PROCEDURE

ACCIDENT PREVENTION MANUAL

ASI5480.22

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See Version History for Previous Changes

Version 12.0
Change 3.0 See the Release History for the effective date of this version.

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MAINTENANCE AND DISPOSITION OF RECORDS

Records described in this publication must be properly protected from damage or loss. Records created from this process are identified in the following table. The Records Inventory and Disposition Schedule (RIDS) provides the appropriate handling instructions (maintenance, transfer to storage, and/or destruction) for these records.

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LIST OF SUPERSEDED DOCUMENTS

Document Number	Title:	Superseded by:
AAA9020.615	Heat Stress Sampling Protocol	ASI5480.22, 17
AAA9020.546	SPR Electrical Safety Program Annual Self-Assessment	ASI5480.22, 15
AAA9020.8	WorkCare, Inc.	ASI5480.22, 38
AAA9020.457	Safety Moment Policy	ASI5480.22, 02
AAA9020.578	Establishing, Reviewing, and Approving Subcontractor Safety and Health Requirements	ASI5480.22, 44
AAA8003.10	Gas Alert Extreme H2S Monitor (Crickets) Operating Procedure	ASI5480.22,2.1
ASR5480.49	Environmental, Safety and Health (ES&H) Video Program	ASI5480.22,2.0
ASR5480.82	Drug Testing Program for Subcontractors	ASI5480.22,2.0
ASL5480.44	Electrical Safety Program Plan	ASI5480.22,B5
ASI5480.22,A0	Accident Prevention Manual	ASI5480.22,B0
ASP5480.6	“Safety”	ASI5480.22,B0
ASR5480.31	“Prescription Safety Eyewear”	ASI5480.22,B0
ASR5480.72	“Safety Footwear”	ASI5480.22,B0
12OP-9	Subcontractor Safety Program, Version 2	ASI5480.22,A10
D506-01933-09	Safe Work Permits, Version 0	ASI5480.22,A6
D506-01002-09	Safety Plan, Version 5	ASI5480.22,A7
D506-02573-09	Site Safety Plan, Version 3	ASI5480.22,A7
12OP-5	Inspection and Hazard Abatement, Version 2	ASI5480.22,A7
12OP-8	Occupational Safety and Health Complaints, Version 1	ASI5480.22,A7
12OP-12	Safety and Health Appraisal Program, Version 1	ASI5480.22,A7
12OP-13	BPS Safety Surveillance Report, Version 00	ASI5480.22,A7

Annual Review

Accident Prevention Manual

ASI 5480.22

I have reviewed all of the sections of this material and they are current and compliant

Director of Occupational Safety and Health	Date
Suzanne Broussard (Signature on File)	7/06/10
Suzanne Broussard (Signature on File)	4/29/11
Suzanne Broussard (Signature on File)	3/22/12
Suzanne Broussard (Signature on File)	12/27/12
Suzanne Broussard (Signature on File)	08/29/13
Suzanne Broussard (Signature on File)	10/01/13
Suzanne Broussard (Signature on File)	10/01/14
Suzanne Broussard (Signature on File)	10/31/14
Suzanne Broussard (Signature on File)	1/12/15
Suzanne Broussard (Signature on File)	4/1/15
Suzanne Broussard (Signature on File)	7/31/15
Suzanne Broussard (Signature on File)	3/31/16
Danny Kosick (Signature on File)	7/18/16
Danny Kosick (Signature on File)	7/27/16

List of Effective Pages

SECTION LIST

Section Number	TITLE	Pages	Version Number	Effective Date
0.0	Cover Matter	i-xv	12.0 Change 3	7/27/2016
1.0	Policy Statement	1-2	12.0	3/31/2016
2.0	Safety and Health General Requirements	1-16	12.0 Change 3	7/27/2016
3.0	Safety Orientation and Training	1-8	12.0	3/31/2016
4.0	Rights and Responsibilities Under OSHA	1-3	12.0	3/31/2016
5.0	Line Control Safety Program	1-14	12.0	3/31/2016
6.0	Integrated Safety Management (ISM)	1-4	12.0	3/31/2016
7.0	Process Safety Management (PSM)	1-12	12.0	3/31/2016
8.0	Asbestos Awareness and Handling Procedures	1-3	12.0	3/31/2016
9.0	Bloodborne Pathogens Exposure Control Plan	1-15	12.0	3/31/2016
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12.0	Controlled Evacuation Procedure	1-5	12.0	3/31/2016
13.0	SPR Hoisting and Rigging Operations	1-2	12.0	3/31/2016

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16.0	Employee Behavioral Safety Process (EBSP)	1-3	12.0	3/31/2016
17.0	Environmental Factors	1-14	12.0	3/31/2016
18.0	Ergonomics Program	1-8	12.0	3/31/2016
19.0	Excavations	1-18	12.0	3/31/2016
20.0	Explosives Safety	1-2	12.0	3/31/2016
21.0	Fall Protection	1-16	12.0	3/31/2016
22.0	General Housekeeping	1-3	12.0	3/31/2016
23.0	Hazard Communication Program	1-11	12.0	3/31/2016
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25.0	Hearing Conservation Program	1-11	12.0	3/31/2016
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27.0	Job Hazard Analysis	1-9	12.0 Change 2	7/18/2016
28.0	Ladder Safety Program	1-8	12.0	3/31/2016
29.0	Lockout-Tagout Program	1-14	12.0	3/31/2016
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44.0	Subcontractor Safety Relations	1-9	12.0 Change 1	6/1/2016
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51.0	Powered Industrial Trucks (Forklifts)	1-5	12.0	3/31/2016
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VERSION	DESCRIPTION	EFFECTIVE DATE
12.0 Change 3	Revision to Section 2.5 to incorporate actions required in response to WHT-14 JONs investigations for clarification prior to audit verification. Clarification necessary to immediately address JON regarding competent persons.	7/27/2016
12.0 Change 2	Changes to Section 27 based on clarifications from DOE regarding WHT-14 JONs and JHA requirements. All revisions are identified by a hash mark on the right border of the page. Changes include the clarification of support equipment hazards, warnings and dangers and the requirement by DOE WHT-14 JONs to be added to the JHA. Included hyperlinks to applicable sections of the APM; allows the use of the Job Hazard Analytics software; updates to roles and responsibilities; and an updated flow chart for JHAs.	7/18/2016
12.0 Change 1	Changes to Section 44 to reflect new SMTR process. 44.3.1. changed SM to SCA; removed special provisions that now have their own section in the APM; 44.3.5. changed SM to SCA; added requirement for environmental requirements; 44.4.2. minor clarifiactions to include ES&H; updated who shall assist the SMTR with completion of the PHR; clarified who signs PHRs for services and construction tasks; spelled out Basic Ordering Agreement (BOA); changed must be at least as stringent to equivilant to; Changed note to state approved by NOLA S&H; 44.5.1. changed SM to SCA; added any support equipment to 44.5.3.; updated responsibilities for the ES&H Manager; deleted PR Requisitioner responsibility and moved to SMTR; new responsibilities added for NOLA Environmental; added as applicable under SMTR responsibility.	6/1/2016
N/A	Administrative Change Only: Corrected year of effective date on title page from 15 to 16 on 4/4/2016.	N/A
12.0	All blue sheets and new formatting for all sections. Sections 48, 49, & 50 have been integrated into the individual sections and replaced with 3 new sections; this manual has a total of 55 sections now; Eliminated outdated forms from the appendix, now form numbers are listed and SharePoint site offers latest form; responsibilities sections have been reformatted in bullets instead of chart to make easier to read; Each section now has a Purpose, Scope, and Application statement; Section 1.0 has been updated with new M&O PM's signature, minor changes to content; Section 2.0 is a complete revision. Includes Competent/qualified person requirements and consolidation of other APM sections to better flow with rest of APM. Section 3.0 is a complete revision from the previous version; Section 4.0, Table 4.1. updated OSHA reporting of incidents; Section 5.0 is a complete revision from the previous version; Section 6.0 is a complete revision; Section 7.0 was updated to eliminate redundancies. Changes are annoted by the right hash marks in the document. Section 8.0 minor revisions to content, formatting, and added roles for asbestos building inspector/CIH. Section 9.10.3. updated to reflect training record storage. Section 10.0 has been formatted to flow better with the current process; eliminated alternate entry procedure; added definitions from previous global glossary; training documentation correction made; revised reclassification process to match minimum OSHA requirements and made to better understand the process; changed pre-entry evaluation to pre-entry briefing; use of the entry log is mandatory for confined space entry; deleted references to OEI; 10.10. added statement about mechanical hoisting for depths greater than 4 feet; added Confined Space Rescue Team Decision Flow Chart to this section; changed appraise to inform throughout section; Section 12 eleminated redundancies and added degas ops manager to process as chairman for CEC on degas; included statement about Life critical; Section 13 was revised to include Life Critical operations; Section 15.2.1. added "electrical" safety-related; deleted PPE hazard assessment throughout; deleted notebox regarding substation training; added Life Critical; eliminated redundancies throughout section; eliminated reference to PPE hazard assessment form; added 15.6.4.	3/31/16

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	Conducting the Annual Self-Assessment into this section and eliminated separate work instruction; Section 16 changed corporate office to NOLA office; Section 17 is a complete revision, major changes include a new action level of 99.7, summoning of the ERT, inclusion of work instruction into this section for heat stress sampling, clarification of essential and non-essential work, updated level I & II controls, and an updated flowchart; acclimation state and heat tolerance expanded; task evaluation time frames for collecting RealFeel® changed; control measures-reference to electrolyte drinks removed; and minor changes to cold stress and other environmental factors; Section 18.2. updated from safety monitor to safety specialist; deleted SSMC in 18.2.7.; replaced monitor to specialist for 18.3.1. and 18.3.3.; 18.5.1. changed JHA to formal erogonomic evaluation; Section 19.0 added Life Critical statement; updated exclusions for ground penetrations; added reference to Section 2.0 for competent persons; referred to APM Section 41 for signs and barricades; referred to APM Section 21 for fall protection; added clarification for soil classification to 19.2.; added reference to 29 CFR 1926 regarding protective systems in 19.3.2.1.; added responsibilitiy to site CM; Section 21.0. is a complete revision, major changes include Life Critical statement, definitions, deletion of PPE Hazard Assessment replaced with JHA, addition of hierarchy of controls, rescue considerations, requirement for a Good Faith Roof Assessment, inspection requirements for fall protection equipment; Section 23.0. eliminated note regarding compliance with new OSHA deadline since it has passed; eliminated MSDS terminology and used SDS; 26.6.2. added training regarding Basic Orienation Plus; Section 24.0. is a complete revision. Section 24.1. deleted OSHAS 18001 and replaced with VPP; clarifications were made throughout to reflect current processes for hazard tracking; deleted outdated processes; deleted references to Behavioral Accident Prevention Process; updates to information regarding SPR Risk Matrix; sample copy of risk matrix included now in table 24-2; reference to new document number AAA9050.854, SPR Risk Coding Matrix added; Section 25.4.1. clarified roles between site safety and New Orleans IH group; 25.5.3. revised notification of affected employees and medical services provider process; 25.7. updated information for incidents that indicate standard threshold shifts; updated responsibilities section to reflect changes; Section 26.0. updated to add definitions from glossary; description of IH oversight added to 26.2.; deletion of redundant note regarding subcontractors; statement regarding exposure assessments added to 26.4.; references to OEI removed added SEGs; addition of hyperlink to OEI has been added; statement added to monitoring protocol for infrequent tasks; Personal H2S Monitor Procedure section moved to new section 48; 26.5. added clarification for baseline monitoring plan; clarifiactions made to personnel notification; updates to NOLA IH instrument calibration of equipment; Section 27.0. added statement about Life Critical; added hierarchy of controls; included new bullet in 27.3.4. to check the lessons learned database; removed references to PPE Hazard Assessment; Section 28.0. is a complete revision to align with Fluor HSE requirements; major updates include addition of definitions, competent person requirements, and standardized inspection requirements; Section 29.0 updated with new Life Critical statement; statement regarding LOTO at remote locations; a new note box regarding IRMA tags; requirement for control of the caution tag log to be by the organization installing the tag; periodic review of caution tag use to be conducted by organization installing it; clarification made in 29.1.4. regarding periodic inspections; 29.2.2. statement about using alternative devices and use of heavy locks; Section 30.0. is a complete revision to align with Fluor HSE requirements; major updates include addition of definitions, competent person requirements, and standardized inspection requirements; Section 31.0. is a complete revision to align with Fluor HSE requirements; major updates include addition of definitions, competent person requirements, and standardized inspection requirements; inclusion of Life Critical operation for material handling using support equipment; Section 32.0. is a complete revision to align with Fluor HSE	

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	requirements and implementation of the WHT-14 JONs; major updates include addition of definitions, competent person requirements, and standardized inspection requirements; inclusion of Life Critical operation; merged Support Equipment Operations Manual (ASI4330.169) with this section to ensure M&O and Subcontractors have full access to same information; new Support Equipment Acceptance Checklist (AAA9020.732) referenced and specifies specific requirements for initial-receipt inspections for all support equipment arriving onsite; added watercraft operation; references specific sections for other support equipment; Section 33.0. eliminated redundancies and conflicting information with other sections of this manual; changes to flow of content in Section 34.0.; removed reference to MSDS used SDS only; added statement for SMTR/supervisor to contact IH if monitoring is needed; minor changes made to Section 35.0 since will be revised soon with process improvement team; clarified note in 35.2.2.; Section 36.0 deleted requirement for PPE Hazard Assessment; added statement under 36.1.2. for application of procedure; 36.1.6. added on-the-job training; Section 37.2.5. added statement regarding authorized access while source is exposed; Section 38.0 removed Hazard Recognition Program requirements and moved to APM Section 2; removed table for safety statistics; added note box stating vehicle accident requirements are located in section 45; addition of statement for requesting return to work release; restructuring to numbering of sections with minor changes made for better flow of requirements; merged work instruction for WorkCare into section 38.1.4. for easier availability; removed note in step 5 requiring originals; deleted redundant section regarding site safety specialist generated files as it is already mentioned throughout section; Section 39.0 is a complete revision to align with Fluor HSE requirements; major updates include addition of definitions, respirator selection, reduced Maximum Use Concentration (MUC), supplied air systems, addition of a designated bottle watch person and pre-job check list, fit testing guidance with current equipment, and updated responsibilities; Section 40.3. deleted S&H activities and replaced with safety and health programs; added responsibilities for supervisors in 40.4.; Section 41.0 title has been changed to Safety Tag, Sign, and Barricade Requirements; added statement regarding disciplinary action; included barricade tape requirements consistent with Fluor HSE requirements; added specifications for color and color combinations; use of tags as a temporary means for defective tools added; use of Danger tags when immediate hazard presents; use of caution tag clarification added; tags used to flag out equipment or warn of additional hazard controls added to 41.2.2.; added responsibility to supervisors to perform reviews of the program with Operations and employees to sign the log to verify accuracy; removed statement in 42.1. referring to application of procedure as it is mentioned already; Section 43.0. is a complete revision to align with the Fluor HSE requirements, major changes include Life Critical operations, definitions, competent and qualified person requirements; scaffold inspection and use; Section 44.3. added sentence about supporting Procurement with preparing solicitations; added additional guidance for oversight Level I, II, & III subcontractors; added clarification for PHR preparation in 44.4.2.; Section 45.0 is a complete revision, major changes include defined “Vehicle” to clarify that support equipment is included; yperlinked the Drug and Alcohol Free Workplace (ASR3700.24) and Vehicle Operations Manual (AAA8003.7) for ease of access; included statement from legal regarding use of prescribed or over-the-counter drugs or medications; Included clear reporting requirements for GSAs vs. all other vehicles; moved bicycle safety from section 2; added requirement to alighn with Fluor HSE to conduct a JHA when driving to remote locations; added CDL requirements from the Support Equipment Manual; Section 46.2. referenced section 36 in note; changed “heed” to follow and added note box in 46.4; referred to APM Section 55 for storage and handling requirements in 46.4.4; Section 47.0 clarified workover safety analyst duties; revised to reflect change in job titles; added incidents and clarified ERP in 47.1.1; changed specific cavergns to posted areas of the	

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	degas plant; clairifed use of the Geronimo line and added CSPC to approval of rescue plan in 47.5.5; revised 47.1.8. to reflect new APM section 49; added statement to refer to APM section 39 and clarified eye wash requirements in 47.1.12; refered to applicable APM sections for equipment and scaffolds to eliminate redundancies; added warning box for wind speeds reaching 25 MPH; added note regarding use of site support equipment; Section 48.0 has been replaced with new section for H2S; procedures from previous version of section 26 have been added; Section 49.0 has been replaced with a new section for benzene; Section 50.0 has been replaced with a new section for carcinogens; Section 51.0 is a new section for powered industrial lifts (forklifts); Section 52.0 is a new section for elevated lift equipment; Section 53.0 is a new section for motorized heavy equipment; Section 54.0 is a new section for lawn equipment and chain saws: Section 55.0 is a new section for operating or using pressurized or compressed air equipment.	
11.0 Change 10	Section 47 has undergone a complete revision.	7/31/15
11.0 Change 9	Section 36.4 has been revised to reflect current ANSI standards for head protection and to clarify the useful life of hard hats. A new form (AAA9020.760) has been established in order to document training conducted on PPE. Minor clarifications and administrative changes were also made to the rest of section 36. Revision marks on the right side of the page identify areas where verbiage was changed to this section. NOTE: There is mention of the term Safety Task Assignment (STA). This term is not applicable as of yet, but has been included to reflect changes to be addressed in the next revision of section 27. Section 44.0 is a complete revision to align with new SMTR process.	4/1/15
11.0 Change 8	Section 18.2.6. changed managing to coordinating; 18.2.6.1. clarified protocols and diagnosis of WMSDs; 18.3.2. changed supervisors report to injury and illness report form; Section 18.5.1.a.&b. deleted to reflect accurate equipment needs. 18.5.2.d. deleted statement regarding requisitions and restocking. 18.5.3. deleted section about distribution of ergonomic equipment. Section 18.5.4. changed to section 18.5.3. Added “to the extent that they have been trained” to section 18.5.3.d. Table 18.1. (NO S&H) deleted statement regarding IH support to sites, DOE, and Deltha Critique.	1/12/2015
11.0 Change 7	Section 19.0 is a complete revision. Section 38.0 is a complete revision.	10/31/2014
11.0 Change 6	Section 1.0 changed to remove old DM policy and replace with FFPO. Section 4.0 changed DM references to MOC, corrected incorrect table numbers in table 4.4. Section 23 changed DM references to MOC; added SDS after MSDS due to change in GHS standard and possibility of one or other being available during phase-in. Added reference to “Guidance for Hazardous Determination,” 29 CFR 1910.1200” in 23.2.2.2; added first aid statements to 23.2.3.a; deleted hazardous from before “chemicals” in section 23 throughout; 23.2.8.b added monitoring with instruments; Section 24.3.1. and 24.4.1. corrected due to DOE Action Tracking System (DATS) finding changed Fluor Hotline number to 1-800 number. Section 36 is a complete revision.	10/01/2014
11.0 Change 5	Section 6 complete revision due to MOC contract award. Section 9 changed DM to MOC; 9.2.1.1. Category I Classifications deleted Emergency Response Team (ERT) members are an example of Category I employees, and Other, added Emergency Response Team (ERT) members to a., deleted h. Emergency Medical Technician (EMT) employees; 9.2.1.2. Category II Classifications Added Category II employees trained in CPR/AED that are non-ERT shall only use “hands-only” techniques; added 9.2.1.3.f for housekeeping tasks; 9.2.1.3 added note that says non-ERT perform “hands-only” CPR; 9.3. added or possible bloodborne pathogens and universal precautions shall be used; 9.3.1. added K9 vehicles; 9.6.1.e. removed percutaneous and replaced with sharps; 9.6.2.c.3. replaced OSHA 1910.1030 with 29 CFR 1910.1030(g)(1); 9.10.2.a added clarification for Category I	5/30/2014

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	employees; Table 9.1, Site Safety Specialist, under (e) added the words “site” and “focal point.” Table 9.1 added Site Medical Focal Point under HR capital. Section 15 changed DM to MOC 15.1. added “subcontractors.” 15.2.3.b. Note added JHA; 15.2.3.d clarified training for those who face risk of electrical hazards per NFPA 70E 2012 Standards; 15.2.3.g. Note deleted first aid for escort; 15.2.3.g. Note added level of care for which they have been trained and currently certified to provide; 15.2.4.2.a.3. added and required PPE; 15.2.4.3.e. updated version number; 15.6.1.b.2. added Standard for Electrical Safety in the Workplace; 15.6.3.d. added form number for self assessment; 15.7. deleted “on the Supervisors Report of Injury/Illness, Unplanned Employee Exposure, or a Early Hazard Recognition form” and added “in accordance with the Reporting –Recording Procedures outlined in Section 38.” 15.8.3.a. deleted “to exposed energized conductors or circuit parts. This safe distance is defined by the Limited Approach Boundary” and replaced with “outside of the Limited Approach Boundary unless continuously escorted by a qualified person.” 15.8.3.c. deleted and clarified in (a); 15.9.4.d. deleted “Safety showers and eyewash stations are also required in close proximity” and replaced with “are required in close proximity and eyewash stations which can be reached within no more than 10 seconds or immediately adjacent to work using strong acid or caustic materials” Section 24 replaced DM with MOC; Section 24.3.1. and 24.4.1. replaced “Listen Up” hotline with Fluor Hotline. Section 26 replaced DM with MOC throughout; Changed colors on risk matrix to match SPR risk matrix (switched blue and green);26.1 deleted “ SPR DOE, and DOE’s support services contractor.” 26.3.2. deleted (such as collecting personal samples with diffusion vapor monitors) “The OEI can be accessed via the Essential Solutions Services (ESS) program” and “such as those established by the ACGIH, OSHA, and the NIOSH.” 26.3.2. replaced ESS with OEI; Section 26.3.3. added clarification regarding posting of SEGs; Section 26.3.3.g. added statement about SEG notifications; 26.3.4. deleted “and ESS.” 26.5.2. e. added placement of H2S monitors; Table 26.1 under S&H responsibilities, deleted Communicate OEI information to line managers, supervisors, Site Safety Specialists, and employees, when necessary. Table 26.6 S&H a. deleted annual and “at the request of management” Section 31 changed DM to MOC throughout; 31.1.2.e. added proper lifting 31.2.2.a. added never operate a mechanical lifting device without proper pre-use training and/or certification; 31.3.1.j. added vertical; 31.3.1.k. added and shall have protective caps on while not in use. Added 31.3.1.n. Cylinders shall not be used if damaged or defective.	
11.0 Change 4	Section 3.2 removed HC will document their training on the Employee Safety Orientation Checklist (OSF90-0073). Added new section 3.6 for Basic Plus training. Section 38.3.7.1.c.4.a) corrected to DOE Action Tracking System (DATS). Removed reference to ES&H video throughout entire section and replaced with Active Force of Protection Video. Updates to Table 3.2 to reflect Basic Plus program.	3/3/2014
11.0 Change 3	Section 25.1 Note added “the M&O Contractor’s.” 25.5.3.b.3 moved to statement in 25.5.3.a. 36.3.4.e added shaded lenses shall not be worn while indoors, before daylight or during night time hours. Added new Section 36.4.1.1. Tactical Assault Helmets to address helmets used for protective force and during exercises. 36.8.a.20 added degas operations. Added Section 39.1.1.e to clarify respiratory protection for protective force.	1/16/2014
11.0 Change 2	Section 10.4.6.a added “or designee” to close finding and better clarify personnel attending debriefing. Section 19, Figure 19-2, fixed typo in number 16 that referred to Section 18, corrected to refer to Section 10. Section 17.1.5.3.3.a) added clarification regarding enhanced buddy system; Section 17.2.4.a deleted “ambient” replaced with “RealFeel®.” 17.2.4 deleted “Guidelines for” in title of subsection. 17.2.4.a-d replaced “should” with “shall”; 17.2.4.c.1 added buddy system clarification; 17.2.4.d.1 added to clarify enhanced buddy system for cold stress; 17.2.4.NOTE added additional guidance. Section	12/23/2013

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VERSION	DESCRIPTION	EFFECTIVE DATE
	26.2.2.2.b.1 & 2 added Senior Industrial Hygienist; 26.2.2.2.c.1-4 added Industrial Hygienist; 26.2.2.2.d.1&2 added Industrial Hygiene Technician; 26.2.2.3 deleted “Safety has updated all its;” Section 26.4 deleted “DM Industrial Hygiene Equipment Integrity Program” and replaced with “equipment calibration program” change is in response to audit finding; 26.5.3.a changed “in” to “for” and 26.5.3.b changed “will be” to “are” and deleted “only.” Section 27.1.c.3 deleted “representative” and added “specialist;” 27.2.1.a added the word “tasks” for clarification; Section 27.3.8.a deleted “or” and added “if a SWP is not required the JHA and PJBF will be filed with.” Table 27.1 deleted “mental” replaced with “verbal” under supervisor and contractor roles and responsibilities. Figure 27-1 under record retention added “if a SWP is not required the JHA and PJBF will be filed with.”	
11.0 Change 1	This revision impacts Section 10, Confined Space Entry. Added transformers to list in 10.1.1.9; 10.3.d removed ERT Organization & Training Plan replaced with ERT Organization Manual; 10.4.3.note revised; 10.4.3.b added “confined space,” and deleted reference to form in appendix; added new note in Section 10.4.3.c.Clarified confined space reclassification in section 10.4.3. and added new subsection 10.4.3.1. Permit Required Confined Space Reclassification Steps. Added word “documented” in 10.4.4.a. Changed confined space permit to safe work permit in 10.4.5.1, and added the Site Safety Specialist, or Associate, is required to check confined space permits daily in 10.4.5.2. Added “at the start of a new operational period” and “Confined Space Entry Permits shall not exceed 12 hours in duration” in the note in 10.4.5. In 10.13.g.2 changed version 6 to 7; 10.4.7.b added monitoring shall also be conducted at the breathing zone or level 10.4.8.h added CSRT and attendants. 10.5.3.b.2 deleted personnel and replaced with CSRT. Changed title of 10.6.2 to Pre-entry; 10.6.4. title changed to Continuous Test Criteria; 10.12.b. added comment regarding visual contact if lifeline is waived. Table 10.1, Rescue Team Personnel (f) revised. Administrative change made in Section 26, Industrial Hygiene, Matrix for Determination of Industrial Hygiene Staffing Requirement, removed “x” and replaced with check mark.	11/27/2013
11.0	Cover matter updated to include Table of Contents; Section 2 revision to incorporate annual review of APM with employees; 2.5.d. removed must be; Section 2.6.1 includes new note referencing break-away lanyards; 2.6.3. added note regarding walking/working surfaces; 2.6.4. added more detail regarding reporting procedures; 2.7.6 added SPR and deleted Strategic Petroleum Reserve; 3.1. note revised to reflect P&D; Revised 3.3.1.a-c to reflect changes in the ES&H Orientation Video procedure and form, and added emergency notification; Section 3.2 added form number OSF90-0073 for reference; Section 3.3.5 changed course number to ESSH 0050 and input to SAP; Section 3.3.6 added statement requiring contractors to demonstrate notification procedures; Section 4 changed format of tables; Updated section 5 to reflect changes in construction management; 5.2.1. changed human resources to human capital; 5.4. changed to human capital; Section 5.6 changed Construction Management contractor to Construction Management director; 5.6.2.2. changed CMS project manager to M&O Director of CM; 5.6.2.3 deleted reference to CM contractor and replaced with M&O (CM)– one representative and an alternate; 5.6.4. removed reference to Construction Management contractor; Revised Section 6 to reflect changes in construction management; Section 6 note removed referencing the Construction Management Contractor does not have the ISM DEAR clause in their contract; Table 6.1. Performance Development deleted statement regarding job hazard analyses performed by PDD; Revised Section 7 to reflect changes in construction management; Section 7 fixed spacing and numbering issues; 7.2.9. deleted version number of Fire Protection Manual; Section 8.1 revised language; Section 8.2 removed SSS acronym and replaced with site safety specialist; added EH&S Manager to notification; Section 9.2.1.1 added BC Brine Disposal Wells; Section 9.3.1 added exemption for	10/1/2013

Release HISTORY ASI5480.22, Accident Prevention Manual		
VERSION	DESCRIPTION	EFFECTIVE DATE
	Elmwood complex medical trauma bags; 9.7.2 added control room; 9.8.1 deleted Social Security number; Section 9.13. updated name to First Aid Injury and Bloodborne Pathogens Exposure Incident Log, added form number; Section 10.1 note added SharePoint as reference to forms; 10.3.b. added SMTR; 10.4.5.a. added form number; Section 10.4.2 note added regarding DOE direction of confined spaces; 10.2.3.added sample; Section 10.4.2. fixed form name and number listed; 10.4.3.d. added form number; 10.4.8.g. corrected form name and added form number; Section 10.11 changed to 4 feet; Table 10.1 removed reference to CMTR; Revised Sections 11.1, 11.2.a., and 11.2.b. to reflect changes; 11.2.d added Control room log; 11.3 added site to number 2 and 3; Section 12 fixed grammatical errors and spacing issues; Section 13 fixed grammatical errors and spacing issues; Section 14.1 added responsibility in part b; Section 15 was incorporated to reflect changes made in version 10 change 1; Section 16 fixed spacing issue; Section 17 fixed alignment issue; 17.1 defined acronym for ACGIH; 17.2.5 added note regarding PFDs; Section 18 eliminated SSS and replaced with site safety specialist; Removed section 18.2.5. Training due to lack of training available, updated numbering to reflect deletion of section; Removed responsibilities of Performance Development Department since a training package does not exist at this time; Section 19.3 updated to reflect change from 6 to 4 feet; 19.3.3.deleted reference to the Construction Management Services (CMS) contractor and replaced with construction management; 19.3.4.c.1. removed reference to CMTR; 19.3.5. changed from 6 to 4 feet; 19.4.c. replaced SMTR for CMTR; Section 20 name changed from Explosives Storage to Explosive Safety, with complete revision of section; Section 21.2. note added regarding fall protection requirements in 29 CFR 1926 not applying to vehicles; 21.2.2. changed from 6 to 4 feet; 21.3. changed from 6 to 4 feet; 21.3 a-c added per OSHA requirements; numbering changes to subsections in section 21.4; 22.2.1.10. deleted Shelves must have weight capacity on them; Section 22.2.2. changed heading to Housekeeping Inspections; 22.2.2.e. deleted should replaced with shall; Section 23.1 fixed formatting in note box; Clarified New Orleans S&H responsibilities in table; 23.2.2.e. deleted 0.01 replaced with 1%; Section 24.2.l. deleted reference to CMTR; 24.3.4.d. deleted Resources replaced with Capital; Section 24.4.6.b. eliminated reference to construction management contractors; 24.4.6.g. deleted Construction Management Contractor; 24.4.6.f. deleted CMTR; 24.4.6.h. deleted responsibility of Construction Management Contractor; 24.6.fixed font problems; removed references to AGSC in table section 24; Table 24.1 under Site ES&H manager added c, d, e, & f; Section 25.1 added note referencing protective force; 25.7.a & b updated; Table 25.1 updated responsibility f for HC; Section 26.2.2.3. change to title and content removing references to construction management contractor; Deleted 26.5.3.b. reference exclusive to only crude oil and replaced with emergency; Section 27.1 added note regarding forms for use by the security contractor; 27.1.c. statement revised; job hazard analysis changed to abbreviation throughout entire section; Section 27.2.1 added machine operators; added note in 27.3.4. Job Hazard Analysis Process; clarified forms and figures in 27.3.4.a and 27.3.4.e; 27.3.5. added part d; updated information found in 27.3.6.; 27.3.8. updated PJBF info; added Figure 27-1.Planning for Safety-Job Hazard Analysis Process-Part 1; added Figure 27-2. Planning for Safety-Job Hazard Analysis Process-Part 2; Section 28.4.o. added any step marked “Not a Step” or “Do Not Step” will not be used as a step; 28.6.a. added all personnel that use ladders; Section 29.2.4. Periodic Inspections revised; 30.2.1.10.c. deleted place knife in a sheath; Section 30.2.1.1.f. added tag requirement; 30.2.1.1.h. added rings or watches; Section 30.2.1.11.renamed and completely revised to specify guard and rest requirements; 31.1.1.c. added loading; 31.2.1.a. added improperly; 31.2.2 fixed formatting and added may result; Added new note in section 31.2.4. Manual Lifting and Material Handling; 31.3.3.s. clarified to cover all cylinders; New note box added to section 32.1; Section 32.2 note added in a safe manner; 32.2.1.j. added all personnel;	

Release HISTORY ASI5480.22, Accident Prevention Manual		
VERSION	DESCRIPTION	EFFECTIVE DATE
	32.2.2.a. added note regarding checklist; Section 32.2.2.3. added any leaks that may impact the environment must be reported to OCC; Added SDS to 33.2.2.and 33.2.6; Added note box in section 34.6.4.; Section 34.3.1.a. clarification regarding pressure regulator valve; 34.3.3.d. added to state need for barrier between mixed paints and ground; Note added to section 34.6.4.1.; Added SDS to section 34.4.1.cand 34.4.2.; 34.4.2 added note; Section 35.3.1.c.2. clarified; Added 35.3.4.b.1; clarification of section 36.2.1.d was added; 36.3.2.j. added for arc flash hazards; 36.7 note added electrical shock; shin guard clarification added to section 36.6.1.; Section 37.2. added x-ray of welds/pipes; Section 38.1.a. updated Early Hazard Recognition; Section 38.2. updated throughout to reflect change to Early Hazard Recognition program; 38.3.4. note added logged on the First Aid Injury Log; 38.3.4.1.a. added person responsible for filling out first aid log; Section 38.3.4.1.added form numbers; Section 38.3.4. added injuries/illnesses; 38.4.1. added site director; 38.6.2. added form number; Figure 38-2 updated; Section 39 revised to combine previous attachments 39-1 through 39-4, attachment 39-5 is now included in the appendix; 39.2.a note deleted that referenced construction management; 39.2.c. note revised regarding volunteer respirator use; 39.3.1. updated new attachment location; Section 40.5 Table updated ES&H director to APM of ES&H; Section 41 fixed spacing issue, no change to content; Section 42.2.3 added note regarding blasting media; Section 43 fixed spacing issue; Table 43.1 deleted CMS, replaced with site construction managers; Section 44.1.1.a. deleted sentence regarding construction management contractor; 44.1.1.c. deleted M&O; 44.1.2. deleted M&O contractors; 44.1.2.c.note deleted; 44.1.3.deleted contracts and inserted statement regarding SME; 44.1.3.a.3. added SDS; 44.2.1.b. deleted diving; 44.2.1.e. deleted; 44.3.2.7. deleted major; 44.3.2.8. deleted other; 44.4.a. updated Safety and Health Checklist title; 44.4.b. from version 10 deleted; 44.5.a.5. deleted sign replaced with review; 44.5.c. deleted reference to figure 44-1; 44.6.a. fixed title of checklist; 44.6.b. deleted; Section 44.7. of version 10 regarding drug testing for subcontractor employees was deleted and a note placed referring to the procurement documents; added note to section 44.7; Table 44.1. Operations, Maintenance and Engineering (Including Site Management) deleted line q; Table 44.1 under ES&H Manager added or Designee; table 44.1 deleted references to construction management contractor; deleted out of date example of preliminary hazard review in figure 44-1; 45.3.i. clarified driving with communication devices; Section 45.4.c. clarified drug testing protocol; 45.5.2.a. changed human resources to human capital; Section 46.4.4 added note regarding storage and handling of cylinders; Section 47.1. complete revision; 47.1.3. note revised; 47.1.6. revised to state man-rated; 47.1.6. note revised; 47.1.7.a. changes to ladder inspection; 47.1.7.d. changed to 4 feet; 47.1.8.b.1 and 47.1.8.b.3. revised; added 47.1.9.b.2. for wooden sills; 47.1.10. revised to reflect lights on rig; 47.1.11.f.1 and 2 revised; 47.2. warning; 47.2.1. added warning; 47.2.2. added caution statement; 47.2.2.e. revised; 47.2.2.f.note added with revision to 47.2.2.f.1.; 47.2.6.f. revised; 47.2.8.d. revised; 47.2.9.f. revised; 47.2.10 revised; 47.2.11. revised; Section 48 added table of contents, forms now listed by section number; updated forms that were changed on SharePoint site; Section 49.0 deleted references to Construction Management Service and CMTR, removed all reference to close calls, added early hazard recognition program; Section 50 updated references with applicable reference revision dates.	
10.0 Change 1	Section 15.2.3. Work Practices section added note to clarify equipment specific service technicians as qualified; Section 15.2.3.d. Work Practices updated to clarify NFPA 70E; Section 15.2.3. Work Practices Section added note to clarify escort requirement for service technicians for vendors; Section 15.3.1. Requirements added note regarding servicing of specialized equipment. This revision affects only Section 15 (Electrical Safety)	8/29/2013
10.0	This is a complete revision to this manual.	12/27/2012

Release HISTORY ASI5480.22, Accident Prevention Manual		
VERSION	DESCRIPTION	EFFECTIVE DATE
9.0	Complete revision of Section 19- Bloodborne Pathogens	6/06/2012
N/A	Administrative change performed on 5/24/2012 deleted reference to Resource Team in section 2.4.1.2.	N/A
N/A	Administrative change performed deleted outdated form in section 2.19.	N/A
8.0	Subpart 2.19 of Section 2 revised to incorporate Job Hazard Analysis (JHA) improvements from past Lessons Learned and Performance Improvement Team.	3/22/2012
7.0	Section 2 updated to include changes made to the stop work authority statement; smoking policy for all SPR sites; changes made in subsection 15, procedures for site safety specialist - generated files and safety reports, and the responsibilities of the site safety specialist under this subsection; and changes in subsection 16, Occupational Safety and Health Concerns, to the procedures for this subsection and to the responsibilities of site directors under this subsection. Section 30 up dated to include direction for operations manager or designee to retain safe work permits for at least one year after work is complete. Safe work permit instructions matrix up dated to reflect additions to the responsibilities of the initiator and supervisor.	3/01/2012
6.0	Section 31 Revision to incorporate actions required in response to fatality investigations. **Note** : Changes made were directed by the investigation Corrective Action Plan. Comments will be welcomed for the next revisions.	12/19/2011
5.0	Section 30 Changes made were to document the initiator's review of the Job Hazard Assessments associated with the Safe Work Permit and to document that the initiator confirms that the personnel being assigned to perform the work are trained.	12/12/2011
4.0	Section 2 Updated	12/14/2011
3.0	This is a complete revision to this manual. The only section that did not change was section 37.	4/29/11
2.7	Added Attachment 2-4 SPR Safety Requirements for Elmwood Complex and GSA Warehouse and the reference to in Section 2.	1/04/2010
Admin Change	After a review of section 23 some sections did not match OSHA requirements and was corrected. Section 18 figure 18.1 flow was corrected to meet OSHA confined space requirements.	9/17/10
2.6	Revised parts of section 2 to take out obsolete information and section 31 added more information on expanded C investigation and Human Performance Improvement.	5/30/10
2.5	Added Section 7 Close Call Program, reviewed section 2 and 8 to match up the forms use for JHA and PPE hazard assessment, Section 30 changed the requirement for the number of the JHA to be put on the safe work permit with the requirement that they will be assessed annually and changed in Section 33 that work orders have to be reviewed by ES&H from weekly to 30 days. Section 2.15.26 added 50 lbs limit requirement	2/17/2010
Admin Change	Added in section 23.3.3 note which explains Construction Management Services (CMS) part in excavation planning as requested by O&M director.	2/17/2010
2.4	Added to section 31.3 note for reporting first aid cases and injuries during natural disasters. Section 2.6.1.8(l) augmentation requirements to support the sites for natural disasters. February 27, 2009 made content change to correct format errors. Section 23 added not in section 23.3.3 which clarified Construction Management Services Requirements in excavation planning.	2/26/09
2.3	Add the requirements for to have SCBA available, continuous monitoring and Flame Retardant Clothing (FRC) for employee performing the line breaking activity.	11/13/08
2.2	Requested changes added to Section 25 by DOE.	06/12/08
2.1	Addition of the Gas Alert H2S Monitor Use Section 6 and update of Calibration of Instruments.	05/28/08
2.0	This is a complete revision. Most sections have been revised to meet new OSHA requirements. Changes section has line to left to indicate change.	03/05/08

Release HISTORY ASI5480.22, Accident Prevention Manual		
VERSION	DESCRIPTION	EFFECTIVE DATE
1.0	Version B10 was migrated into Documentum on 3/8/07 as Version 1.0 There were no content changes.	N/A
B10	This version involves sections 12 and 30. In section 12 Arc Flash Requirements were added and in section 30 a further clarification of when walkthrough inspections are required. Revision Bars in the right margin mark changes to text.	03/13/06
B9	This version involves sections **1, 2, 3, 5, 6, 8, 19, 21, 22, 25, 28, 31, 32, 33, 35**. In section **1,** changed policy to program and corrected DOE 440 to 450. In Section **2,** changed all SITS reference to ATS: Updated steering committee responsibilities as part of VPP contingency item. Change that SSMC can be sent out by E-mail. In section **3,** corrected heat stress flow chart. In section **5,** changed manufacture reference to O&M contractor. Deleted the requirement for the section to be in book. In Section **6,** added under 3.1 summary of statement requirement for monitoring. In section **8,** added table 8-1 and updated table 8-2. Raised reimbursement amount for steel toed shoes and prescription glasses. In section **19,** added supervisors responsibility and OSHA 300 requirements. In section **21,** added definitions and 8 hour TWA for employees working around drawdown equipment. In section **25,** added lockout/tagout to CEC checklist. In section **28,** corrected the SCBA requirements to 10 per site. In section **31,** change SITS references to ATS and 200 log to 300. In section **32,** added requirement to inspect fall protection equipment before use. In section **33**, change SITS references to ATS and updated risk severity adding security requirements. In section **35**, deleted monthly requirement of review of subcontractors and reference to minor construction boiler plate since there is no such document. Revision bars in the right margin mark changes to the text.	06/06/05
B8	This version involves sections **2, 2-2, 6, 18, 21, 27, 28, 30, 36**, and the reference section. In section **2,** in 2.6.1.2.f, on page 32: added that department managers "or a designee" will represent their organizations at SSMC meetings. Also, changed Executive Council meetings to quarterly. In attachment **2-2,** revised to state that a star will mark personnel who are absent "and do not have a designee present," and deleted "reason not in attendance." In section **6,** added Equipment Integrity Program, to close out a finding. In section **18,** changed definitions to match OSHA. In section **21**, updated hearing conservation program requirements. In section **27**, corrected a sentence in figure 27-6 to say equipment shall be locked out instead of "not locked out." In section **28**, corrected equipment requirements as requested by site. In section **30**, addressed issues that have arisen from the use of the new permit. In section **36**, added a new workover rig checklist as a result of incident investigation. In the reference section, added references. Revision bars in the right margin mark	01/09/04
N/A	Noncontent change only – added the 2003 Annual Review by the occupational safety and health manager (after the cover page).	10/01/03
B7	This version involves section 13, Vehicle Safety Program. This section is updated at the request of senior management to decrease vehicular accidents on the SPR. Section 13 is entirely rewritten and has no revision marks.	04/16/03
B6	This version involves sections 2, 8, and 30. The changes in sections 2 and 8 are to support the changes in section 30, Safe Work Permits. Changed paragraphs in sections 2 and 8 are marked with a revision mark in the right margin. Section 30 is entirely rewritten and has no revision marks.	01/27/03
B5	This version involves sections 6, 10, 12, 19, 20, 24, and 37. New attachment 12-1 added. Former attachments 20-5 and 20-6 deleted; new 20-5 added. Section 9 concerning nuclear density gauges deleted and reserved for future use. Sections 6, 10, 19, and 20 and modified to address interim review comments. Section 12 now includes electrical safety information; the Electrical Safety Program Plan will be canceled. Section 24 modified to better explain when a Hot Work Permit is required.	09/09/02

Release HISTORY ASI5480.22, Accident Prevention Manual		
VERSION	DESCRIPTION	EFFECTIVE DATE
	Section 37 updated to meet OSHA ergonomics requirements. Changes to text are marked with a revision bar in the right margin.	
B4	This version adds a new section 3, Heat Stress Management Program, in its entirety. The previous section 3, concerning aviation safety, was superseded by ASL6420.32, Aviation Operations Manual in 1997.	05/01/02
N/A	12/12/2001 – a non-content change was made to correct the document number by removing the version designator from the number; this was done for all sections of the document. Also, the word "revision" in the headers was changed to "version" in keeping with the Document Control & Management Program's terminology. This change was in response to audit finding IE-NO-2001-1-30-2. This change does not change the effective date of the document.	N/A
B3	This version makes changes in sections 2, 6, 8, 27, and 30. In Section 2, figure 2-9, Employee Safety Orientation Checklist modified, and responsibilities for this checklist changed. In section 6, changes made concerning Personal Exposure Monitoring Reports. In section 8, only course number changed on page 6. In section 27, added new subsection 27.4, Equipment Specific Energy Control Procedure, and various text changes made throughout. In section 30, new subsection 30.6 on training added.	08/13/01
B2	This version makes a change in section 27. In item 27.3.5.b.4) "then discarded" changed to "then follow the pertinent RIDS schedule to determine the retention of the record." Text change is marked with a revision bar in the margin.	04/13/01
B1	This version adds Manual back to the title of this document. In section 13, accident reporting procedures are updated.	01/19/01
B0	This is a complete revision. Most sections have been substantially revised to meet new OSHA requirements and prepare for VPP application. Sections 38 and 39 are new.	06/01/00
A20	Added new material to section 2; revised section 6; added new section 37.	09/30/99
A19	In section 2, 2.6.4 (f), inspection period changed from "periodically" to "biweekly." New figure 2-12 added.	07/26/99
A18	Section 20 and attachments 20-1 through 20-4 extensively rewritten.	09/03/98
A17	Sections 5, 18, 27, and 30 updated. In section 18, Confined Space Entry Permit revised. In section 30, Safe Work Permit revised.	06/12/98
A16	Section 26 updated. One paragraph in section 33 updated (page 21). Changes marked by revision bars in margin.	01/06/98
A15	Sections 8 and 31 updated. Changes marked by revision bars in margin.	09/12/97
A14	Section 25 updated.	07/23/97
A13	Sections 9 and 10 updated.	06/12/97
A12	Sections 4 and 25 revised. Section 36 is new.	04/09/97
A11	Sections 18 and 29 updated.	01/12/97
A10	Section 11 extensively revised. Section 35 is new	10/29/96
A9	The following sections updated: 2, 23, and 31. Sections 32, 33, and 34 are new.	07/05/96
A8	The following sections updated: 1, 13, 16, 19, 21, 22, 24, 28 and reference section. Sections 14 and 17 cancelled.	05/17/96
A7	Section 2 is rewritten and expanded, superseding the Safety Plan, Site Safety Plan, and four items of command media.	01/26/95
A6	Section 30 is entirely new.	10/27/95
A5	This version updates sections 12, 24, and 31.	09/25/95
A4	This version updates section 8, which is entirely rewritten and includes material from existing section 15. Section 15 cancelled.	08/17/95
A3	Added subsection 24.4 to section 24.	05/02/95
A2	Section 27, Lockout/Tagout Program, revised.	09/30/94

Release HISTORY ASI5480.22, Accident Prevention Manual		
VERSION	DESCRIPTION	EFFECTIVE DATE
A1	Section 23, Evacuations, updated and rewritten. Appendixes B and C replaced.	07/28/93

POLICY

Fluor Federal Petroleum Operations

RESPONSIBLE FUNCTION: Safety and Health AUTHOR: S. Broussard OWNER: Dan Evans	SUPERSEDES: APPROVED BY: Daniel M. Evans, Project Manager	POLICY NO: AAA7001.1 VERSION: 5.0 PAGE: 1

TITLE: SAFETY & HEALTH POLICY

Effective Date: March 31, 2016

Policy Statement
Fluor Federal Petroleum Operations Company (FFPO) will provide a safe and healthful workenvironment for all employees.

Functional Oversight
The Safety and Health Department is responsible for the annual review and update of this policy.

FFPO shall provide a safe and healthful work environment for all employees. FFPO shall have zero tolerance for the conditions or precursors leading to disabling injuries and fatalities. FFPO will actively promote and continuously improve the Integrated Safety Management process throughout the SPR.

Scope
FFPO's approach to ES&H recognizes the value of a comprehensive and consistently applied approach to safety management. FFPO is committed to actively promoting, and continuously improving the Integrated Safety Management System at all SPR worksites in order to prevent human injury and material loss. FFPO is also committed to meet or exceed DOE contractual requirements; OSHA regulations; and federal, state, and local laws governing safety, health, and medical practices. FFPO management is supportive of the Life Critical Program, the Behavioral Safety process, the Human Performance Improvement process, and Managed Care. FFPO embraces a "bottoms up" approach to managing Safety that welcomes employee participation in job hazard analysis and work planning, as well as demonstrated management commitment. FFPO strongly supports capturing and incorporating lessons learned from incidents and findings that reveal inadequacies. These processes will be incorporated into FFPO's overall ISMS and contribute to recognizing, analyzing and controlling hazards.

- FFPO will provide the human and material resources necessary to meet these commitments.
- FFPO management believes that all accidents, illnesses and injuries are preventable and authorizes and endorses this policy, and commits to their prevention.
- FFPO management will demonstrate its commitment to safety and health best practices by actively supporting participation in the OSHA and DOE Voluntary Protection Programs (VPP),

REFERENCE

and by implementing the Human Performance Improvement (HPI) process to analyze and correct performance gaps.

- All line managers and supervisors are responsible and accountable for safety performance.
- All employees shall conform to FFPO's Safety & Health policy and the safety requirements as stated in publication ASI5480.22 "Accident Prevention Manual" (APM).
- Every FFPO employee has the authority and responsibility to stop work if they see an unsafe activity or feel uncertain of safely performing the work without fear of retribution.
- Every employee has the right to refuse work they believe could be detrimental to their safety and health without fear of retribution.
- This Safety and Health Policy will be reviewed annually and revised as needed.
- The policy will be communicated to all persons working under the control of FFPO with the intent that they be aware of their individual Occupational Safety and Health obligations. Working safely is a condition of employment for FFPO.
- Safety objectives and targets will be established annually and will be reviewed to ensure that they are being achieved.
- Employees will be made aware of the risks associated with their tasks and the controls will be in place to protect them. Employees are expected to work within those controls.
- This policy will be made available to all interested parties.

Version History – Significant Changes		
Version	**Description**	**Effective Date**
5.0	Safety and Health Policy	3/31/2016
4.0	Safety and Health Policy	7/1/2014
3.0	Safety and Health Policy Review	2/13/2014
2.0	Safety and Health Policy	6/30/2010
1.0	Safety and Health Policy	3/1/2016

END OF DOCUMENT

REFERENCE

2. SAFETY AND HEALTH GENERAL REQUIREMENTS

PURPOSE

The requirements contained in the APM will assist line management in providing a safe and healthful work environment for all SPR personnel. This manual is intended for use by line management to determine the minimum programmatic and technical safety requirements for work processes and to help identify, prevent, correct, and eliminate hazardous conditions and unsafe behaviors.

SCOPE

This section includes the following major topics:

- Introduction
- Safety Topics
- Hierarchy of Controls
- Posting Requirements
- Competent/Qualified Person Designations
- Operation of Cellular Telephones
- Clothing and Jewelry Requirements
- Housekeeping
- Walking/Working Surfaces
- Tool/Equipment Modifications
- Water Safety
- Resolving Safety and Health Concerns and Issues
- Reporting of Accidents, Injuries, Illnesses, Potential Hazards, or Near Misses
- Hazard Recognition Program
- Personal Stop Work Authority
- Tobacco Smoke & Electronic Cigarettes
- Adverse Weather Conditions
- Waivers
- Responsibilities

The success of any accident-prevention program depends largely on how well each individual accepts responsibility for working safely. Each employee must remain alert for unforeseen danger and take the initiative in reporting safety hazards to help prevent accidents and unsafe behavior.

This manual outlines fundamentals of accident prevention; contains safety policies, objectives, and goals; and describes the site safety organization, management surveillance responsibilities, site Line Control Safety Program activities, and safety rules and practices, complaint procedures, and other regulatory requirements.

APPLICATION

The Accident Prevention Manual applies to all SPR sites and all DOE personnel and contractors working at those sites.

DEFINITIONS

Competent Person — One who is capable of identifying existing and predictable hazards in the surroundings or working conditions which are unsanitary, hazardous, or dangerous to employees, and who has authorization to take prompt corrective measures to eliminate them.

Qualified Person — One who, by possession of a recognized degree, certificate, or professional standing, or who by extensive knowledge, training, and experience, has successfully demonstrated his/her ability to solve or resolve problems related to the subject matter, the work, or the project.

Authorized Person – One who has been approved or assigned by the employer to perform a specific type of duty or duties or to be at a specific location or locations at the jobsite.

2.1. INTRODUCTION

The Management and Operating Contractor (M&O), under contract to the U.S. Department of Energy (DOE), is responsible for providing a safe and healthful work environment during the operation of the Strategic Petroleum Reserve (SPR). Fulfilling this responsibility, the M&O has developed the Line Control Safety Program (APM Section 5) to prevent human and material loss. The Accident Prevention Manual (APM) is the authoritative document that directs line organizations in implementing the SPR Safety Program. In accordance with DOE safety and health and legal requirements, the M&O will:

- Provide a safe and healthful work environment for all employees,
- Have zero tolerance of disabling injuries, illnesses, and fatalities,
- Actively promote and continuously improve the Integrated Safety Management (ISM) process throughout the SPR,
- Support an employee-owned behavioral safety accident prevention process designed to eliminate “at risk” behaviors, and
- Maintain OSHA and DOE Voluntary Protection Program (VPP) status.

The M&O is committed to providing the human and material resources necessary to maintain a safe work environment and meet all applicable regulatory requirements. The M&O expects employees to submit their safety and health concerns to management through their immediate supervisors.

M&O management believes that all injuries are preventable and encourages employees at every level, from hourly workers to senior management, to be actively involved in the Line Control Safety Program. Line managers and supervisors are the individuals who are responsible and thus accountable for safety performance. Line managers and supervisors shall ensure that employees are knowledgeable of the contents of this manual as they pertain to the tasks being performed.

2.1.1. M&O Safety and Health Objectives

The M&O safety objectives are consistent with the guiding principles and core functions of Integrated Safety Management (ISM), in compliance with DOE Policy 450.4, “Safety Management System Policy.” M&O management reviews the company’s safety objectives annually, as required by contract, revising them if necessary. Specifically, our objective is to incorporate safety into all the work we do to prevent all accidents and injuries in the workplace and at home.

2.2. SAFETY TOPICS

In order to keep safety awareness at the forefront, every M&O meeting with five or more attendees shall be opened with a safety moment. This brief, informal but informative verbal message should be identified as a "safety topic" and can be presented by an attendee nominated by the leader or a volunteer. The topic may be about on-the-job or off-the-job safety, and should from time to time serve to also remind everyone they have stop work authority.

2.3. HIERARCHY OF CONTROLS

Hazards will be controlled by the following hierarchy:

- Elimination
- Substitution
- Engineering controls, where technically feasible
- Administrative controls
- Personal protective equipment (PPE)

2.4. POSTING REQUIREMENTS

The following safety-related notices, forms, and signs must be posted on company information bulletin boards wherever employees normally congregate:

- Emergency telephone numbers/contact persons
- Workers' compensation information specified by federal/state requirements
- Required federal/state/local posters

2.5. COMPETENT/QUALIFIED/AUTHORIZED PERSON DESIGNATIONS

OSHA 29 CFR 1910 and 1926 standards require the training and assignment of specialized personnel for certain tasks and equipment operation. Specific training requirements are found in the section to which they apply.

Tracking of Competent, Qualified, and Authorized person designations differ between M&O and subcontractor personnel. Training qualifications for M&O personnel are maintained in SAP, while subcontractor personnel must submit records to the SMTR prior to performing work.

2.5.1. Designations for M&O Personnel

M&O Site Directors must designate and post a roster of Competent, Qualified, and Authorized M&O Personnel. The roster shall include the following designations:

- Confined Space Program Coordinator (Primary and Backup)
- Excavation (Primary and Backup)
- Fall Protection (Primary and Backup)

- Hearing Conservation (Primary and Backup)
- Respiratory Protection (Primary and Backup)
- Heavy Equipment Inspector (type)
- Crane Inspector(s)
- Rigging Inspector
- Scaffolds – Erection/Inspection (Primary and Backup)
- Portable Ladder Inspection (Primary and Backup)
- Safe Work Permit (SWP) Authorizers
- Technically Competent Individual (TCI)
- Radiation Safety Officer (RSO)

Note: Authorization to operate site support equipment is tracked in the qualifications section of SAP.

2.5.2. Competent/Qualified/Authorized Person Rosters (M&0)

- The Site Training Coordinator will maintain and periodically updated a roster of M&O Competent Persons.
- Individuals may be removed from the roster at the discretion of their respective site or department managers.

2.5.3. Designations for Subcontractor Personnel

Subcontractors must designate Competent Persons and Qualified Persons and document on the Competent/Qualified Person Designations Form (AAA9020.692) or approved equivalent prior to performing work. SMTRs shall coordinate with the subcontractors to ensure compliance with SPR competent person requirements, and conduct periodic audits to ensure subcontractor personnel are complying with the procedure.

2.5.3.1. Competent Person Designations

Competent Persons must be designated when the following activities are part of project/site or office operations:

Aerial lift trainer	Hearing Conservation/Protection
Asbestos	Ionizing Radiation
Confined Space Entry Supervisor	Ladder Inspection (Portable)
Crane Operator	Lead Abatement
Demolition	Lock/Tag/Verify Authorized Person
Excavation, Trenching, Shoring	Respiratory Protection
Fall Protection	Rigging and Rigging Inspector
Forklift Operator	Safety Monitor - Roof
Hazardous Materials Usage	Scaffolds – Erection/Inspection
Heavy Equipment Inspection	Scissor Lift
Heavy Equipment Operator	Steel Erection

Note: Competent Persons may be designated for other activities using the same process.

2.5.3.2. Qualified Person Designations

Qualified Persons must be designated when the following activities are part of project/site or office operations:

- Concrete and Masonry Construction
- Crane Operator
- Electrical (480 volts and above)
- Excavation/Trenching (Shoring Design)
- Fall Protection System Design
- Scaffold Design

2.6. OPERATION OF CELLULAR TELEPHONES

SPR employees, temporary employees, subcontractor and lower-tier contractor personnel, and other third party personnel **shall not** use a cell phone, handheld or hands free, while driving a moving vehicle on company business or on site.

2.7. CLOTHING AND JEWELRY REQUIREMENTS

All personnel, including visitors, are required to wear clothing appropriate for their job tasks and to comply with any additional protective clothing requirements specified by the supervisor. Prior to entrance to an SPR site, personnel and visitors must coordinate with appropriate management or other contacts to ensure proper clothing is worn.

Employees working in the field are not to wear clothing that could get caught in machinery (such as dragging pants, loose or torn long-sleeved shirts, or neckties). No jewelry (rings, wristwatches, necklaces, bracelets, dangling earrings, etc.) will be allowed to be worn by any employee whose work involves live electrical parts, hand or power tools, rotating equipment, and/or working on or around equipment/machinery or parts. Exception: Medic alert bracelets or necklaces.

Non-site personnel who go into the field (out-of-office, off of walkways, and parking lots) will comply with those requirements specified for the work they are to perform.

All badge lanyards shall be break-away style.

2.8. HOUSEKEEPING

All work areas and storage areas will be maintained in a neat and orderly fashion. In addition, some areas require housekeeping and maintenance specific to the activities, equipment, and personnel common to that area.

For additional information on housekeeping, see Section 22 of this manual, as well as chapters dedicated to specific areas and disciplines relative to your work.

2.9. WALKING/WORKING SURFACES

Safe walking/working surfaces shall be provided to employees, but employees must also exercise diligence and awareness, to include eyes on path.

2.10. TOOL/EQUIPMENT MODIFICATIONS

No modifications or additions that affect the capacity or safe operation of tools or equipment may be made without the manufacturer's written approval. If such modifications or changes are made, the capacity, operation, and maintenance instruction plates, tags, or decals must be changed accordingly.

2.11. WATER SAFETY

Employees working 4 feet or more above water, or within 4 feet near water, where the danger of drowning or falling into the water exists, are required to wear a U.S. Coast Guard-approved life jackets or buoyant work vests.

When 100% fall protection is provided on walking/working surfaces located above water, and no drowning hazard exists, employees do not need to wear U.S. Coast Guard-approved life jackets or buoyant work vests.

2.12. RESOLVING SAFETY AND HEALTH CONCERNS AND ISSUES

2.12.1. General

This subsection establishes the method by which company personnel may present concerns about any condition or practice that may be hazardous to safety and health or in violation of a prescribed safety or health policy or regulation.

All employees and contractor personnel will be given the opportunity to voice concerns and issues without fear of reprisal.

Employees should discuss safety and health issues and concerns with their immediate supervisor, as the issues and concerns become apparent. These discussions may take place during pre-job briefings, formal or informal walkthroughs, safety meetings, or may be a scheduled meeting with the supervisor.

Employees must report defective or faulty equipment promptly to the employee's supervisor.

Immediate oral reports for imminent danger and other high risk situations are mandatory, and shall be communicated to all affected employees. Stop work may require immediate mitigation of risks.

Any employee may decline to perform an assigned task that they believe cannot be performed safely without retribution. Both the supervisor and the employee are entitled to a review by a qualified person such as a safety professional to assess the task and provide appropriate mitigation.

Resolution of employee safety and health concerns should be communicated to the employee(s).

If disagreement exists between the employee and the supervisor as to whether or not a hazard exists, or if there is disagreement over what rectification measures should be taken.

Should a resolution not be agreed to, the issue/concern shall be elevated to the next level of management.

Employees may contact their safety committee members/representative at any time to help resolve safety concerns. Employees may also contact site or New Orleans S&H at any time to discuss safety and health concerns. Such concerns may be provided orally, or in writing. Employees may request confidentiality or anonymity, which will be honored. Concerns may be communicated to M&O management through the confidential Ethics Hotline (1-800-223-1544).

2.14.2. Procedures

The following procedures shall be used when reporting a safety or health concern.

- The employee shall first contact his/her supervisor and attempt to resolve the problem by conducting a joint inspection with the Site Safety Specialist and/or Safety Monitor of the conditions or circumstances identified in the concern.
- If a site employee desires anonymity, he or she may submit a written concern to the Site Director on the M&O's Occupational Safety and Health Employee Concern form (OSF96-0009). The forms are made readily available to employees by the Site Safety Specialist. Alternatively, the employee may call the Fluor Hotline 1-800-223-1544. The Fluor Hotline is run by an external service and reports are strictly confidential.
- The site director shall designate an appropriate member of the SSMC to investigate the concern. The findings will be presented to the site director within three working days. If the concern is called into New Orleans to the Safety and Health Director, she or he will present the information to the Site Director for site action or institute corrective action.
- If the Site Director decides that action is needed to remedy the problem, corrective measures will be initiated. Safety and Health will decide what action is needed to correct problems submitted to the department anonymously. A written response to the concern will be posted on the site employees' bulletin board within three workdays following the decision by the Site Director or S&H manager.
- The status of recommended corrective actions will be reviewed in the monthly SSMC meetings. If the corrective actions cannot be carried out by a work order and the problem is still outstanding after 30 days, the concern will be entered into ATS.
- If the employee filing the concern does not believe that any of the steps above have remedied the situation, he or she may file a formal concern with the DOE senior site representative, or call the DOE ES&H Hotline (5030), or report the problem directly to the SPR Project Manager and the M&O Project Manager at the Tripartite Safety Council.

NOTE
All written concerns and documentation of corrective action taken are to be kept in the site files for five years.

2.14.3. Responsibilities

Site Directors

- Appoint an appropriate member of the SSMC to investigate the concern and recommend corrective action if the concern is found to be valid.
- Review the findings of the investigation of the concern.
- Initiate the recommended corrective actions to remedy the problem.
- Provide a written response to employee concerns within three working days and post it on the employees' bulletin board.
- Enter recommended corrective action into the Work Order System if correctable by work order. If the recommended corrective action cannot be carried out by work order and is still outstanding, enter the concern into ATS within 30 days.
- Act immediately to investigate concerns involving unsafe acts or conditions.
- Initiate actions to stop all work related to a concern of a condition determined to involve an unsafe act or if the work cannot be performed safely.
- Ensure that this subsection is available to all employees.
- Ensure employee concern forms are available to all employees.
- Ensure that written concerns and documentation of the corrective action taken are maintained in site files for five years.
- Provide the safety and health manager with a copy of all written and anonymous concerns and intended site action.

Site Safety Management Council

- Review and track the status of the recommended corrected actions for all occupational safety and health concerns submitted at their site.

Supervisors

- Attempt, with the help of the site safety specialist, to resolve any occupational safety and health concern with the employee through an inspection/review of the conditions.
- Review the concern procedure with employees and make sure they understand it.

Site Safety Specialist

- Provide assistance in investigating occupational safety and health concerns and recommending actions to correct the problem.
- Investigate concerns alleging working conditions involving unsafe acts or conditions, and if concerns are valid and work has not been stopped, stop it immediately and address the issue.
- Ensure the availability of employee concern forms.

Employees

- Report safety concerns and identified hazards to their supervisor, the site safety specialist, or a safety monitor.

Safety and Health Director

- Provide procedures for employees to report safety and health concerns.
- Review and act upon all written occupational safety and health concerns submitted.
- Provide a written action plan to the employee filing the concern or, if the concern was filed anonymously, ensure that the response is posted, within three working days.
- Maintain a record of all written concerns submitted along with documentation of the corrective action taken in the Safety department files.

2.13. REPORTING OF ACCIDENTS, INJURIES, ILLNESSES, POTENTIAL HAZARDS, OR NEAR MISSES

All accidents, injuries, illnesses, potential hazards, and near misses -- no matter how minor -- must be reported. This includes personal injury, property damage, environmental damage, and vehicle accidents.

At the Operating Sites, immediately report all injuries and illnesses to the Control Room Operator (CRO) regardless of severity. Anyone may call 911 if they feel it is necessary, however, calling the CRO will result in a faster response.

In New Orleans, report all injuries and illnesses to the Protective Force Security Contractor (x4321); dial 9-911 if medical response is needed immediately. If notifying 9-911, state clearly what building and office the patient is in. Employees at the GSA Warehouse in New Orleans call 9-911 and then report to Operations Control Center (OCC). Employees at the Stennis Warehouse call the Stennis Fire Department and then report to the OCC.

The employee's Supervisor/Subcontract Manager's Technical Representative (SMTR) or, in his or her absence, the department manager will be notified by the CRO or security depending on the location.

For specific information and guidance on accident reporting, see APM Section 38, Reporting/ Recording Procedures.

2.14. HAZARD RECOGNITION PROGRAM

2.14.1. Introduction

The Hazard Recognition Program is a voluntary safety, health, and environmental program designed to allow anyone on the SPR to report situations that could have lead to an injury or an accident easily but did not.

Reporting a hazard is a positive activity designed to promote a culture of concern among employees for one another's safety, concern for the environment, and to give the M&O's employees an additional, proactive opportunity to prevent accidents and incidents. OSHA VPP also strongly urges that hazards be reported to prevent future accidents.

This sub-section establishes the procedures for reporting and recording hazards. Figure 2-1 is a flow diagram of the hazard reporting process.

- Although the Hazard Recognition Program is required, reporting is voluntary.
- Employees may identify themselves when reporting hazards or report them anonymously.
- Following the employee's report of the hazard, investigation includes causes and corrective action information for potential safety, health, and environmental incidents.
- Documenting information on these incidents in the Hazard Recognition Program allows lessons learned to be available and benefit all SPR personnel.

2.14.2. General

The Hazard Recognition Program gives employees the opportunity to report, without reprisal, any witnessed activities, experiences or conditions that could have resulted in an incident or an event that could have had more severe safety or environmental consequences, but does not meet the criteria for Occurrence Reporting and Processing System (ORPS) "near miss" reporting.

This program is intended to prevent incidents, control hazards, and identify and correct weaknesses in the existing safety and environmental management systems, monitor change, and analyze possible trends that may have an adverse effect on safety, health, or the environment over time.

The Hazard Report form allows employees to give feedback or suggestions for mitigating hazards. Hazards may be reported on the forms posted at the sites and in New Orleans, on the phone or on the S&H SharePoint site.

All reports will be evaluated and causes will be identified, trended, and resolved, (when possible), to prevent future incidents. If the hazard cannot be resolved or removed, it will be mitigated/controlled.

The analysis of potential corrective actions will be initiated using the contents of the report and will typically be conducted by the Site Safety Specialist or New Orleans S&H staff.

An employee shall never be discriminated against nor will action ever be taken against him or her as a result of filing a report.

Feedback will be provided to the employee on the action taken to eliminate or mitigate the hazard.

2.14.3. Procedures

Reporting (Figure 2-1)
Report any hazard using one of the following methods:

- Website: Submit information via the Hazard Recognition Electronic Form located on the Safety and Health (S&H) SharePoint site. The site also provides a record of all reports submitted.
- Mail: Complete and send the Hazard Recognition index cards to the New Orleans coordinator at mail route EF- 20.
- Email: Send an email to the S&H mailbox with the subject title of Hazard Recognition with the description of the hazard (address: Safety & Health).
- Phone: Leave a message on the Strategic Petroleum Reserve (SPR) Fluor Hotline. The Fluor Hotline number is 1-800-223-1544

- Fax: E-Fax the completed form, index card, or event description to 504-818-5581 (S&H mailbox).
- In Person: Submit it to the Site Safety Specialist, or a member of the New Orleans S&H staff.

Data Collecting and Processing

- The NO HRP Coordinator will enter submitted reports into a tracking database.
- The S&H Department will work with the SSS or ES&H Manager to identify corrective actions (if needed) and work to eliminate or mitigate any identified causal factors. All hazard reports will be evaluated for cause and trended.
- The NO HRP Coordinator or SSS will inform the employee who reported the hazard when the corrective action is completed. Hazard reports can also be tracked by accessing the ES&H SharePoint site in the S&H section under the link Hazard Recognition Program.
- The NO HRP Coordinator or SSS should submit a lessons learned when a hazard report can be applicable to all sites or other DOE facilities.

CAUTION
If the employee believes that the hazard presents an unsafe activity or feel uncertain of safely performing the work, the employee shall stop work and notify the ES&H manager or SSS immediately.

NOTE
All HRP reports will be accepted and addressed. If there is doubt as to whether a reported hazard should be reported as a near miss, the NO coordinator or Site Safety Specialist will forward a copy to the OCC, who will determine whether to report the item in the ORPS.

2.14.4. Responsibilities

Site Director

- Support the Hazard Recognition Program by reviewing status of hazard reports with site ES&H staff

New Orleans HRP Coordinator

- Maintain the Hazard Recognition Program database.
- Work with the SSS or ES&H Manager to ensure that corrective actions are taken.
- Inform the affected site and employees when corrective actions have been taken.
- Provide a report by request to the SSS for discussion with employees.

Site Safety Specialist

- Act as the Site program coordinator and coordinate with the NO coordinator.
- Submit all hazards reported to the NO coordinator and share them with the site safety committees.

- Ensure that interim safety actions have been applied and appropriate.
- Provide status of hazard reports to the NO Coordinator.

ES&H Manager

- Submit all hazard reports to the NO coordinator
- Provide status of hazard reports to NO coordinator for closure.

Site Safety Management Council, (SSMC)

- Create action plans for hazard reports submitted by the SSS.
- Request help and assign actions from departments that can address the problem.
- Inform the Site or the NO coordinator when the actions are completed.

Department Manager

- Address hazard reports submitted to your department for correction.
- Notify employees of any hazards or risks that remain and the methods being used to control or mitigate them.
- Discuss hazard reports that were submitted from the SSS or discussed at the SSMC with employees.
- Let the SSS or the NO coordinator know when corrections have been assigned and completed.

Supervisor/Foreman

- Encourage employees to report hazards.
- Submit all hazard reported by employees to the NO coordinator or SSS
- Review hazard reports with employees during safety meetings.

Employees

- Stop work for unsafe acts or conditions exist.
- Submit hazard reports.
- Take immediate action to mitigate the danger yourself or fix the problem, if you are qualified and it is safe to do so.
- Apply interim control measures such as notifying the Control Room, placing cones, posting a watch, roping off an area with caution tape, posting warning signs, or erecting barricades until the situation can be fixed.

Safety and Health Director

- Appoint the Hazard Recognition Program Coordinator.
- Report items for entry as hazards.
- Initiate hazard investigations and/or interventions and assist with action plans when needed.
- Maintain records of hazards reported and their solution.
- Assure that the employee that reported a hazard is kept informed of its ongoing status.

2.15. PERSONAL STOP WORK AUTHORITY

2.15.1. Overview

All personnel on the SPR have the authority and responsibility to stop work if they see an unsafe activity or feel uncertain of safely performing the work.

No work will resume until all stop work issues and concerns have been adequately addressed.

Any form of retribution or intimidation directed at any individual or company for exercising their authority as outlined in this program will not be tolerated, and may be cause for disciplinary action.

2.15.2. Responsibilities

Personnel have the following responsibilities in support of this program:

- All personnel shall understand their authority to stop work when warranted, support the stop work actions of others, and properly report all stop work actions.
- Supervisors are responsible to create a culture where stop work authority (SWA) is exercised freely, honor requests for stop work actions to resolve issues before operations resume, recognize proactive participation, and ensure that all stop work actions are properly reported with required follow-up completed.
- Site Directors must establish the clear expectation to exercise a stop work action, create a culture where SWA is exercised freely, resolve stop work conflicts when they arise, and hold those accountable that choose not to comply with established SWA expectations and requirements.

2.15.3. Conducting a Stop Work Action

When a person identifies a perceived unsafe condition, act, error, omission, or lack of understanding that could result in an undesirable event and chooses to exercise their authority to stop work, the following steps will be followed.

- Immediately notify any affected person(s) who may be at risk.
- Notify the supervisor as soon as possible. If the affected person(s) are not in immediate risk, the stop work action should be coordinated through the supervisor.
- Stop work actions should be initiated in a positive manner by briefly introducing yourself, and stating your intent to stop work and the reason for doing so.
- If necessary, stop associated work activities, remove person(s) from the area, stabilize the situation, and make the area as safe as possible.
- All parties must discuss and gain agreement on the stop work issue.
- After careful consideration, a determination will be made either to proceed as-is or to take action to resolve the issue to all affected persons' satisfaction before re-starting the work.
- If the issue cannot be resolved immediately, work must be suspended until proper resolution is achieved. When opinions differ regarding the validity of the stop work issue or adequacy of the resolution actions, the Site Director must be called upon to make the final determination.

- Positive feedback will be given to the initiator and affected employees regarding resolution of the stop work issue.

2.15.4. Reporting

Reports of stop work actions will be reviewed by supervisors in order to:

- Measure participation
- Determine quality of actions and follow-up
- Trend common issues and identify opportunities for improvement
- Facilitate sharing of learning's
- Feed recognition programs

2.15.5. Follow-Up

Stop work actions that cannot be addressed to the satisfaction of all involved persons before resuming work and require additional investigation or follow-up will be handled utilizing existing practices or procedures for incident investigation and follow-up.

2.15.6. Recognition

Line supervisors are encouraged to positively recognize employee and contractor participation in the program. At a minimum, each line supervisor will informally recognize individuals when they exercise their authority to stop work or demonstrate constructive participation in a stop work action.

2.15.7. Training

Employees must receive Stop Work Authority training before initial assignment. Stop Work Authority training is included in the site orientation.

2.16. TOBACCO SMOKE & ELECTRONIC CIGARETTES

Smoking tobacco is prohibited at all storage sites. The use of electronic cigarettes will be treated the same as traditional tobacco smoking.

In New Orleans, smoking is only permitted in designated areas. The use of electronic cigarettes will be treated the same as traditional tobacco smoking.

Smoking tobacco and using electronic cigarettes are prohibited in vehicles and equipment.

2.17. ADVERSE WEATHER CONDITIONS

The SPR has a process to receive "adverse weather condition" warnings, and to communicate actions to personnel on the site. Sites subject to adverse weather conditions address the protection of employees and equipment in work planning, including site-specific requirements.

2.18. WAIVERS

In the unusual circumstance where a safety requirement or assignment is not feasible, inappropriate for the specific and unique situation, or presents a greater risk to the employee, the supervisor shall submit written justification for a waiver to be submitted for review and approval by New Orleans S&H, unless specified otherwise.

A written justification for a waiver from a subcontractor requires additional approval of the assigned SMTR/SM.

Once the justification is approved, the waiver shall be included in the Job Hazard Analysis, and all affected employees shall be informed during the pre-job briefing. The pre-job briefing is documented on the Pre-Job Briefing and Qualifications Form.

2.19. RESPONSIBILITIES

M&O Project Manager

- Implement this program.

Assistant Project Managers

- Implement these requirements within their directorate.

Site Director

- Use this manual to implement the Line Control Safety Program. Site Directors assist New Orleans Safety in identifying subjects to include in this manual. They may also review completed sections and provide data and comments on completed sections.
- Ensure that all site tasks are performed according to the procedures outlined in this manual.

Manager

- Use this manual to help implement the Line Control Safety Program in their departments.
- Ensure this manual is followed when performing tasks.

Supervisors

- Use this manual to help implement the Line Control Safety Program and for reviewing safety requirements with employees before they perform tasks.
- Ensure employees know of the contents of this manual as they pertain to the tasks being performed.
- Ensure employees are aware of the location of this manual.
- Ensure employees receive safety training required to perform assigned tasks and training specified in this manual.

New Orleans S&H

- Prepare this manual and keep it current in coordination with site directors, managers, supervisors, and site safety specialists.
- Ensure all personnel are notified of changes to the APM.

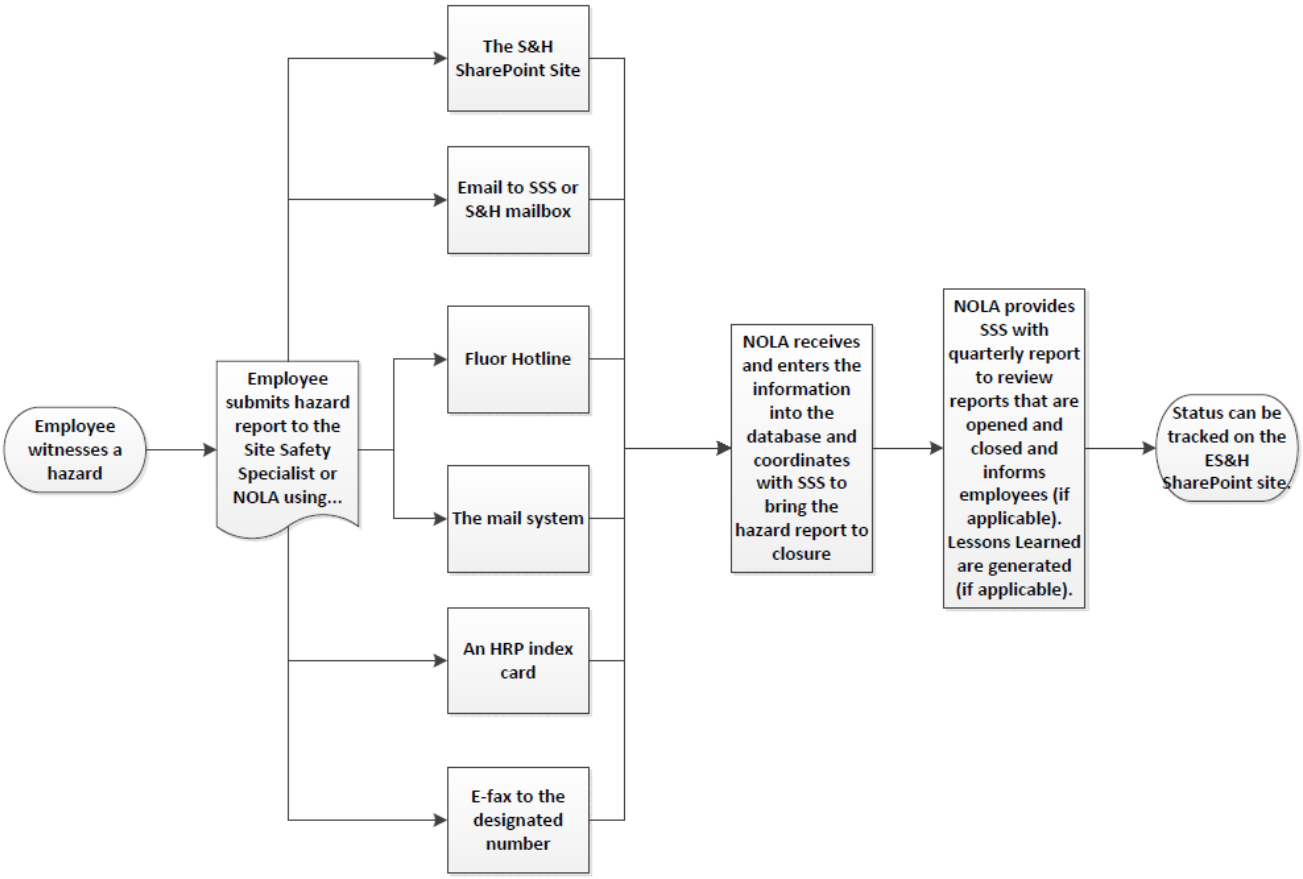
Site Safety Specialist or Associate

- Assist in identifying subjects for this manual, preparing material, and reviewing and providing comments on completed sections.
- Monitor site tasks to make sure the safety procedures in this manual are followed.
- Monitor contractor and subcontractor worksites to ensure that they meet the requirements of this manual.

Contractor/Subcontractor Safety Personnel

- Monitor the work they are performing to ensure that all safety requirements are followed.

Figure 2-1. Hazard Recognition Reporting Flow Chart



3. SAFETY ORIENTATION AND TRAINING

PURPOSE

This section outlines the standard program for training M&O and supervised subcontractor personnel on safety procedures, safe work practices, and safety rules and regulations.

SCOPE

This practice includes the following major sections:

- General Requirements
- ES&H Orientation Video
- Basic Orientation Plus training
- Weekly "Toolbox" Safety Meetings
- Responsibilities

APPLICATION

This section applies to work activities performed by M&O personnel, and supervised subcontractors. Training requirements for other subcontractor personnel are applicable as specified in their contract language.

3.1. GENERAL REQUIREMENTS

Appropriate training of all employees is a critical element of the M&O Safety and Health Program. To encourage a culture of safety, The M&O established the Active Force of Protection video outlined in this section, to be used as an ES&H orientation video. No one can enter the SPR to perform work without viewing the video, unless authorized to do so with an escort.

Each new employee (new hire, temporary, or transfer) shall receive a safety orientation through their site, followed by more specific on-the-job training (OJT) by their first line leader. First line leader training shall be provided before being placed on any job assignment and shall be documented as OJT.

The receiving first line leader shall make new employees aware of any special rules or procedures in the work area at the time of employment or transfer. Particular education shall be provided regarding known causes of past accidents and how to avoid them.

The following points should be covered:

- No one is expected to do a job that he or she does not understand, has not been trained to perform, or feels is unsafe.
- All accidents and near misses must be reported to the employee's supervisor and to the Control Room Operator (CRO). For accidents/injuries requiring ERT or medical response, notify the CRO first.
- Unsafe conditions, unsafe acts, and near misses must be reported to the supervisor or safety monitor and the site safety specialist. All levels of management must exercise the greatest degree of accident control possible.

- Each employee must know how to obtain personal protective equipment (PPE) and understand rules and procedures regarding its use.
- Employees shall never attempt to operate mechanical equipment without instruction and specific authorization from their supervisors.
- Willful violations of safety regulations, including failure to wear or use required safety equipment or PPE, will not be tolerated and are grounds for disciplinary action, up to and including termination.

NOTE
Basic safety training is required of all employees, and additional training may be required according to an employee's job duties. The M&O Performance Development (PD) Department and applicable Subject Matter Expert (SME) will ensure personnel needing additional workplace education receive appropriate supplemental training.

3.1.1. Training Structure

The training/orientation process is structured as follows:

- ES&H Video
- Basic Orientation training
- Site-Specific Safety Orientation
- Job-Specific Training

3.1.2. Training Development

Subject Matter Experts (SMEs), assigned by the responsible director or APM, develop safety training. M&O PD validates and reviews it. It is then presented by qualified instructors.

3.1.3. Instructors

Instructors who are knowledgeable and proficient in the subject(s) to be taught shall be designated by the applicable SME, in accordance with AAA8008.02, Instructor-led Training.

3.1.4. Documentation

All instructor-led training is documented and evaluated by M&O PD to ensure accurate records and continuous improvements of training provided on the SPR.

Training shall be documented in accordance with AAA8008.02 (Instructor-led Training) using one of the following methods:

- OSF82-0394, Training Activity Attendance Report (TAAR)
- AAA8008.05, On-the-Job Training Activity Report (OJTAR)
- OSF94-0021, Activity Attendance Report (AAR)

- Equipment-Specific Support Equipment Training Plans (SETP)
- A certificate of completion issued by the vendor

  Note: The ES&H Orientation Video is documented on OSF95-0009.

3.1.5. Employees Not Oriented

Employee's who have not completed ES&H Orientation Video shall be continually accompanied in the workplace by an escort who has viewed the ES&H Orientation Video.

3.1.6. Escorts

A fully oriented/trained employee will be identified by site leadership to escort employees and personnel who have not successfully completed the site-specific Safety Orientation.

3.1.7. Follow-Up

Line management is expected to conduct regular follow-up interviews with new or transferred employees to verify that rules, requirements, and safe work practices are understood.

3.2. ENVIRONMENTAL SAFETY AND HEALTH (ES&H) ORIENTATION VIDEO PROGRAM

3.2.1. General

All M&O employees, contractors, subcontractors, vendors, and unescorted visitors at the Strategic Petroleum Reserve (SPR) Crude Oil Terminal or Storage Facilities are required to attend the Active Force of Protection training and complete a Viewer's Confirmation Form afterwards. The official form (OSF95-0009) can be found in SharePoint.

The purpose of this training is to enhance awareness and knowledge of established ES&H, fire protection, process hazard information, emergency notification, and security information for the SPR crude oil storage facilities (all sites except New Orleans).

Employees and visitors who complete a Viewer's Confirmation Form verify that they understand the ES&H, fire protection, emergency notification, and security information presented in the training.

- Visitors - Persons on site who are visiting may not be required to view the ES&H video at the Site Director's discretion. These visitors shall be escorted 100% of the time by an escort who has been badged and completed the training.

  Note: Delivery personnel and vendors are not required to view the ES&H video, unless unescorted access to the SPR sites is required.

- General Workers - All other persons will view the ES&H video before commencing work.

The DOE badge issued for unescorted access to an SPR site shall be used to identify personnel who have received the video training and agree to comply with the ES&H requirements presented.

Visitors who have not viewed the video and completed the Viewer's Confirmation Form will not be allowed unescorted access to the SPR sites.

3.2.2. Documentation

The Viewer's Confirmation Form (OSF95-0009) is to be filled out and signed by the person viewing the video and the authorized person showing the video. The form will be processed as follows:

- The person showing the video will ensure a signed copy of the form is provided to the Site Training Coordinator and Site Security Specialist.
- Upon request, the person showing the video will provide a copy to the viewer for his or her personal record.

After processing the Viewer's Confirmation Form, the site security specialist/New Orleans badging official will issue an appropriate badge and, if applicable, add the person's name to the Contractor Entry Control List for unescorted access to the SPR.

Signed Viewer's Confirmation Forms shall be maintained on file indefinitely, or until regulations require a change in this procedure. These files shall be maintained by the site training coordinator/New Orleans training coordinator at the site the original form was generated.

NOTE
This procedure applies to all signed Viewer's Confirmation Forms for M&O Personnel, Subcontractors, Vendors, Visitors, and Service Contractors Supervised by SMTRs.

3.2.3. Verification of Viewing of Video

The M&O badging official, responsible supervisor, or the Site Security Specialist shall verify that all persons requiring unescorted access to the SPR have completed the Viewer's Confirmation Form before they are cleared and badged for unescorted access at an SPR site.

NOTE
Additional H_2S training is required for unescorted access to the Degas Plant.

3.2.4. Emergency Bulletins and Evacuation Information

Emergency Preparedness develops emergency procedures that describe the emergency warning signals and evacuation routes established for all SPR sites. These procedures are outlined in the site Emergency Response Procedures, and discussed briefly during Active Force of Protection. In addition, evacuation maps should be posted on site.

NOTE
As part of the video, construction contractors, subcontractors, vendors, visitors, and service contractors supervised by SMTRs who are performing work on site will be required to demonstrate knowledge and ability to physically notify the site control room during an emergency. This will be verified by the person showing the video and signing the form in accordance with the procedures outlined in this section.

3.2.5. Responsibilities

Safety and Health Director

- Perform "ownership" functions relating to this procedure, and
  - Ensure accuracy of content,
  - Interpret and administer provisions,
  - Obtain concurrence on precedent-setting cases,
  - To the extent an exception is allowed, approve or deny requests for the exceptions,
  - Initiate revisions when required.

M&O Directors

- Ensure the Active Force of Protection is effectively implemented for all personnel working within the directorate.
- Ensure adequate records of Active Force of Protection activities are maintained to verify information is provided and understood by all M&O employees, contractors, subcontractors, and unescorted visitors at the SPR.

Assistant Project Manager of ES&H

- Ensure that the video program presents accurate information.

Site Director

- Ensure the Active Force of Protection is effectively implemented at their SPR site.
- Ensure auditable records are maintained to verify information is provided and understood by all M&O employees, contractors, subcontractors, and unescorted visitors at the SPR.

Site ES&H Managers

- With the authority of the site director, coordinate with responsible managers to implement the Active Force of Protection at their site.

SMTRs

- Coordinate with the Site Safety Specialist, or Associate to implement the Orientation Video Program for subcontractors.

Site Security Specialist

- Verify signed Viewer's Confirmation Form before a badge is issued for unescorted access to any SPR site.

New Orleans Badging Official

- Verify signed Viewer's Confirmation Form before a badge is issued for unescorted access to any SPR site.

Site Training Coordinators

- Access the Active Force of Protection in SharePoint as needed.
- Ensure that appropriate entries are made into the computerized training record for M&O and DOE personnel who have completed the Viewer's Confirmation Form.

- Maintain an auditable file of the signed copies of the form for site-based employees.

Supervisors

- Ensure that personnel who require unescorted access to any SPR site complete the Viewer's Confirmation Form to affirm they have viewed and understand the information presented by the Active Force of Protection video.
- Coordinate with the Site Safety Specialist, or Associate to complete the form for personnel who require unescorted access to any SPR site.

Director of Emergency Management

- Develop and maintain evacuation procedures and current information on site emergency warning signals and evacuation routes established for all SPR sites.
- Review video for current content related to emergency response or emergency operations.

3.3. BASIC ORIENTATION PLUS - ARSC RECIPROCAL TRAINING

3.3.1. Initial Training

Basic Orientation Plus training is mandatory for all M&O personnel.

Subcontractor requirements for Basic Orientation Plus training are identified in their applicable contract documents.

NOTE
The protective force trains personnel to the 10 hour OSHA Outreach Training Program in lieu of the Basic Orientation Plus training.

3.3.2. Renewal Training

- Renewal training shall be completed every year following the completion of the initial training course.
- Annual refresher training for subcontractor personnel shall be maintained at all times by the subcontractor.

3.3.3. ARSC Badge

Upon completion of the Basic Plus training, personnel are issued a photo ID badge, which has an expiration date on it. This badge shall be maintained at all times with the DOE badge.

3.3.4. Responsibilities

M&O Directors

- Ensure the Basic Plus Program is effectively implemented for all personnel working within the directorate.

Site Director

- Ensure the Basic Plus Program is effectively implemented at their SPR site.

- Ensure Basic Plus badge is worn or available at all times by site personnel and subcontractors.

Site ES&H Managers

- With the authority of the site director, coordinate with responsible managers to implement the Basic Plus Program at their site.

SMTR

- Coordinate with the subcontractors to ensure compliance with the Basic Plus Program.
- Conduct periodic audits to ensure subcontractor personnel are complying with the Basic Plus program.

Site Training Coordinators

- Schedule required training in a timely manner.
- Report on completion as requested.

3.4. WEEKLY "TOOLBOX" SAFETY MEETINGS

3.4.1. General

M&O craft employees, including supervised subcontractors (i.e. painters, grasscutters, etc.) shall participate in Weekly "Toolbox" Safety Meetings conducted by their supervisor.

At a minimum, the following M&O supervisors shall ensure that craft employees conduct Weekly "Toolbox" Safety Meetings:

- Supervisor, Property & Material
- Supervisor, Operations
- Supervisor, Degas Operations
- Supervisor, Site Maintenance (I&C, I&E, Electrical, Mechanical, General, ect.)
- Supervisor, Pipeline Mechanic

Note: Other employees and management are encouraged to attend.

3.4.2. Safety Meeting Topics

Suggested Safety Meeting Topics:

- Review of compliance/management safety inspections conducted since the last safety meeting
- Review of violations to assist in correction hazards
- Evaluation of investigation conducted since the last safety meeting to determine if the cause of the unsafe acts or unsafe conditions involved were properly identified and corrected
- Review of incident/injury/illness experience
- Review of safety communications

- Lessons learned from incidents and root causes
- Review of current job-specific job safety analyses (JHAs)
- Review of upcoming JHAs
- Review of specific job safety concerns ("shop talk")
- Review of SDS information
- Site-specific procedures
- Review of pertinent announcements, correspondence, notes from supervisor meetings, and other topics specifically relating to the group.

3.4.2. Documentation

Supervisors shall ensure topics covered during Weekly "Toolbox" Safety Meetings are documented on the Activity Attendance Report (OSF94-0021). Supervisors are responsible for maintaining files of completed Weekly "Toolbox" Safety Meetings. Supervisors shall ensure that reference information for the topics is attached to the Activity Attendance Report for audit purposes.

Note: Special campaigns for safety, such as Life Critical, may have attached sign-in rosters. These may be used in lieu of the Activity Attendance Report. M&O Performance Development will provide direction on how to track special campaigns as they are implemented.

3.5. RESPONSIBILITIES

Site Director

- Advise each person acting in a supervisory role of his/her responsibilities as associated with this section.
- Determine the requirements for infrequent visitors to attend orientation training.
- Provide resources to carry out orientations and training
- Ensure that a member of project leadership open each Safety Orientation.
- Nominate appropriate persons to conduct orientations and training.
- Ensure employees attend required orientation, job-specific training, and safety meetings.

Line Management

- Confirm that each employee for whom they are responsible has attended the required training for the work he/she will perform.
- Nominate an "escort" for visitors who have not attended the site-specific Safety Orientation
- Attend required training.
- Hold weekly toolbox safety meetings for personnel, as required by this section.

Employees

- Attend and constructively participate in orientation and training at the time and location as notified by their supervisor or other authorized person.

4. RIGHTS AND RESPONSIBILITIES UNDER OSHA

PURPOSE

This section provides an overview of rights and responsibilities for employers and employees under OSHA regulations. A safe, healthy workplace results from the diligent combined efforts of management, employees, contractors, and subcontractors. Under OSHA regulations, both employers and employees have rights and responsibilities that are critical to the overall success of the Safety and Health Program. By participation in the VPP, the M&O assures that these rights apply to all contractor/subcontractor employees.

SCOPE

This section includes the following tables:

- Employer Responsibilities Under OSHA
- Employee Responsibilities Under OSHA
- Employer Rights Under OSHA
- Employee Rights Under OSHA

APPLICATION

This section applies to work activities and employees under the control of the M&O and its subcontractors.

TABLE 4.1. EMPLOYER RESPONSIBILITIES UNDER OSHA

• Provide a work environment free from recognized hazards that could cause harm to our employees.
• Strive to comply with all OSHA standards, rules, and regulations.
• Inform all employees of the company about OSHA and its standards.
• Routinely examine workplace conditions for compliance with OSHA standards.
• Ensure all employees are equipped with safe tools and equipment for performing their jobs in a safe manner, and ensure that all tools and equipment are properly maintained.
• Provide affected employees information on the existence, location, and availability of medical records and records of their exposure to toxic substances and harmful physical agents upon their initial assignment and at least annually thereafter.
• Identify potential hazards through the use of color codes, labels, signs, or posters.
• Establish or update operating procedures and ensure that all updated procedures are communicated to all employees.
• When required by OSHA, provide medical examinations for employees.
• Report to nearest OSHA office all:
  ○ Work-related fatalities within 8 hours.
  ○ Work-related inpatient hospitalizations, all amputations and all losses of an eye within 24 hours
• Maintain OSHA-required records of work-related injuries and illnesses utilizing the OSHA Form 300A Summary, Form 300 Log, and DOE Form 5484.3 in lieu of OSHA Form 301 Injury and Illness incident Report. These records are to be maintained for 5 years.
• Post in a conspicuous location the previous calendar year's summary of occupational injuries and illnesses (OSHA No. 300A Summary only) from February 1 through April 30 of every year.

- Post the OSHA No. 2203 poster entitled "Job Safety and Health Protection" to inform employees of their responsibilities and rights in the area of job safety.
- Provide all employees, former employees, and their representative's access to the OSHA No. 300 Log and 300A Summary of Occupational Injuries and Illnesses when requested.
- Never discriminate against an employee when he/she properly exercises his/her rights under the OSHA Act.
- Post the citation of any violations at or near the worksite for a period of 3 days or until the violation is corrected, whichever is later.
- Correct all violations noted by OSHA within the specified timeframe.

TABLE 4.2. EMPLOYEE RESPONSIBILITIES UNDER OSHA
• Comply with all applicable OSHA standards at all times. • Read the OSHA No. 2203 poster entitled "Job Safety and Health Protection." • Follow all safety policies set forth in the Accident Prevention Manual. • Wear all personal protective equipment (PPE) and/or clothing required for the job that you are performing. • Immediately report all safety violations, concerns, or potential hazards to your supervisor. • Immediately report all work-related injuries, illnesses, near misses, and non-job related illnesses to **the control room** and your supervisor.

TABLE 4.3. EMPLOYER RIGHTS UNDER OSHA
• Request off-site consultation and advice from nearest OSHA office. • Within 15 days of receipt of an OSHA violation, file a written notice of contest if applicable. • Apply for a temporary variance from a standard when unable to comply due to the unavailability of materials, equipment, or personnel needed to enforce compliance within a specified period of time. • Apply for a permanent variance from a standard if employer can prove that employer's work practices provide employee protection as effective as that required by the standard. • Become active in developing safety and health standards through participation in advisory committees sponsored by OSHA or other nationally recognized organizations. • Request in writing from the National Institute for Occupational Safety and Health (NIOSH) information regarding substances in the workplace, and whether they have potential toxic effects in the concentrations used.

TABLE 4.4. EMPLOYEE RIGHTS UNDER OSHA
• Every employee has the right, without discrimination, to demand safety and health while on the job. The M&O will not discriminate against any employee who exercises his/her rights under OSHA. Employees who feel they have been discriminated against for exercising safety and health rights may contact their nearest OSHA office within 30 days of the alleged discrimination. An investigation will be initiated by OSHA. • Additional employee rights include: • Request review of all OSHA standards, rules, regulations, and requirements that the employer should have available at the workplace. • Request information pertaining to safety and health hazards in the workplace, precautions that may be taken, procedures to be followed if an employee is involved in an accident or is exposed to toxic substances, and be provided with training on company safety and health policies and procedures.

- Having access to relevant employee exposure and medical records.
- Request that an OSHA inspection be conducted if hazardous conditions or violations are believed to exist in the workplace.
- Request that their names be withheld from their employer when filing a written complaint with OSHA.
- Request information regarding OSHA's actions concerning a complaint.
- Request to review all records pertaining to any monitoring or measuring of hazardous materials within the workplace.
- Review or have their authorized representative review the OSHA No. 300 Log and 300A Summary of Occupational Injuries and Illnesses.
- Following an OSHA inspection, request a closing discussion with the OSHA compliance officer.
- Submit a written request to NIOSH for information pertaining to any substance in the workplace and its potential toxic effect when used in specific concentrations. When a request of this sort is made, the employee may request that his/her name be withheld from his/her employer.
- Regarding violations due to an OSHA inspection, an employee may write an objection to "the time frame for corrective actions to be taken," and submit their objection to their OSHA director within 15 days of the receipt of citation.
- Receive notification from employer of application for a variance and testify at a variance hearing and appeal the final decision.
- Submit information or comments to OSHA on the issuance, modification, or revocation of OSHA standards and request a public hearing.

5. LINE CONTROL SAFETY PROGRAM

PURPOSE

This section establishes a uniform method for organizing, implementing, and operating the M&O Line Control Safety Program in compliance with requirements specified by:

- DOE Orders and the DOE SPR Environmental, Safety and Health Manual,
- OSHA requirements and other federal codes and regulations,
- State and local laws,
- The M&O Contract and this manual.

SCOPE

This section includes the following major topics:

- Introduction
- Safety Management System
- Elements of the Site Line Control Safety Program
- Executive Safety Council (ESC)
- Site Safety Management Council (SSMC)
- Tripartite Safety Council (TSC)
- Line Control Safety Program Activities
- Safety Awareness Program
- Occupational Medical Plan
- Safety Performance
- Disciplinary Process for Safety and Health Violations

APPLICATION

This manual applies to all personnel working on the SPR.

5.1. INTRODUCTION

The M&O is responsible for the safe and secure operation of the SPR. In keeping with this responsibility, the M&O has implemented the Line Control Safety Program to prevent human and material loss at SPR locations. The line control concept assigns line management the responsibility and accountability for ensuring that the safety management system is understood and implemented. “Line management responsibility for safety” is the first Guiding Principle of Integrated Safety Management (ISM). Workers are responsible for safely performing their jobs as instructed, applying good judgment, and notifying their supervisor when they believe the potential for an unsafe condition exists.

The purpose of the line control program is to eliminate or control hazards and prevent accidents. Work-related Injuries and illnesses can be prevented, and management is responsible for doing so in order to provide a safe and healthful place to work. Additionally, safety requires empowerment and training for all employees.

5.2. SAFETY MANAGEMENT SYSTEM

The M&O safety management system actively promotes and continuously improves safety, health, and accident prevention programs at all operating locations; provides a safe and healthful work

environment for all employees; prevents human and material loss under its jurisdiction; and meets or exceeds contractual requirements, OSHA regulations, and federal, state, and local laws for safety, environmental, health, and medical practices. The M&O is committed to providing the human and material resources needed to implement these requirements in a timely manner.

The SPR safety management system mandates that S&H will be systematically integrated into management and work practices at all levels, so that the mission is accomplished while protecting the public, the worker, and the environment. Direct worker participation must be a component of any successful safety management system. OSHA requires and the M&O practices employee participation in such areas as operational readiness reviews; process hazards analyses (PHAs); operating and maintenance (O&M) procedures development; change control review and approval; identification and use of Personal Protective Equipment (PPE); training; hazard identification, communication and abatement; job hazard analyses; and others.

M&O employees own and operate an effective Employee Behavioral Safety Process (EBSP). All four storage sites participate in the OSHA and DOE Voluntary Protection Programs (VPP). In combination with Process Safety Management (PSM), the behavioral process and VPP ensures that the workers are involved in all areas of safety management. All managers and employees actively participate in the safety program. Every M&O employee is asked to sign the seven-part Safety Commitment. The M&O Project Manager and the M&O Assistant Project Manager (APM) of Environmental Safety and Health (ES&H) also sign the commitment, documenting their commitment to providing a safe and healthful workplace.

The Safety and Industrial Hygiene professional staff supports the line organization in program definition, hazard recognition, hazard resolution, safety training, and safety performance measurement. The Operational Systems staff provides the same support for process-related activities. Management commits that safety resources, materials, and services will be provided to support the programs.

The safety program is based on the SPR Management and Operating (M&O) contract; applicable DOE Orders; OSHA regulations; and federal, state, and local codes and regulations, the SPR ES&H Manual, and internal M&O safety and health requirements.

STOP WORK AUTHORITY

Every SPR employee has the authority and responsibility to stop work if they see an unsafe activity or feel uncertain of safely performing the work. Employees have the right to refuse work they believe may be detrimental to their safety and health without fear of retribution.

Safety performance is assessed by periodic inspections. The M&O investigates identified accidents, near misses, potential hazards, and safety deficiencies to determine corrective actions, root causes and lessons learned.

Representative M&O Safety and Health staff will maintain memberships and actively participate in professional Safety and Health organizations such as the National Safety Council (NSC), Voluntary Protection Programs Participants' Association (VPPPA), American Society of Safety Engineers (ASSE), American Industrial Hygiene Association (AIHA), Board of Certified Safety Professionals (BCSP) and other professional associations in order to maintain their technical expertise and meet the requirements in the SPR Environmental Safety and Health (ES&H) Manual.

Participation in these organizations provide professional peer benchmarking to ensure that the S&H staff remains current with professional activities, technical advances, regulatory changes, and trends that impact the safety and health communities. The M&O S&H professional staff will maintain professional qualifications and skills by attending advanced safety and health-related training and education seminars, workshops, conferences, and classes. Continuing education and training opportunities will be provided to the S&H staff to maintain their expertise and to enhance their level of competency for overseeing safety and health activities of SPR employees and subcontractors.

5.2.1. Integrated Safety Management System (ISMS)

The M&O safety management system is part of the overall M&O Integrated Safety Management System (ISMS). Safety objectives are reinforced through the integration of S&H requirements in all M&O business systems: finance, human capital, engineering, operations and maintenance, etc. See APM Section 6, Integrated Safety Management.

5.2.2. Safety Goals

SPR safety goals are established in the Strategic Petroleum Reserve Environmental, Security, Safety and Health Performance Goals, which are updated annually. Each site will establish site-specific annual goals.

The M&O strives for zero accidents as an overarching goal. In addition, a top M&O priority is to enhance the M&O safety and health program by developing strong safety awareness throughout all M&O organizations through skills training for hazard identification and elimination, management and employee involvement, and consistent use and enforcement of the safety program.

M&O and DOE safety goals are communicated to all employees by memorandum. Site safety goals are communicated through the SSMC meeting minutes and will be reviewed and posted for employee awareness. VPP Annual Self-Evaluations also establish specific goals for the upcoming year and progress on meeting VPP goals previously set is reported.

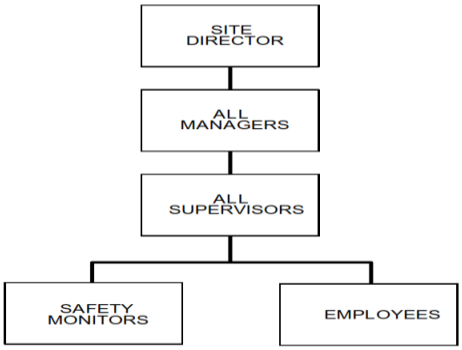
5.3. ELEMENTS OF THE SITE LINE CONTROL SAFETY PROGRAM

The effectiveness of the Site Line Control Safety Program depends on the active involvement of all employees and the support of all levels of management from the project manager to the first-line supervisor. The Line Control Program will contain the following key elements.

- Demonstrated management support at all levels.
- Active safety emphasis, involvement, and cooperation among employees and management.
- Motivation toward safe attitudes and behaviors.
- Clearly defined organizational structures and responsibilities.
- Both proactive and reactive methods to measure and review safety performance.
- An effective means of communicating safety issues among line organization management, employees, and support organizations.
- Safety awareness, stressed through education, training, and positive reinforcement of safe work practices, including the EBSP and the VPP.

- Clearly defined safety goals and objectives at the site and corporate levels.
- Management accountability and responsibility for promoting safety as an integral part of the job.
- Management authority to allocate company resources and resolve safety problems.
- Integration of safety into all work activities and operations, including business processes.
- Effective procedures for documenting, tracking, and resolving safety and hazard-control issues.
- Effective internal self-assessment procedures.
- Safety leadership.
- A professionally staffed Safety and Industrial Hygiene organization providing policies, procedures, guidance, support, and consultation to line management.
- An employee annual review process that evaluates safety performance.

Figure 5-1. Line Control Safety Organization.



5.3.1. Line Management and Supervisors Responsibility

Supervisors and managers are responsible for the safety and health of their subordinates. An overview of their responsibilities for employee safety and health include:

- Plan and direct the work in such a manner that the requirements of the APM and the Integrated Safety Management System are met.
- Possess a comprehensive knowledge of safety and health rules pertaining to his/her job.
- Consistently enforce safety rules and regulations by applying appropriate M&O disciplinary actions to address breaches of the M&O S&H Policy, practices, or procedures.
- Maintain a zero tolerance for unsafe acts.
- Accept responsibility for the implementation of incident prevention processes and safe work practices at the site.
- Verify that each employee under his/her supervision has received an initial safety orientation.
- Ensure and verify all employees under his/her direct supervision understand the rules and regulations.

- Supervise the training of new employees, either personally or with the assistance of experienced craftsmen, until he/she demonstrates the ability to work in a safe and efficient manner.
- Ensure personnel are qualified for the work to which they have been assigned.
- Correct hazards on the spot.
- Conduct scheduled and unscheduled inspections of the work areas.
- Be visible in the workplace and acknowledge good S&H performance.
- Monitor employees' performance to ensure the use of safe work practices.
- Develop and execute JHAs that effectively analyze work activities to identify potential hazards and specify controls.
- Periodically re-analyze work methods to establish necessary safety work methods and to simplify job processes.
- Be responsible for housekeeping in his/her department and for the use and maintenance of all personal protective devices, equipment, and safeguards.
- Notify direct supervisors and/or Site Safety concerning work areas where unique hazards exist and/or special assistance is required.
- Attend and participate in required safety and health meetings.
- Report incidents that could have or did result in personal injury or property/environmental damage.
- Consult with Site Safety on S&H and incident management issues.

5.3.2. Employee Responsibility

Employees have a responsibility to:

- Work safely.
- Immediately correct or report unsafe conditions to your supervisor and/or Site Safety.
- Provide information to supervision for improving site safety and health conditions.
- Obey the rules, requirements, and instructions.
- Understand safety and health goals and objectives.
- Use and maintain safety equipment properly.
- Attend scheduled safety and health training sessions.
- Take an interest in the safety and health of co-workers and the environment. Your guidance and the benefit of your experience will be appreciated.
- Have a working knowledge of tools and equipment before operating them.
- Pay special attention to new employees; they may not know all the rules and may need help to work on the site in a safe manner.
- Discuss any assignment that you feel is unsafe with your supervisor. If you are still not convinced that you have been requested to perform a task in a safe manner, then elevate the

concern to the next level supervisor/manager until you are satisfied that the assignment or work procedure is safe.

5.4. EXECUTIVE SAFETY COUNCIL (ESC)

The M&O Project Manager will chair the Executive Safety Council. The safety and health director and operational systems director will serve as safety advisors to the Council, which consists of the APMs, Site Directors, and project counsel.

5.4.1. Roles and Responsibilities of the Executive Safety Council

The Executive Safety Council

- Meet at least quarterly or when requested by the chairperson and provide written meeting minutes with action items listed.
- Evaluate whether implementation of the Line Control Safety Program complies with M&O safety objectives.
- Examine selected accident/incident investigation reports and the corrective actions taken to prevent recurrences.
- Review major safety problems from sources such as Accident Reports: Unusual Occurrence Reports (UORs); Performance Indicators and trending information; Lessons Learned; and Process Hazard Analyses (PHAs).
- Recommend suggestions for the improvement or expansion of the Line Control Safety Program.
- Establish, promote, and provide resources for safety performance recognition programs to reinforce employee safe work practices.

M&O Project Manager

- Chair the Executive Safety Council and, through the council and the line organization, manage the Line Control Safety Program.
- Appoint a New Orleans director, who will serve as the New Orleans Site Director for this council.

M&O APMs

- Attend the Executive Safety Council Meetings, representing their directorate.

S&H Director

- Schedule the meetings, prepare the agenda, and report the results in meeting minutes to the Executive Safety Council.
- Track action items to completion.

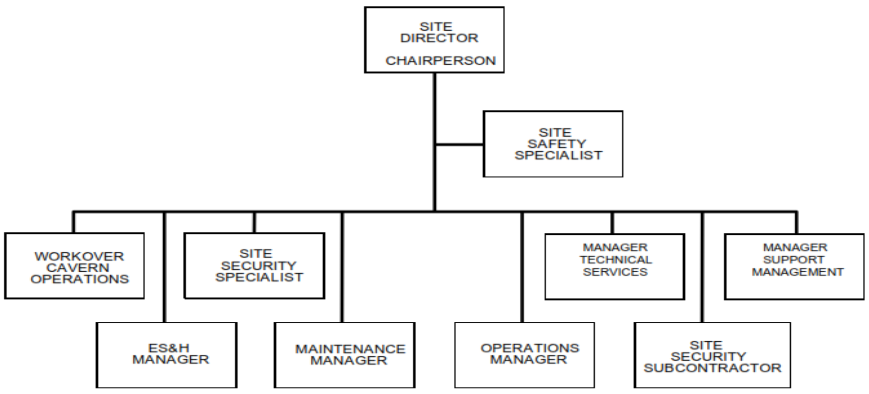
Site Directors

- Attend the Executive Safety Council Meetings, representing their sites.

5.5. SITE SAFETY MANAGEMENT COUNCIL (SSMC)

The site director or designee will chair the SSMC. The site safety specialist will serve as advisor to the council, which includes department managers, representatives of the security and construction contractors, and other interested parties.

Figure 5-2. Site Safety Management Council (excluding New Orleans).



The New Orleans SSMC will be chaired by the New Orleans Site Director and composed of one director from each directorate (or designee), the property manager, and departmental safety monitors.

SSMC will evaluate the effectiveness of this program, and safety monitors will regularly conduct inspection of the facilities to detect hazardous materials and unsafe conditions and practices.

5.5.1. Roles and Responsibilities of the Site Safety Management Council

The Site Safety Management Council

- Meet at least monthly and publish meeting minutes by the fifth working day of the following month. Meeting minutes will contain an action items list with actionees and estimated completion dates. Copies will be distributed and posted at each site. Attendance and non-attendance shall be recorded in the meeting minutes.
- Monitor Line Control Safety Program activities to ensure that all M&O safety objectives are met and to ensure that all line safety tasks and meetings (supervisor's safety meetings and toolbox meetings) are being implemented.
- Establish site safety goals and conduct safety awareness programs.
- Promote safety awareness among employees. Encourage employees toward safe and healthful work habits by promoting motivational programs.
- Appoint and document actionees to ensure timely correction of unsafe conditions, near misses, and hazards that are brought to the attention of the council. If an identified hazard cannot be corrected by a work order it will be entered into the Assessment Tracking System (ATS) with the risk assessment information.
- Maintain and post a site safety organizational chart on site bulletin boards.
- Support Behavioral Accident Prevention and VPP processes.

The Site Director

- Chair the SSMC or appoint a designee and serve as site interface to the Executive Safety Council.
- Review action items at SSMC meetings. Update open safety-related ATS items monthly for which they are actionee.

Department Managers

- Ensure that they or a designee represent their organizations at the SSMC meetings.
- Review and discuss work orders, Safety Monitor's/Employee's Report, DOE Observation Reports, M&O Site Management Organization Assessments (OAs), ATS, and other documented safety findings at the monthly SSMC meeting.

Supervisors

- Report safety activities.
- Conduct safe work practices and safety and health program reviews and present findings to the SSMC.
- Ensure that Safety Monitors' Reports are provided to the department manager and site safety for discussion at the SSMC meetings.

Safety Monitors

- Send copies of the Safety Monitor's/ Employee's Report or E-mail to the supervisor, site safety specialist, and SSMC member.

5.6. TRIPARTITE SAFETY COUNCIL (TSC)

5.6.1. Purpose

The purpose of the TSC is to further DOE safety and health goals by encouraging employee participation by providing access to top DOE and M&O management. It provides a mechanism for input through employee representatives and ensures that SPR-specific topics and concerns are addressed and acted upon. Action items assigned in TSC are tracked in the DOE Action Tracking System (DATS) database and status is reported in each Project Review by the M&O director assigned the action. TSC DATS items are assigned and closed by the DOE Project Manager.

The TSC supplements the existing safety and health line control system by providing independent employee assessments, evaluations, advice, and information relative to the safety and health status, programs, and policies of the SPR. The TSC does not replace existing procedures for reporting or filing grievances or concerns, but allows an alternative method for employees to speak directly to the DOE and M&O Project Managers and address safety problems that have not been corrected through normal channels.

5.6.2. Membership

DOE

- Project Manager (chairperson)

- APM for Technical Assurance
- APM for Operations

Contractor Management

- M&O Project Manager
- M&O APM of ES&H
- M&O APM of O&M
- M&O Director of CM
- M&O Director of S&H
- A&E Project Director or representative

Contractor Employees

- M&O – one employee from each site representing site personnel and one alternate. Only one representative is required to attend the semi-annual meetings.
- M&O (CM) – one representative and an alternate.
- Security Services contractor - one primary and alternate employee from each site representing the hourly payroll. Only one representative is required to attend meetings.
- A&E – one primary and alternate employee representing the A&E.

Subcontractor Employees

- Construction and other subcontractor personnel will be notified of meetings at their site and will be invited to provide an employee representative from personnel who may be on site that particular day, if they so choose.

5.6.3. Authority

The TSC is designed to foster communication by identifying generic issues relating to occupational safety and health. Individual members are responsible for carrying out their assigned duties. The TSC is not intended to replace existing line management processes for resolving individual issues but to provide a final avenue to management if safety issues are not being resolved. It also does not change or lessen the responsibility of the M&O and A&E contractors to provide a safe workplace for employees or of DOE to ensure those duties are taken seriously.

Members are free to discuss any and all safety-related issues/topics. One of the key principles of the DOE value statements is that, “All personnel at the SPR are free to state their views without fear of retribution.” This principle covers federal employees and extends to DOE contractor and subcontractor employees. This position is reinforced by the M&O, Protective Services contractor, and A&E contractor.

5.6.4. Meeting Frequency

TSC meetings will be conducted semiannually (two per year) in rotation from site to site. Meetings will be scheduled in conjunction with scheduled management meetings, such as project review and program review whenever possible.

5.6.5. Presentations and Meeting Minutes

The S&H Director or designee will coordinate and provide a copy of presentations and meeting minutes to all members within ten working days from the date of the meeting. All members are encouraged to review the minutes to ensure accuracy and completeness. Corrections should be brought to the S&H Director or designee's attention prior to the next meeting.

5.7. LINE CONTROL SAFETY PROGRAM ACTIVITIES

Line Control Safety activities include meetings and training, which are briefly explained below.
Note: Safety requirements for Elmwood Complex are listed in APM Section 33, Office Safety.

5.7.1. Meetings

Safety meetings are held to discuss safety problems, provide safety instruction and information, evaluate safety performance against objectives, review accidents, develop corrective measures, and disseminate information concerning the safety program. See APM Section 3 for direction on how to document safety meetings.

Safety meetings require planning. The material to be discussed should be planned in advance and handouts and visual or mechanical aids provided if necessary. Subjects in the Accident Prevention Manual can be used as meeting topics.

"Stand downs" may be used to issue important safety warnings, provide broad training in new practices/requirements, or highlight high-risk items or accident consequences and lessons learned.

5.7.2. Roles and Responsibilities of the Line Control Safety Program

Site Director

- Ensure the Work Order System (Support Magic System in NO only) tracks deficiencies that can be corrected by a work order. Ensure that ATS is used to track deficiencies that cannot be corrected by a work order and are not corrected within 30 days of identification
- Ensure supervisors follow procedures for reporting and recording accidents, incidents, near misses, and job-related illnesses.
- Ensure that an employee trained in advanced first aid is available on each shift. Note: The Security Force Protection Officers are trained in CPR and are available to back up the advanced first aid responder on each shift.
- Ensure that Safety Conditions Assessment Team (SCAT) inspections are conducted each quarter.

Department Managers

- Work with the site training coordinator to Identify safety training requirements for their departments.

Supervisors

- Promote safety motivation and safety performance recognition programs. Reinforce employee safe work practices.

- Support NO Safety & Health in defining safety training requirements.
- Emphasize the importance of safety when planning tasks, selecting personnel and equipment, performing job briefings, and supervising job performance. ~~Develop~~ JHAs as required by applicable Section of the APM.
- Ensure safety monitors assist in daily activities related to the safety program. Validate the safety monitor's report of a hazard prior to its submission and ensure corrective work orders are submitted. Take short-term (interim) measures to abate the hazard until it is corrected.
- Ensure each employee is instructed in and understands the safety monitor's duties, authority, and responsibilities. Ensure that a safety monitor is designated for their area.
- Ensure each employee has been briefed on and is familiar with M&O safety policy and goals and how to file M&O, DOE, and S&H concerns. M&O concerns may be communicated to the employee's supervisor or manager orally or in writing. DOE concerns may be reported in accordance with Section 40. S&H concerns may be submitted according to "How to File Health and Safety Concerns" guidelines posted on bulletin boards throughout M&O. S&H concerns can also be reported with complete anonymity through Strategic Petroleum Reserve (SPR) Fluor Hotline.
- Assist in developing action plans as needed for identified accident trends.

Site Safety

- Monitor the line safety program, recommend actions to correct deficiencies, and fulfill the following requirements.
- Serve as field representative for the site environmental, safety and health manager, and support the sites in their administration of the Line Control Safety Program.
- Assist and support site director, department managers, supervisors, safety monitors, and employees in understanding objectives and implementing requirements of the Line Control Safety Program.
- Serve as system focal point for other safety activities, such as motivational programs and accident/incident reporting and investigation.
- Provide technical guidance and support to supervisors on the use of personal protective devices and equipment.
- Review safety-related open ATS items monthly and provide comments to the site director for ATS updates, including hazard level. Support the line organization in risk assessments, verifying the hazard level, and identifying code citations (for example: OSHA, National Electrical Code, DOE Orders, etc.).
- Post OSHA/DOE/M&O notices and ensure they remain unaltered and are not covered by other material.
- Review Safe Work Permits (SWPs) when safety expertise is required and sign off when requirements are met. Review SWPs in use in the field and initial to document those SWP requirements are being met. If SWP requirements are not being met, initiate a stop work until the requirements are met or corrected.
- Review all safety-related work orders to assure the right priority is given to each.

- Review and ensure appropriate action is taken on all Safety Monitor Reports. Actions should include interim actions to mitigate hazard, and final corrective actions required to eliminate the identified hazard.

Site Monitors

- Work with and assist department supervisors in establishing and maintaining a safe and healthful work environment, and assist personnel in following safe work practices.
- Conduct monthly inspection of work areas and document findings, at risk conditions, or other safety issues identified on the Safety Monitor's Report (located in the appendix) or other safety inspection report. Conduct inspections immediately after a move or area modification. If there are no findings document inspection with "Nothing Found".
- Report unsafe conditions and practices to the department supervisor immediately.
- Correct safety problems within their capability.
- Request supervisor and site safety specialist support as needed. Return Safety Monitor Report to supervisor or Site Safety Specialist when complete.

Employees

- Participate in the Line Control Safety Program, including acting as a Safety Monitor if requested.
- Exercise Stop Work Authority if they see an unsafe activity or they feel uncertain of safely performing the work.

S&H Director

- Support the Line Control Safety Program and provide the procedures under which they operate.
- Audit Line Control program and provide recommendations as needed.
- Enter and track recommendations to completion in ATS.

5.8. SAFETY AWARENESS PROGRAM

Safety awareness material such as bulletin boards, posters, booklets, entrance signs, and webinars will be used to increase employee safety awareness. The M&O Performance Improvement Program may be used to achieve safety improvements also. M&O promotes safety motivation and safety performance recognition programs to reinforce employee safe work practices.

5.9. OCCUPATIONAL MEDICAL PLAN

The M&O Occupational Medical Plan is documented in ASL3700.32, and roles and responsibilities are outlined below:

Human Capital

- Maintain medical services' contracts with occupational medical physicians knowledgeable of actual and potential work-related hazards, tasked to perform targeted inspections annually at each operating site. The medical physician will also review first aid kit requirements for the site.

- Ensure that the physician documents the results of the annual health evaluation and distributes this report to the site ES&H Manager and to HC, including specifying the required first aid kit contents.
- Communicate results of health evaluations to management and to those responsible of mitigating work site hazards.

Site Director

- Designate an area as a first aid site.
- Ensure that one person trained in advanced first aid, and a CPR-trained backup, is available per shift.

Site Safety

- Provide inspecting physicians with information on potential work site exposures and employee job tasks and hazard analyses.
- Document and correct problems identified by inspecting physicians.

New Orleans Safety and Health

- Provide medical program requirements.

5.10. SAFETY PERFORMANCE

The M&O holds employees accountable for their safety performance during the year. This performance shall be documented by the following:

- Repeat violators of safety policies shall be subject to disciplinary action in accordance with approved procedures.
- Safety performance, good and bad, shall be part of employees' formal annual performance review.

5.11. DISCIPLINARY PROCESS FOR SAFETY AND HEALTH VIOLATIONS

5.11.1. General Requirements

Employees will be subject to disciplinary action for committing an unsafe act, which may include termination of employment. Taking chances or risks concerning safety will not be tolerated! **UNSAFE ACTS ARE PROHIBITED!**

This section provides guidelines to assist management and supervision with the uniform application of disciplinary action for safety violations throughout the company.

NOTE
All disciplinary actions must comply with the M&O Disciplinary Action Procedure (ASR3700.27).

5.11.2. Roles and Responsibilities

M&O Management implements programs that promote safe work practices. When safe work practices are not adhered to, Line Management will take immediate corrective action. Line Management's response may include hazard elimination and disciplinary action up to and including termination.

The supervisor is responsible for consulting with the Employee Relations Generalist throughout the disciplinary action process and must notify the generalist of all safety related disciplinary actions.

NOTE
To obtain copies of the specific HR reprimand forms used for the M&O, contact your HR generalist.

6. INTEGRATED SAFETY MANAGEMENT (ISM)

PURPOSE

The M&O and the Security subcontractor are required to comply with DOE P 450.4, "Safety Management System Policy," which establishes Integrated Safety Management (ISM) requirements for employees at all levels. This section provides instructions on how the M&O will sustain and assess ISM. As used herein, and in this policy, the term "safety" encompasses: safety, health and hygiene, environmental, including waste minimization and pollution prevention, fire protection, and emergency management.

SCOPE

This section includes the following major sections:

- Implementation
- Guiding Principles
- Core Functions
- M&O Responsibility
- Flow Down of Requirements
- Responsibilities
- Verification

APPLICATION

Contractor compliance with ISM is governed solely by the Department of Energy Acquisition Regulation (DEAR) clause at 48 CFR 970.5223-1, *Integration of Environment, Safety and Health into Work Planning and Execution.* DEAR clause 48CFR970.5204-2 contractually requires that "the [M&O] contractor develop, and submit to the Department for approval, documentation of an Integrated Safety Management System." The requirement now is for the M&O to have a System Description and an annual self-assessment. This requirement is flowed down by the M&O to the Security subcontractor. SPRPMO N 450.3, Implementation of Environmental, Safety & Health Contractor Requirements Documents; Attachment 1, Contractor Requirements Document for Management and Operating Contractor also requires that the M&O implement an ISM system that:

- Develops, implements, and evaluates an ISM system that complies with all federal and local directives,
- Develops and maintains a System Description,
- Requires annual self assessments, and
- Ensures that the M&O manages and performs work according to the ISM guiding principles and core functions.

6.1. IMPLEMENTATION

The M&O safety management systems are structured to assure that the following criteria for successful implementation are met.

- Sets of current, applicable requirements and standards are established, agreed upon, and maintained.

- Safety Management System Description is approved annually and revised as needed. The System Description is provided to DOE annually for review and acceptance. The Security subcontractor's System Description has the same requirement for review and revision and is submitted to M&O for review and acceptance.
- Applicable Safety Management Systems are implemented and approved.
- Feedback and improvement programs are in place and effective.
- Oversight programs are in place and effective, including a documented annual self-assessment.
- A documented process to maintain applicable Safety Management System is in place.

6.2. GUIDING PRINCIPLES

M&O's ISM system will comply with the seven guiding principles that form the foundation of ISM:

- Guiding Principle 1. Line management responsibility for safety.
- Guiding Principle 2. Clear roles and responsibilities.
- Guiding Principle 3. Competence commensurate with capabilities.
- Guiding Principle 4. Balanced priorities.
- Guiding Principle 5. Identification of safety standards and requirements.
- Guiding Principle 6. Hazard controls tailored to work being performed.
- Guiding Principle 7. Operations authorization.

The most recent revision of the System Description provides detailed definitions of the principles. The System Description summarizes how M&O implements each principle. The SPR ISM Document Matrix specifically lists the policies and procedures that implement each principle.

6.3. CORE FUNCTIONS

All work on the SPR shall comply with the following five core functions:

- Core Function 1. Define the scope of work.
- Core Function 2. Analyze the hazards.
- Core Function 3. Develop and implement hazard controls.
- Core Function 4. Perform work within controls.
- Core Function 5. Provide feedback and continuous improvement.

The most recent revision of the System Description explains each core function and how it is integrated in the day-to-day work performed on the SPR. The SPR ISM Document Matrix lists the M&O policies and procedures that support the five functions.

6.4. M&O RESPONSIBILITY

M&O senior management is committed to integrated safety management, assuring that ES&H requirements are recognized and incorporated into all facets of M&O management systems. For example, ES&H requirements are an interwoven, but recognizable, part of M&O finance, engineering, change control, contractor management, procurement, operations and maintenance, training programs, staffing, and all other business areas. The resulting management systems ensure that we analyze the work, identify the hazards associated with it, allocate and prioritize the necessary resources, apply those resources responsibly to eliminate or control the hazards, work within those controls, and have effective feedback mechanisms in place.

At a minimum, the M&O ISM systems shall:

- Ensure that all activities at the SPR sites, including activities of all other contractors, subcontractors and site tenants, comply with applicable safety policies, standards, and M&O, DOE, other Federal, State, and local agencies' requirements.
- Ensure that work is stopped upon discovery of any unsafe activity or if an employee is uncertain that they can safely perform the work.
- Require an SPR ISM System Description that complies with 48CFR970.5204-2. The system description shall refer to the SPR Document Matrix which includes a listing of all DOE, SPRPMO, and contractor directives that implement ISM.
- Verify implementation of ISM and review and update safety goals annually.
- Manage and perform work in accordance with guiding principles and core functions of ISM.

6.5. FLOW DOWN OF REQUIREMENTS

The M&O will flow down ISM requirements to subcontractors using a graded approach based upon the complexity and risk associated with the tasks to be performed. The Security contractor is required to provide an ISM system description, documentation and quarterly updates; but M&O's specific requirements for an annual report and briefing are not applicable. Other sub-tier contractors, while required to implement the guiding principles and core functions, are not required to have a system description.

6.6. RESPONSIBILITIES

For a detailed description of M&O ISM specific responsibilities see the most recent revision of the ISM System Description. For details on the processes that direct functions, responsibilities, and authority within the M&O see the most recent revision of the SPR ISM Document Matrix**.** Both documents are readily accessible in the S&H SharePoint site.

6.7. VERIFICATION

In compliance with the DEAR clause, the M&O shall maintain a System Description that documents the management systems the M&O is using to comply with ISM. The System Description will be reviewed and accepted by the SPRPMO. The clause further requires a yearly review of the M&O safety policy and revision if needed. The M&O S&H will update the company safety policy as needed. The M&O is not required to maintain a Functions, Roles, Authority Matrix (FRAM).

The M&O S&H department also publishes an annual ISM Review and Update Report that summarizes the M&O's assessments and related performance metrics, demonstrating how effective ISM implementation has been during the year, and identifying areas where improvements are needed. Publication of the report is required annually as a Work Authorization Directive (WAD) deliverable and a Level III milestone.

7. PROCESS SAFETY MANAGEMENT (PSM)

PURPOSE

This section provides minimum requirements for managing hazards associated with processes using highly hazardous chemicals. It defines M&O responsibilities regarding actions that must be taken to prevent or minimize the consequences of accidents involving highly hazardous chemicals.

SCOPE

This section includes the following major topics:

- Introduction
- PSM Requirements
- Responsibilities

APPLICATION

This section applies to work activities and employees under the control of the M&O and its subcontractors.

7.1. INTRODUCTION

The SPR is required to comply with 29CFR1910.119, "Process Safety Management of Hazardous Chemicals (PSM)," because we store, handle, and move a flammable liquid (crude oil) in quantities of 10,000 pounds or more and the crude oil is stored under pressure. This section provides the requirements for implementing Process Safety Management (PSM) at the SPR and includes information on all applicable requirements in 1910.119 and 1926.64.

Of the listed chemicals in the standard, the SPR only meets the criteria for crude oil. PSM requirements are consistent with and support Integrated Safety Management.

7.2. PSM REQUIREMENTS

The purpose of our PSM program is to prevent the occurrence, and minimize the consequences, of significant releases of toxic substances, as well as fires, explosions, and other types of catastrophic accidents. Overall, PSM prevents fatalities, injuries and illnesses, and avoids physical property damage. Activities required under PSM are outlined below.

7.2.1. Employee Participation (1910.119(c))[1]

- Develop a written employee participation plan for each operating site.
- Consult with employees on the conduct and development of process hazards analyses and on the development of the other elements of process safety management.
- Provide employees with easy access to process hazard analyses and all other information developed under this standard.

[1] ISM Core Function 5. "Provide Feedback and Continuous Improvement.

7.2.2. Process Safety Information (1910.119(d))[2]

- Compile written process safety information before conducting any process hazard analysis. Written process safety information must be presented in a way that allows employees involved in the process to identify and understand hazards posed by the process.
- Information to be collected will include at least:
  - Toxicity information,
  - Permissible exposure limits,
  - Physical data,
  - Reactivity data,
  - Corrosivity data,
  - Thermal and chemical stability data,
  - Hazardous effects of unintended mixing of different materials.
- Information on the process will include at least:
  - A block flow diagram or other simple process flow diagram,
  - Process chemistry,
  - Maximum intended inventory,
  - Safe upper and lower limits for temperature, pressures, and flows of compositions,
  - An evaluation of the consequences of process deviations that could affect the safety and health of employees.
- Information pertaining to the process equipment will include:
  - Materials of construction,
  - Piping and instrumentation diagrams (P&IDs),
  - Electrical classification areas,
  - Relief system design and design basis,
  - Ventilation system design,
  - Design codes and standards,
  - Material and energy balances,
  - Safety systems.
- Documentation that equipment complies with good engineering practices.
- For equipment designed and installed according to standards no longer in effect, determine and document that the equipment is being operated and maintained in a safe manner.

[2] ISM Core Function 1. “Define the Scope of Work.”

7.2.3. Process Hazard Analysis (1910.119(e))[3]

- Perform an initial Process Hazard Analysis (PHA) on the processes covered by the standard, for all operating sites. Analyses may use "what-if" checklists, Hazard and Operability Study (HAZOP), Failure Modes and Effects Analyses, fault trees, or similar methodologies. Written process safety information must be sufficient to allow employees involved in the process to identify and understand the hazards posed by the process.
- The Process Hazard Analysis shall address:
  - Any previous incident that had significant potential to cause catastrophic consequences in the workplace,
  - Engineering and administrative controls applicable to the hazards identified,
  - Consequences of failure of engineering and administrative controls,
  - Facility siting,
  - Human factors,
  - A qualitative evaluation of the possible safety and health effects of controls failure.
- Perform the Process Hazard Analysis with a team of employees who have expertise in engineering and process operations in general, as well as employees who are experienced and knowledgeable about the operation and maintenance of the specific process. The team should also include an instrumentation and control technician someone knowledgeable about the analysis methodology being used.[4]
- Identify and document process hazards and recommend corrective actions.[5]
- Establish a system to promptly address the team's findings.
- Update and revalidate the Process Hazard Analysis every 5 years after completion of the initial hazard analysis.
- Retain process hazard analyses and updates for the life of the process.

7.2.4. Operating Procedures (1910.119(f))[6]

Develop and implement written operating procedures for safely conducting activities involved in the process, including:

- Initial startup,
- Normal operations,
- Temporary operations,
- Emergency shutdown,

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[3] ISM Core Function 2. "Analyze the Hazards"
[4] ISM Core Function 5. "Feedback and Improvement" and Employee Participation
[5] ISM Core Function 3. "Develop and Implement Hazard Controls"
[6] ISM Guiding Principles 2, "Clear Roles and Responsibilities," 5, "Identification of Safety Standards and Requirements;" and 6, "Hazard Controls Tailored to Work Being Performed;" and Core Function 4, "Perform Work within Controls.

- Emergency operations,
- Normal shutdown,
- Startup following a shutdown,
- Operating limits – consequences of deviation and steps required to correct,
- Cautions and warnings about safety and health considerations,
- Properties and hazards of the chemicals used in the process and, precautions necessary to prevent exposure, and control measures if an exposure occurs,
- Quality control for chemical inventory levels,
- Any special or unique hazards,
- Safety systems and their functions,
    - Ensuring operating procedures are readily accessible to employees,
    - Reviewing operating procedures as often as necessary to ensure they are current,
    - Certifying operating procedures annually as current and accurate,
    - Developing and implementing safe work practices, such as lockout/tagout, confined spaced entry, hot work, access control, etc.

7.2.5. Training (1910.119(g))[7]

Initial training: Provide initial training to each employee involved in operating a newly assigned, or significantly changed, process before they operate the process. Training must include:

- An overview of the process and operating procedures,
- An emphasis on safety and health hazards,
- An emphasis on emergency operations (including shutdown),
- Safe work practices applicable to the employee's job tasks.

Refresher training:

- Provide refresher training at least every three years and more often if necessary to each employee involved in operating a process.
- Provide training whenever the process is changed.
- With feedback from the employees involved in operating the process, determine the appropriate frequency of refresher training.

Training documentation:

- Ensure training is performance-based, i.e., requiring some demonstration of skill or knowledge.

[7] ISM Guiding Principle 3, "Competence Commensurate with Responsibility."

- Prepare a record containing the identity of the employee, the date of training, and the means used to verify that the employee understood the training. A Training Activity Attendance Report (TAAR) is used to document attendance.

7.2.6. Contractors and Subcontractors (1910.119(h))[8]

The requirements that apply to construction and service subcontractors and other contractors performing maintenance or repair, turnaround, major renovation, or other work on or adjacent to a covered process can be found in tables at the end of this section. At the minimum, contractors and subcontractors performing work on site must be informed of the hazards of the process.

7.2.7. Pre-Startup Safety Review (1910.119(i))[9]

Perform a pre-startup review for new facilities or facilities which have undergone significant modification.

Confirm that prior to introducing hazardous chemicals to the process:

- Construction and equipment meets design specifications,
- Adequate safety, operating, maintenance, and emergency procedures are in place,
- A Process Hazard Analysis has been performed and recommendations have been resolved,
- Training requirements have been met.

7.2.8. Mechanical Integrity (1910.119(j))[10]

Establish and implement written procedures for maintenance.

Provide maintenance personnel with training that includes an overview of the process and its hazards, as well as of procedures applicable to the employee's tasks.

CAUTION
Employees shall be trained on the equipment they will operate or maintain.

Inspection and Testing:

- Perform inspections and tests that follow recognized and generally accepted engineering practices on process equipment. Ensure the inspection and tests recommended in the operator's equipment manual (OEM) or manufacturer's manual are included
- Comply with the manufacturers' recommendations for the frequency of inspections/tests and inspect more frequently if deemed necessary based upon operating experience.
- Document each inspection and test, including:

[8] DEAR Clause 48CFR970.5204-2 requirement to flow down ISM to subcontractors.
[9] ISM Guiding Principle 7. "Operations Authorization."
[10] ISM Core Function 4. "Perform Work within Controls."

  - date of inspection,
  - name of person performing inspection,
  - serial number or other identifier on the equipment tested,
  - description of the type of inspection or test, and
  - results.
- Correct equipment deficiencies before further use or in a safe and timely manner.

Quality Assurance:

- Assure that fabricated equipment is suitable for the process application.
- Perform appropriate checks and inspection to assure that equipment is properly installed.
- Assure that maintenance materials, spare parts, and equipment are suitable for the process application.

7.2.9. Hot Work Permit (1910.119(k))[11]

Issue a Safe Work Permit (SWP) for hot work operations conducted on or near the covered process, documenting that fire prevention and protection requirements as found in ASL5480.18, Fire Protection Manual, are completed prior to the start of hot work operations. Documentation must include:

- the date authorized for hot work,
- serial number or other identifier of the object on which hot work is performed,
- hazard controls, and
- required PPE.

The permit must comply with the requirements stipulated in APM Section 35, and must be kept on file until the work is completed.

7.2.10. Management of Change (1910.119(l))

Establish and implement written procedures to manage changes to process chemicals, technology, equipment, and procedures, as well as changes to facilities that affect the covered process.

- Written procedures will not apply to replacements in kind.
- Procedures shall address the technical basis for the change, impact of the change on safety and health, modifications necessary to operating procedures, the time period for the change, and authorization requirements for the proposed change.
- Inform employees and subcontractors who operate and maintain the process of the change.
- Provide employees and others with any necessary training prior to them working on the changed equipment, facility, etc.

[11] ISM Guiding Principles 6, “Hazard Controls Tailored to Work Being Performed;” and 7, “Operations Authorization. Core Function 4. “Perform Work within Controls.”

- If a change requires revision or creation of operating procedures, this must be done prior to operating the changed process.

7.2.11. Incident Investigation (1910.119(m))[12]

- Investigate any incident that resulted in, or could have reasonably resulted in, a catastrophic release of crude oil as soon as possible and not later than 48 hours following the incident.
- Assign an accident investigation team, composed of one person knowledgeable in the process, a subcontract employee (if the incident involved subcontractor work), and other persons with appropriate expertise and experience.
- Prepare an accident report that includes the date of the incident, the date the investigation began, a description of the incident, contributing factors, and recommendations.
- Document and resolve corrective actions.
- Review the report with all affected personnel, whose job tasks are relevant to the incident, including subcontractor employees, when applicable.
- Retain investigation reports for at least five years.

7.2.12. Emergency Planning and Response (1910.119(n))

- Establish and implement an Emergency Action Plan in accordance with 29CFR1910.38(a) and 1910.120. The plan will include procedures for handling process-related releases.
- Address what actions our employees are to take when there is an unwanted release of highly hazardous chemicals in the Emergency Action Plan.
- Locate the Emergency Action Plan in each storage site's Emergency Response Procedures.

7.2.13. Compliance Audits (1910.119(o))

- Assess site compliance with the PSM standard at least every three years.
- Certify that M&O procedures and policies are compliant.
- Report the audit findings.
- Track the audit findings to closure.
- Document responses and closure of findings.
- Retain the two most recent compliance audit reports.

7.2.14. Trade Secrets (1910.119(p))

The SPR has no trade secrets.

[12] ISM Core Function 5. "Provide Feedback and Continuous Improvement."

7.3. RESPONSIBILITIES

M&O Contractor

- When selecting a contractor, obtain and evaluate information regarding the subcontractor's safety performance and programs.
- Inform subcontractor employees of the known potential for fire, explosion, or toxic release hazards related to the subcontractor's work or adjacent to the work area, as well as potential hazards.
- Explain the emergency action plans – i.e., alarms, evacuations, expected response, and return to work.
- Control the entrance, presence, and exit of contract employers and contract employees in process areas.
- Require all subcontractors and their employees working at the facility to follow the safe work practices established by M&O.
- Evaluate the performance of subcontractor supervision of their employees.
- Require the subcontractor to maintain a subcontract employee injury and illness log on site.

Contractor and Subcontract Responsibilities

- Certify that each subcontract employee is trained as needed to perform his/her work safely.
- Document that each subcontract employee has received and understood training in the known potential fire, explosion, or toxic release hazards related to his/her job and the process, including the applicable emergency action plans.
- Maintain a training record: identity of the subcontract employee, date of training, and means used to verify that the employee understood the training.
- Ensure that subcontract employees follow the safety rules of the M&O facility.
- Advise M&O of any unique hazards presented by their work.
- For construction subcontractors, maintain compliance with 1926.64 regarding any requirements not covered in this section.

Project Manager

- Ensure that M&O has policies and procedures in place to comply with 29CFR1910.119 and 29CFR1926.64.

Site Director

- Ensure that the site complies with the requirements of PSM.
- Ensure that employees are appropriately trained for their job tasks and responsibilities prior to operating or maintaining the crude oil and related processes.[13]
- Ensure that all subcontractors working on site follow the required PSM policies and procedures as defined in this section.

[13] Guiding Principle 3.

- Ensure that pre-startup safety reviews (or Readiness Reviews) are performed for new facilities and processes or facilities and processes which have undergone significant modification.

Operations and Maintenance (O&M)

- Ensure operating procedures are accessible to employees at all times.
- Ensure all operators and maintenance personnel receive initial training before operating or maintaining a new or significantly changed operation, equipment, or facility.
- Ensure all operators and maintenance personnel receive refresher training at prescribed intervals.
- Ensure maintenance personnel's training includes an overview of the process and its hazards, as well as procedures applicable to the employee's tasks.
- Do not allow employees without required training to operate or maintain process equipment.
- Establish and implement written maintenance procedures.
- Perform inspections and tests as required and as specified in the OEM.
- Correct equipment deficiencies before further use in a safe and timely manner.
- Use and maintain a hot work permit system meeting the requirements outlined in this APM.
- Take prompt action to implement any corrective actions resulting from an accident/incident investigation.
- Review accident/incident reports with all affected personnel.
- Establish and implement emergency action plans.

Engineering

- Configuration control.
  - Establish and implement written procedures for managing changes to process chemicals, technology, equipment, procedures, as well as changes to facilities that affect the covered process as specified in 7.2.10.
- Electrical engineering.
  - Review the electrical operating procedures as often as necessary to assure that they are current.
  - Certify annually that electrical operating procedures are accurate and current.
  - Ensure that the electrical equipment meets the requirements in NFPA 70-E.
- Engineering design.
  - Ensure that process equipment complies with good engineering practices and SPR Level 3 Design Criteria.
  - For equipment designed and installed according to standards no longer in effect, determine and document that the equipment is being operated and maintained in a safe manner.
- Process engineering.

- Consult with employees on the conduct and development of process hazards analyses and on development of the other PSM elements.
- Compile written process safety information as described in 7.2.2, prior to process analyses.
- Determine whether equipment complies with regularly accepted engineering practices, and document findings.
- Appoint a team of employees as described in 7.2.1.
- Lead Process Hazard Analyses (PHAs) on any new or significantly changed process equipment, facilities, etc.
- Assure that PHAs meet the requirements of 7.2.3.
- Implement a system to track PHA recommendations to closure, in accordance with this manual.
- Provide a regular report on status of PHA recommendations to the affected sites.
- Update and revalidate the PHAs every 5 years.
- Develop and implement written operating procedures that cover the activities listed in 7.2.4.
- Review the mechanical operating procedures as often as necessary to assure that they are current.
- Certify by signature that mechanical operating manuals are accurate and current.
- Conduct pre-startup reviews when any facility, process equipment, or process procedures are introduced or significantly modified.
- Prior to introduction of hazardous chemicals to the process, confirm all requirements have been met.
- Review annual budget changes for potential impacts to Process Safety.

Procurement and Contracts

- For M&O subcontracts, obtain and evaluate information on a potential subcontractor's safety performance and programs when selecting a subcontractor.
- Obtain documentation of subcontractors' experience in performing the type of work for which they are being contracted.
- Take effective action when a subcontractor fails to comply with contractual or legal requirements.

Quality Assurance

- Ensure that fabricated equipment is suitable for the process application.
- Perform appropriate checks and inspections to assure equipment is properly installed.
- Assure that maintenance materials, spare parts, and equipment are suitable for the process application.
- Maintain the Assessment Tracking System (ATS), which tracks assessment and accident investigation corrective actions.

Professional Development

- Assess training performance at least once a year for conformance with 7.2.5 requirements.
- Require that training associated with operating and maintaining the crude oil process be performance-based.
- Ensure that employees involved in operating and maintaining the process participate in determining the appropriate frequency of refresher training.
- For each M&O position, identify the required training needed to perform the job scope.
- For M&O personnel, maintain training records containing at minimum: the identity of the employee, date of training, and means used to verify the employee understood the training.
- Assess site-maintained training records for compliance.

Site ES&H Manager

- Act as the PSM Coordinator for the site.
- Maintain a site specific written employee participation plan and document roadmap in accordance with the M&O Process Safety Management Employee Participation Implementation Plan.
- Ensure ready access to process hazard analyses and all other PSM information at all times.
- Provide input to the development and implementation of safe work practices including, but not limited to, lockout/tagout, confined space entry; excavation; hot work; access control, etc.

Site Safety Specialist and Associate

- Provide input to the development and implementation of safe work practices including, but not limited to, lockout/tagout, confined space entry; excavation; hot work; access control, etc.
- Provide safety and health oversight and support of site operations and maintenance, including at least a biweekly inspection.
- Assist Construction Management with safety and health oversight and orientation of subcontractors.

Site Training/Continuous Quality Improvement

- Maintain training records that fulfill the requirements in 7.2.5.

New Orleans Safety and Health

- During annual Organizational Assessments (OA), use a representative sample to verify that subcontract employees have been trained as certified to perform their work safely.
- During annual OAs use a representative sample to verify that M&O employees have been trained as required to operate or maintain process equipment.
- Establish and implement written procedures for compliance with PSM requirements.
- Establish and implement written procedures for hot work and other safety practices and controls.
- During audits, verify that the requirements of this section are being met.
- Establish and implement incident investigation procedures.

- Investigate any accident or incident that could have caused a catastrophic release as soon as possible and at least within 48 hours of occurrence.
- Participate as a member of an accident investigation team meeting the requirements in 7.2.11.b.
- Prepare an accident report meeting the requirements in 7.2.11.c.
- Establish system(s) to document and track corrective actions resulting from an incident/accident investigation.
- Retain copies of the investigation report for at least five years.
- Assess site compliance with the PSM standard every three years.
- Certify that M&O procedures and policies are adequately compliant or initiate corrective action.
- Report PSM assessment findings to M&O management.
- Document and track to closure PSM assessment findings.
- Retain the two most recent PSM assessment reports, at minimum.
- Write the initial edition of the employee participation plan and roadmap to PSM documents.

Contractors and Subcontractors

- Certify that each subcontractor employee is trained as needed to perform his/her work safely and provide supporting documentation if requested
- Document that subcontractor employees have received and understood training in the known hazards related to his/her job, the process, and emergency action plans.
- Maintain employee training records meeting the requirements of (1910.119(h))
- Ensure that subcontractor employees follow all SPR safety policies and procedures.
- Advise M&O of any unique hazards presented by the subcontractor's work.
- Comply with the requirements of 1926.64 for any additional requirements not covered in this section.

Construction Management/Safety Project Management

- Evaluate information regarding the subcontractor's safety performance and programs when selecting a potential subcontractor.
- Verify that subcontractor employees have been informed of the potential process hazards for any system on which they will be working or within close proximity to their workspace.
- Verify that subcontractor employees have been briefed on site specific emergency action plans.
- Ensure that site access by subcontract employees is controlled.
- Require all subcontractors, their employees, and lower tier subcontractors working at an SPR facility to follow the safety work practices established by M&O, or their own programs if approved by M&O S&H.

8. ASBESTOS AWARENESS AND HANDLING PROCEDURES

PURPOSE

This section provides procedures for identifying and properly handling materials containing asbestos.

SCOPE

This section includes the following major sections:

- Introduction
- Procedure
- Responsibilities

APPLICATION

This section applies to work activities and employees under the control of the M&O and its subcontractors.

8.1. INTRODUCTION

Although the SPR no longer uses products containing asbestos, there are still some materials containing asbestos on site such as floor and ceiling tile, mastic, building materials, brake shoes, and gaskets. These procedures apply to Operations, Maintenance, Construction Management and subcontractor personnel involved in the removal and replacement of these materials, as well as to property personnel who may store or handle asbestos containing materials prior to disposal, until materials of this kind are no longer in use at SPR sites.

8.2. PROCEDURE

The Site Safety Specialist will evaluate material suspected of containing asbestos based on physical characteristics and attributes. The Site Safety Specialist will examine the material in question based on 29CFR 1910.1001 and will advise the New Orleans industrial hygienist that the material requires evaluation. The Asbestos Building Inspector will determine the size and amount of the suspected asbestos material to be obtained, obtain the sample, and send it to an AIHA-accredited laboratory for analysis/identification. Based on results of the laboratory analysis, a CIH or an Asbestos Project Designer will notify the ES&H Manager, or the Site Safety Specialist and provide directions for proper handling, removal, encapsulation, labeling, and similar actions, according to the nature and purpose of the asbestos-containing material. All activities involving materials suspected of containing asbestos will stop until proper identification is confirmed.

Projects which could disturb suspected material that may contain asbestos should be identified in the scope of work. If need be, characterization and testing shall be performed prior to AFC release. Arrangements for determination and testing are the responsibility of the engineer of record. Determination and testing shall be performed by an Asbestos Building Inspector (contact NO S&H for this task).

8.3. RESPONSIBILITIES

Site Director

- Ensure full compliance with this procedure and the following health requirements.
- Ensure that site personnel who may be exposed to asbestos materials while performing their job functions receive job training at the time of initial assignment. The training shall cover the health effects associated with asbestos exposure; the relationship between smoking and exposure to asbestos in producing lung cancer; the quantity, location, manner of use, release, and storage of asbestos; the specific nature of jobs that have the potential for exposure to asbestos; the engineering controls and work practices associated with the employee's job assignment; the specific procedures implemented to protect employees from exposure to asbestos; and the purpose, proper use, and limitations of respirators and protective clothing.
- Ensure that site personnel exposed to asbestos materials while performing their job functions receive an annual physical examination that will include a chest roentgenogram (posterior-anterior 14 x 14 inches); a complete physical examination of all systems with emphasis on the respiratory, cardiovascular, and digestive systems; and pulmonary function tests to include forced vital capacity and forced expiratory volume at 1 second.
- Request air monitoring of work areas when it is suspected that airborne concentrations of asbestos fibers may be present. Remove personnel from the area until the determination is made.
- Ensure that site personnel and subcontractor personnel are informed of the location of any asbestos-containing material.

Human Capital

- Ensure that an annual physical examination program for site personnel exposed to asbestos during their job functions includes examination requirements described above.

Site Safety Specialist

- In coordination with the New Orleans industrial hygienist, provide assistance as requested to the site in the identification of suspect asbestos materials.

Site ES&H Manager

- In coordination with New Orleans environmental personnel, provide assistance as requested to the sites in the proper sampling, analysis, labeling, manifesting, transportation, and disposal techniques and regulatory requirements.

New Orleans Industrial Hygiene

- Provide an asbestos training script for use by the site in the event of an exposure.
- Provide the initial Asbestos Management Plan for each site.
- Provide protocol for specific asbestos sampling to be performed.
- Arrange for asbestos samples to be analyzed and provide the lab report and a brief summary to the site ES&H Manager and the Site Safety Specialist.

- Provide/review protocol for removing/containing asbestos material and its disposal. (CIH or Asbestos Project Designer).

SMTR

- Assure that subcontractors' plans for proper handling and abatement of asbestos are properly reviewed and implemented prior to start of activities involving asbestos.
- Ensure the subcontractor follows 29CFR1926.1101 (Asbestos).
- Coordinate with Site ES&H Manager to ensure the asbestos waste generated by sub-contractors is properly managed.

9. BLOODBORNE PATHOGENS EXPOSURE CONTROL PLAN

PURPOSE

To reduce the first aid/ cardiopulmonary resuscitation (CPR) responder's risk of infection by minimizing or eliminating occupational exposure to blood and other potentially infectious materials (OPIM) in accordance with the provisions of OSHA 29CFR1910.1030, Bloodborne Pathogens.

SCOPE

This section includes the following major sections:

- Review of Plan
- Exposure Control
- Methods of Compliance
- Personal Protective Equipment for Occupational Exposure
- Housekeeping
- Regulated Waste
- Hepatitis B Vaccination and Post-Exposure Evaluation and Follow-up
- Medical Recordkeeping
- Hazard Communication for Exposure Hazards
- Information and Training
- Record Availability
- Transfer of Records
- First Aid Injury and Bloodborne Pathogens Exposure Incident Log
- Responsibilities

APPLICATION

This section applies to work activities and employees under the control of the M&O and its subcontractors.

PURPOSE

The purpose of the Bloodborne Pathogens Exposure Control Plan is to reduce the first aid/ cardiopulmonary resuscitation (CPR) responder's risk of infection by minimizing or eliminating occupational exposure to blood and other potentially infectious materials (OPIM) in accordance with the provisions of OSHA 29CFR1910.1030, Bloodborne Pathogens.

9.1. REVIEW OF PLAN

This plan shall be reviewed and updated at least annually, or whenever necessary, to reflect:

- new or modified tasks and procedures that affect occupational exposure, and
- changes in technology that eliminate or reduce occupational exposure.

The review must document consideration and implementation of appropriate commercially available and effective safer medical devices designed to eliminate or minimize exposure.

This plan shall be made available to the Assistant Secretary of Labor for OSHA and the Director of NIOSH or their designated representatives upon request.

9.2. EXPOSURE CONTROL

In developing this exposure control plan, M&O evaluated work tasks associated with M&O activities to determine which tasks could reasonably be anticipated to result in exposure to bloodborne pathogens. In this process, the M&O solicited input from non-managerial employees who are potentially exposed to bloodborne pathogens in the identification, evaluation, and selection of effective engineering and work practice controls.

9.2.1. Categorical Distinctions

The M&O uses the following occupational exposure categories to determine levels of potential exposure.

9.2.1.1. Category I Classifications

Category I – Tasks that generally do not involve exposure to blood, body fluids, or tissues, even though employment may require performing planned or unplanned exposure to blood or bodily fluids. The normal work routine involves no exposure to blood, body fluids, or tissues, but exposure may be required as a condition of employment.

All employees who have attended the U.S. Department of Transportation (DOT) First Responder course, American Red Cross (ARC) or American Heart Association (AHA) or equivalent First Aid courses, ARC or AHA Cardiopulmonary Resuscitation (CPR) or equivalent courses are considered to be Category I.

Category I Employees:

- Emergency Response Team (ERT) members
- Boat operators,
- Employees working at remote locations:
  - Texas 22 Pipeline
  - Lake Charles Meter Station,
  - West Hackberry Raw Water Intake Structure (RWIS),
  - Big Hill Raw Water Intake Structure (RWIS),
  - Personnel performing off-site Pipeline Maintenance,
  - BC Brine Disposal Wells
- Electrical (I&E),
- Instrumentation and control (I&C) technicians,
- Site Safety Specialists,
- Protective Force.

9.2.1.2. Category II Classifications

Category II – Tasks that do not require personal protective equipment (PPE) and include normal work routines with no exposure to blood, body fluids, or tissues (although situations can be imagined or hypothesized under which anyone, anywhere, might encounter potential exposure to body fluids). Category II employees trained in CPR/AED that are non-ERT shall only use "hands-only" techniques.

All Remaining employees not classified in Category I are considered to be Category II. Examples of these employees include:

- Field Operations,
- Maintenance personnel,
- Office personnel.

9.2.1.3. Tasks Involving Potential Exposure

First aid/CPR tasks that involve potential occupational exposure to blood or OPIM include, but are not limited to:

- Controlling patient bleeding,
- Performing CPR,
- Performing rescue breathing,
- Performing first aid for burns, bites, and stings, and assisting choking victims,
- Treatment for seizures and eye injuries.
- Routine housekeeping of restrooms and trash

NOTE
Personnel that are non-ERT shall perform "hands-only" CPR to prevent exposure to blood or OPIM.

9.3. METHODS OF COMPLIANCE

Universal precautions shall be observed to prevent contact with blood or other potentially infectious materials. Under circumstances in which differentiation between body fluid types is difficult or impossible, all body fluids shall be considered other potentially infectious materials (OPIM) or possible bloodborne pathogens and universal precautions shall be used.

9.3.1. Trauma Bags (ERT/Proforce)

Medical trauma bags are located in each Security vehicle (except Elmwood Complex security vehicles and K9 vehicles), the fire truck, in the First Aid Room, in the entry portal and one each in the 850 and 900 buildings. Each medical trauma bag shall be equipped with the following minimum personal protective equipment:

- Ten pairs of nitrile surgical-type gloves,

- One chemical splash goggle,
- One mouth-to-mouth CPR barrier,
- Three antiseptic towelettes,
- One red "Biohazard" disposable bag.

9.3.2. Engineering and Work Practice Controls

Engineering and work practice controls are used to eliminate or minimize employee exposure. Engineering controls are examined and maintained or replaced on a regular schedule to ensure their effectiveness. Where occupational exposure remains after instituting these controls, personal protective equipment must be used.

In addition, the M&O protects their employees from the hazards of bloodborne pathogens through the use of universal precautions, work practice controls, adequate housekeeping, and safe, proper handling of regulated waste. These controls include the following:

- The M&O provides hand-washing facilities that are readily accessible to employees. When hand-washing facilities are not feasible, either an antiseptic hand cleanser with clean cloth/paper towels or antiseptic towelettes will be provided. When antiseptic hand cleansers or towelettes are used, hands should be washed with soap and running water as soon as feasible. Employees shall wash their hands immediately or as soon as feasible after removal of gloves and/or other personal protective equipment (PPE).
- Employees shall wash hands and any other exposed skin with soap and water, or flush mucous membranes with water immediately, or as soon as feasible, following contact with blood or other potentially infectious materials (OPIM).
- Contaminated needles or other sharps shall not be bent, recapped, or removed. Shearing or breaking of contaminated needles is prohibited. Each site must have a sharps disposal box.
- Surgical gloves, bandages, or other personal protective equipment that come in contact with blood or body fluid must be placed in a red “Biohazard” bag for disposal; a bag is included in each trauma kit.
- Eating, drinking, smoking, applying cosmetics or lip balm, and handling contact lenses are prohibited in work areas where there is a reasonable likelihood of occupational exposure.
- Blood or other potentially infectious materials shall not be kept in refrigerators or freezers, and food and drink shall not be kept on countertops or bench tops where blood or other potentially infectious materials are present.
- All procedures involving blood or other potentially infectious materials will be performed in such a manner as to minimize splashing, spraying, spattering, and generation of droplets of these substances.
- Specimens of blood or other potentially infectious materials must be placed in a leak-proof container during collection, handling, processing, storage, transport, or shipping. The container for storage, transport, or shipping will be properly labeled or color-coded as specified in this plan.
- If outside contamination of the primary container occurs, the primary container will be placed within a second container that prevents leakage during handling, processing, storage, transport, or shipping and is labeled or color-coded as specified in this plan.

- If the specimen could puncture the primary container, the primary container will be placed within a secondary container that is puncture-resistant and properly labeled or color-coded as specified in this plan.
- Equipment that may become contaminated with blood or other potentially infectious materials will be examined prior to servicing or shipping, and it will be decontaminated as necessary. A readily observable label will be attached to the equipment indicating the potential for remaining contamination. The M&O will convey this information to all affected employees, the servicing representative, and/or the manufacturer, as appropriate, and prior to handling, servicing, or shipping the equipment so appropriate precautions can be taken.
- At the storage sites, first aid/CPR responders will use 5.25 percent sodium hypochlorite (household bleach) diluted to 1:10 with water to clean and decontaminate equipment, environmental areas, and working surfaces that have come in contact with blood or other contaminants. In New Orleans, a cleaning contractor cleans contaminated areas.

9.4. PERSONAL PROTECTIVE EQUIPMENT FOR OCCUPATIONAL EXPOSURE

9.4.1. Procedures

When there is an occupational exposure, the M&O provides appropriate personal protective equipment (PPE) such as, but not limited to, gloves, face shields or masks, eye protection, resuscitation bags, pocket masks, or other ventilation devices. Each Security Police Officer also carries a bloodborne exposure prevention kit. PPE for bloodborne pathogens will be considered "appropriate" only if it does not permit blood or other potentially infectious materials to pass through to or reach the employee's work clothes, street clothes, undergarments, skin, eyes, mouth, or other mucous membranes under normal conditions of use and for the duration of time that the protective equipment is used.

- Employees shall use appropriate personal protective equipment unless the M&O shows that the employee temporarily and briefly declined to use personal protective equipment; this may happen only under rare and extraordinary circumstances, such as when the employee's professional judgment regarding a specific situation is that use of PPE would prevent the delivery of health care or public safety services or would pose an increased safety hazard to the worker or co-workers. When the employee makes this judgment, the circumstances shall be investigated and documented in order to determine whether changes can be instituted to prevent such occurrences in the future.
- Surgical gloves and eye protection will be worn when treating any personal injury or emergency to provide an additional barrier to blood and body fluids.
- The M&O ensures that appropriate personal protective equipment in the appropriate sizes is readily accessible at the worksite or is issued to the employees. Hypoallergenic gloves, glove liners, powderless gloves, or other similar alternatives are readily accessible to those employees who are allergic to the gloves normally provided.

NOTE
Any garment penetrated by blood or other infectious material will be removed as soon as possible. All PPE must be removed prior to leaving the site. Once removed, PPE will be placed in an appropriate place for storage, laundry, or repair. Disposable gloves must not be washed or reused.

9.4.2. Types of PPE for Exposure Prevention

The M&O cleans, launders, and disposes of PPE as required and outlined in this chapter. The M&O also repairs or replaces PPE as needed.

- Masks, Eye Protection, and Face Shields: Masks in combination with other eye protection, such as goggles or glasses with side-shield or face shields, shall be worn whenever splashes spatter, or droplets of blood or other potentially infectious material may be generated and eye, nose, or mouth contamination could reasonably be expected.
- Gowns, Aprons, and Other Protective Body Clothing: Appropriate protective clothing shall be worn in occupational exposure situations. The type of clothing will be determined by the potential for exposure.
- CPR Barriers: To protect the CPR rescuer from cross-contamination with the victim's fluid, mouth-to-mouth CPR barriers will be used.

9.5. HOUSEKEEPING

- The M&O shall ensure that the worksite is maintained in a clean and sanitary condition by implementing a schedule for cleaning based upon the use of the facilities.
- All equipment and environmental and working surfaces will be cleaned and decontaminated after contact with blood or other potentially infectious materials.
- Contaminated work surfaces will be cleaned and decontaminated with an appropriate disinfectant after any spill of blood or other potentially infectious materials as soon as possible following the event.
- Broken glassware which may be contaminated must not be picked up directly with the hands. It will be cleaned up using mechanical means, such as a brush and dust pan, tongs, or forceps.

9.6. REGULATED WASTE

9.6.1. Contaminated Needles Discarding and Containment

- Contaminated needles shall be discarded immediately or as soon as feasible in containers that are closable, puncture resistant, leak-proof on sides and bottom, and labeled or color-coded to indicate contents.
- During use, containers for contaminated needles shall be easily accessible to personnel and located as close as is feasible to the immediate area where needles are used or can be reasonably anticipated to be found.
- Sharps containers shall be maintained upright throughout use, replaced routinely, and not be allowed to overfill.
- When moving containers of contaminated sharps from the area of use, the containers will be closed immediately prior to removal or replacement and placed in a secondary container if leakage is possible. The second container will be closable, constructed to contain all contents and prevent leakage during handling, storage, transport, or shipping; it will be labeled or color-coded in accordance with OSHA 1910.1030.

- Reusable containers will not be opened, emptied, or cleaned manually or in any other manner that would expose employees to the risk of sharps injury.

9.6.2. Other Regulated Waste Containment

- Regulated waste shall be placed in containers that are closable and labeled or color-coded. Biohazard bags are available at each site and a contractor provides appropriate packaging for disposal upon call-out.
- Containers shall be closed prior to removal to prevent spillage or protrusion of contents during handling, storage, transport, or shipping.
- If outside contamination of the regulated waste container occurs, it must be placed in a second container. The second container must be:
  - closable,
  - constructed to contain all contents and prevent leakage of fluids during handling, storage, transport, or shipping,
  - labeled or color-coded as required by 29 CFR 1910.1030(g)(1), and
  - closed prior to removal to prevent spillage or protrusion of contents during handling, storage, transport, or shipping.
- Disposal of all regulated waste will be in accordance with applicable regulations of the United States, individual States and Territories, and political subdivisions within States and Territories.

9.6.3. Laundry

- Contaminated laundry will be handled as little as possible and must be cleaned by a facility that follows Universal Precautions. It will be bagged or containerized at the location where it was used, and it will not be sorted or rinsed in the location of use.
- Contaminated laundry will be placed and transported in bags or containers labeled or color-coded in a way that permits all employees to recognize the containers as requiring compliance with Universal Precautions.
- Whenever contaminated laundry is wet and presents a reasonable likelihood of soak-through of or leakage from the bag or container, the laundry will be placed and transported in bags or containers that prevent soak-through and/or leakage of fluids to the exterior.
- The M&O shall ensure that employees who have contact with contaminated laundry wear protective gloves and other appropriate PPE.
- The M&O will place the contaminated laundry in bags or containers that are labeled or color-coded.

9.7. HEPATITIS B VACCINATION AND POST-EXPOSURE EVALUATION AND FOLLOW-UP

9.7.1. Hepatitis B Vaccination General Information

- The M&O shall make available the hepatitis B vaccine and vaccination series to all employees who have the potential for occupational exposure. The M&O will also offer post-exposure evaluation and follow-up to all employees who have experienced an exposure incident.

- The M&O will ensure that all medical evaluations are:
  - conducted at an accredited laboratory,
  - made available to the employee at no cost and at a reasonable time and place,
  - performed by or under the supervision of a licensed physician or other licensed healthcare professional, and
  - provided according to recommendations of the U.S. Public Health Service current at the time these evaluations and procedures take place.

NOTE
This includes the hepatitis B vaccine and vaccine series, as well as post-exposure evaluation and follow-up, including prophylaxis.

- The hepatitis B vaccination will be made available after the employee has received required training and within 10 working days of initial assignment to all employees who have occupational exposure unless the employee has previously received the complete hepatitis B vaccination series, antibody testing has revealed that the employee is immune, or the vaccine is contraindicated for medical reasons.
- The M&O shall not make participation in a prescreening program a prerequisite for receiving hepatitis B vaccination.
- If the employee initially declines the hepatitis B vaccination but, while still covered under the standard, decides to accept the vaccination at a later date, the M&O will make the hepatitis B vaccination available at that time.
- The M&O requires that employees who decline the hepatitis B vaccination offered by the M&O sign the hepatitis vaccination declination statement. Declination does not have to be made each year and is in place until and unless the employee decides to accept the vaccination, however the vaccination will be made available to them each year during refresher training.
- If a routine booster dose(s) of hepatitis B vaccine is recommended by the U.S. Public Health Service at a future date, such booster dose(s) will be made available.

9.7.2. Post-Exposure Evaluation and Follow-up

The first aid/CPR responder will report any first aid incident involving the presence of blood or other bodily fluid, which they may have been exposed to, immediately to the control room and his or her supervisor.

Following a report of an exposure incident, the M&O will immediately make available to the exposed employee a confidential medical evaluation and follow-up, including at least the following elements:

- Documentation of the route(s) of exposure and the circumstances under which the exposure incident occurred,
- Identification and documentation of the source individual, unless the M&O can establish that identification is infeasible or prohibited by state or local law,
- The source individual's blood shall be tested as soon as feasible and, after consent is obtained, in order to determine HBV and HIV infectivity.

- If consent is not obtained, the M&O shall establish that legally required consent cannot be obtained.
- When the source individual's consent is not required by law, the source individual's blood, if available, will be tested and the results documented.
- When the source individual is already known to be infected with HBV or HIV, testing need not be repeated.

Results of the source individual's testing will be made available to the exposed employee, and the employee shall be informed of applicable laws and regulations concerning disclosure of the identity and infectious status of the source individual.

The exposed employee's blood shall be collected as soon as feasible and tested after consent is obtained.

If the employee consents to baseline blood collection, but does not give consent at that time for HIV serologic testing, the sample shall be preserved for at least 90 days. If, within 90 days of the exposure incident, the employee elects to have the baseline sample tested, such testing shall be done as soon as feasible.

9.7.3. Post-Exposure Prophylaxis, Counseling; and Evaluation of Reported Illnesses

Information Provided to the Healthcare Professional responsible for the employee's hepatitis B vaccination:

- A copy of 29 CFR 1910.1030.
- A description of the exposed employee's duties as they relate to the exposure incident.
- Documentation of the route(s) of exposure and circumstances under which exposure occurred.
- Results of the source individual's blood testing, if available.
- All medical records relevant to the appropriate treatment of the employee (including vaccination status), which are the M&O's responsibility to maintain.

Healthcare Professional's Written Opinion

- The M&O shall obtain and provide the employee with a copy of the evaluating healthcare professional's written opinion within 15 days of the completion of the evaluation.
- The healthcare professional's written opinion for hepatitis B vaccination will be limited to whether hepatitis B vaccination is indicated for an employee, and if the employee has received such vaccination.
- The healthcare professional's written opinion for post-exposure evaluation and follow-up will be limited to the following information:
  - the employee has been informed of the results of the evaluation and
  - the employee has been told about any medical conditions resulting from exposure to blood or other potentially infectious materials that require further evaluation or treatment.

All other findings or diagnoses will remain confidential and will not be included in the written report.

9.8. MEDICAL RECORDKEEPING

9.8.1. Medical Records

Medical records will be established for each first aid/CPR responder exposure incident. The record will include:

- the name and of the employee,
- a copy of the employee's hepatitis B vaccination status, including dates of all hepatitis B vaccinations and any medical records relative to the employee's ability to receive the vaccination,
- a copy of all results of examinations, medical testing, follow-up procedures, the healthcare professional's written opinion, and a copy of the information provided to the healthcare professional, and
- a copy of the declination form.

Human Capital will keep the medical record confidential and will not disclose or report the results without the employee's express written consent to any person within or outside the workplace.

9.9. HAZARD COMMUNICATION FOR EXPOSURE HAZARDS

9.9.1. Labels

Warning labels will be affixed to containers of regulated waste containing blood or other potentially infectious material, as well as to other containers used to store, transport, or ship blood or other potentially infectious materials.

- Labels required by this section must include a biohazard emblem.
- Labels shall be fluorescent orange or orange-red or predominantly so, with lettering.
- Labels shall be affixed as close as feasible to the container by string, wire, adhesive, or other method that prevents their loss or unintentional removal.
- Red bags or red containers may be substituted for labels. The M&O makes these available at each site.
- Labels required for contaminated equipment shall also state which portions of the equipment remain contaminated.
- Regulated waste that has been decontaminated need not be labeled or color-coded.

9.10. INFORMATION AND TRAINING

9.10.1. Information

Information covering the following topics will be given annually to first aid/CPR responders:

- The OSHA Standard for Bloodborne Pathogens, 1910.1030.
- Explanation on the modes of transmission and symptoms for bloodborne diseases.
- The Bloodborne Pathogen Exposure Control Plans and their location.

- Procedures that might cause exposure to blood or OPIM.
- Control methods.
- PPE requirements and the basis of selection of the PPE.
- Explanation of the hepatitis B vaccine and post-exposure follow-up programs.

9.10.2. Training

Each Category I employee with the potential for occupational exposure shall be trained in accordance with the requirements of this section. Training shall be provided at no cost to the employee and during working hours.

Training will be provided at the time of initial assignment to tasks where occupational exposure may take place and at least annually thereafter.

Annual training for all employees shall be provided within one year of their previous training.

Additional training will be provided when changes (such as modification of tasks or procedures, or institution of new tasks or procedures) affect the employee's occupational exposure. The additional training may be limited to addressing the new exposures created.

Material appropriate in content and vocabulary to educational level, literacy, and language of employees shall be used.

The training program shall contain at a minimum the following elements:

- An accessible copy of the regulatory text of the OSHA Standard for Bloodborne Pathogens, 1910.1030, and an explanation of its contents.
- A general explanation of the epidemiology and symptoms of bloodborne diseases.
- An explanation of the modes of transmission of bloodborne pathogens.
- An explanation of the M&O exposure control plan and the means by which the employee can obtain a copy of the written plan.
- An explanation of the methods for recognizing tasks and other activities that may involve exposure to blood and other potentially infectious materials.
- An explanation of the use and limitations of methods used to prevent or reduce exposure, including appropriate engineering controls, work practices, and personal protective equipment.
- Information on the types, proper use, location, removal, handling, decontamination, and disposal of personal protective equipment.
- An explanation of the basis for selection of personal protective equipment.
- Information on the hepatitis B vaccine, including information on its efficacy, safety, method of administration, the benefits of being vaccinated, that the vaccine and vaccination will be offered free of charge, and that if an employee initially declines the vaccination, he can at any time request it.

- Information on the appropriate actions to take and persons to contact in an emergency involving blood or other potentially infectious materials.
- An explanation of the procedure to follow if an exposure incident occurs, including the method of reporting the incident and the medical follow-up that will be made available.
- Information on the post-exposure evaluation and follow-up that the M&O is required to provide for the employee following an exposure incident.
- An explanation of the required signs and labels and/or color coding.
- An opportunity for interactive questions and answers with the person conducting the training session.

The person conducting the training will be knowledgeable in the subject matter covered by training program as it relates to the specific workplace.

9.10.3. Training Records

Training records are stored in SAP and include the following information:

- dates of the training sessions,
- contents or a summary of the training sessions,
- names of persons conducting the training, and
- names and job titles of all persons attending the training sessions.

Training records will be maintained for 3 years from the date training occurred.

9.11. RECORD AVAILABILITY

The M&O will ensure that all records required to be maintained are available upon request to the Assistant Secretary and the Director for examination and copying. Employee training records shall be provided upon request for examination and copying to employees, to employee representatives, to the Director, and to the Assistant Secretary. Employee medical records required by this paragraph shall be provided upon request for examination and copying to the subject employee, to anyone having written consent of the subject employee, to the Director, and to the Assistant Secretary.

9.12. TRANSFER OF RECORDS

The M&O shall comply with the requirements involving transfer of records set forth in 29 CFR 1910.1020(h).

9.13. FIRST AID INJURY AND BLOODBORNE PATHOGENS EXPOSURE INCIDENT LOG

The M&O will establish and maintain a First Aid Injury and Bloodborne Pathogens Exposure Incident Log, located in SharePoint, (OSF91-0013) for recording injuries from contaminated sharps. This information will be recorded in a way that protects the confidentiality of the injured employee, and will include at minimum:

- the type and brand of device involved in the incident,

- the department or work area where the exposure incident occurred, and
- an explanation of how the incident occurred.
- The log must be maintained for five (5) years from the year that the log covers.

9.14. RESPONSIBILITIES

Site Director

- Determine if an exposure incident occurred for each first aid/CPR incident involving blood or OPIM. Send documentation to the Safety Department.
- Ensure the site Worker's Compensation representative maintains a worker's compensation file for each exposure incident.
- Maintain the First Aid Injury and Bloodborne Pathogens Exposure Incident Log. Document exposure incidents on the Supervisor's Report of Injury/Illness, Unplanned Employee Exposure, or Near Miss, and the DOE 5484.3 Individual Accident/Incident Report.
- Ensure that all employees, whether or not they are covered by the bloodborne pathogens standard, record all work-related needle sticks and cuts from sharp objects contaminated with another person's blood or OPIM on the 300 Log as an injury.

Operations

- Maintain PPE inventory listed in 9.3.1.a-e for each first aid kit.
- Modify operations requirement cards for first aid kits to ensure PPE is stored in or near each first aid kit and PPE is replaced as necessary for each first aid kit.
- Maintain a supply of 1-gallon containers of household bleach.

Supervisors

- Ensure that employees are aware of the location of the plan and provide a hard copy if requested within 15 working days.
- Notify Site Safety Specialist of reported exposures.
- Provide Supervisor’s First Report of Injury/Incident for your employees as needed.

Category I First Aid/CPR Responders

- Attend Bloodborne Pathogens training course annually.
- Accept or decline hepatitis B vaccination. If an individual declines, the hepatitis B Vaccination Declination form must be signed. The form need only be signed once and the employee may elect at any time to rescind declination and receive the vaccine.
- Use PPE and practice universal precautions when providing treatment for a personal injury or emergency.
- Disinfect and clean equipment and surfaces as necessary using a 10 percent household bleach solution.
- Place contaminated gloves, bandages, and similar items in biohazard infectious waste containers.

- Notify your supervisor following an exposure incident involving blood or OPIM as soon as possible after exposure.

Site Safety Specialist

- Serve as a technical resource for PPE and work practices/ universal precautions.
- Investigate first aid/CPR responder's exposure incidents.
- Assist site management in determining if an exposure incident occurred for each first aid/CPR incident involving blood or OPIM.
- Following an exposure incident, determine if the first aid/CPR responder has received the hepatitis B vaccination series. If the responder declined, reoffer the hepatitis B vaccination series. Send hepatitis B vaccination declination forms to Site Medical Services Focal Point.
- Following an exposure incident, determine OSHA 300 recordability and ensure section 20 of the 5484.3 form is annotated to reflect the exposure.
- Ensure the disposal waste subcontractor is made aware of any infectious wastes to be picked up (for example, contaminated gloves, bandages, or disposable PPE) at the sites.
- Provide training on Bloodborne Pathogens upon request.
- Maintain the First Aid Injury and Bloodborne Pathogens Exposure Incident Log. Records for the last 5 years will be retained on site. Older records will be forwarded to New Orleans for retention.

Site Training Coordinator

- Coordinate locations and times for training sessions

New Orleans Safety

- Review and update as necessary the course package and material for Bloodborne Pathogens.
- Annually review and update as necessary the Bloodborne Pathogen Exposure Control Plan.
- Serve as a technical resource for PPE and work practices/ universal precautions.
- Assist site management in determining if an exposure incident occurred for each first aid/CPR incident involving blood or OPIM.
- Solicit information from employees to improve effective engineering and controls to protect them

New Orleans Environmental

- Approve a medical waste disposer and post to the SPR Qualified Disposers, Transporters, and Recyclers List.

Human Capital - Medical Services/Site Medical Services Focal Point

- Set up and coordinate the pre-exposure Hepatitis B Vaccination Program with licensed healthcare professionals. The licensed healthcare professional will provide the M&O contractor with:
    - complete hepatitis vaccination series according to USPHS recommendations to all first aid/CPR responders,

  - medical records in accordance with this procedure, and
  - medical evaluation, collection, and testing of blood for HBV and HIV serological status; counseling; treatment for first aid/CPR responders following an exposure incident in accordance with this procedure.
- Provide information to healthcare professionals in accordance with this procedure.
- Maintain the hepatitis B vaccination declination forms.
- Ensure the employee is notified of the dates of the second and third series of the vaccination shots.
- Maintain records as outlined in this procedure.

10. CONFINED SPACE ENTRY PROGRAM

PURPOSE

The Confined Space Entry Program establishes a written means for the proper preparation, issuance, and implementation of all permits (Safe Work Permit, entry permit, confined space entry permit, etc.) associated with confined space entry and work. The requirements described are compliant with OSHA regulations for confined space activities.

SCOPE

This section includes the following major topics:

- General
- Training Requirements
- Program Requirements
- Safe Work Practices
- Atmospheric Testing
- Lighting
- Electrical Equipment
- Compressed Gas/Flame Producing Equipment
- Ventilation Equipment
- Safe Retrieval Equipment
- Harness Systems
- Rescue Requirements
- Subcontract Responsibilities
- Responsibilities

APPLICATION

This section applies to work activities and employees under the control of the M&O and its subcontractors.

NOTE
Specific safety requirements for excavation activities are covered by Section 19, Excavations and Trenching.

DEFINITIONS

Atmosphere Tester – A person trained in the use and interpretation of each instrument used and authorized by the project manager to perform confined space and hot work atmospheric testing.

Attendant – An individual stationed outside one or more permit spaces who assesses the status of authorized entrants and who must perform the duties specified.

Authorized Entrant – An employee who is authorized by the entry supervisor to enter a permit space.

Confined Space - A space that is large enough and so configured that an employee can bodily enter it, has limited or restricted means for entry and exit, and is not designed for continuous employee occupancy.

Confined Space Program Coordinator (CSPC) - The CSPC is the final authority for identification, classification, and reclassification of confined spaces.

Confined Space Rescue Team (CSRT) - The personnel qualified and trained to rescue victims from any confined space during an emergency situation.

Engulfment - The surrounding and effective capture of a person by a liquid or finely divided (flowable) solid substance that can be aspirated to cause death by filling or plugging the respiratory system or that can exert enough force on the body to cause death by strangulation, constriction, crushing, or suffocation.

Entry - The action by which any part of a person passes through an opening into a PRCS. Entry includes ensuing work activities in that space and is considered to have occurred as soon as any part of the entrant's body breaks the plane of an opening into the space, whether or not such action is intentional or any work activities are actually performed in the space.

Entry Rescue - Actions taken when a rescue service enters a confined space to rescue one or more employees.

Entry Supervisor - The qualified person responsible for determining if acceptable entry conditions are present at a confined space where entry is planned, for authorizing entry and overseeing entry operations, and for terminating entry as required by this section. An entry supervisor also may serve as an attendant as long as that person is trained and equipped as required by this section for each role they fill. Also, the duties of entry supervisor may be passed from one entry supervisor to another during the course of an entry operation.

Hazardous Atmosphere - An atmosphere that may expose employees to the risk of death, incapacitation, impairment of ability to self-rescue (that is, escape unaided from a permit space), injury, or acute illness from one or more of the following causes: (1) Flammable gas, vapor, or mist in excess of 5 percent of its lower flammable limit (LFL); (2) Airborne combustible dust at a concentration that meets or exceeds its LFL; (3) Atmospheric oxygen concentration below 19.5 percent or above 23.5 percent; (4) Atmospheric concentration of any substance for which a dose or a permissible exposure limit could result in employee exposure in excess of its dose or permissible exposure limit; (5) Any other atmospheric condition that is immediately dangerous to life or health.

Lower Flammable Limit (LFL) or Lower Explosive Limit (LEL) - The minimum concentration of a substance in air needed for an ignition source to cause a flame or explosion.

Monitoring - The process used to identify and evaluate the hazards after an authorized entrant enters the space. This is a process of checking for changes that is performed in a periodic or continuous manner after the completion of the initial testing or evaluation of that space.

Non-entry rescue - When a rescue team, or the attendant, retrieves employees in a permit space without entering the permit space.

Non Permit Confined Spaces (NPCS) - A space, which, by configuration, meets the definition of a confined space but which, after evaluation is unlikely to have potential hazards or has the hazards eliminated by engineering controls.

Permit Required Confined Spaces (PRCS) - A confined space, which after evaluation, is found to have one or more of the following characteristics: (1) Contains or has a potential to contain a hazardous atmosphere; (2) Contains a material that has the potential for engulfing an entrant; (3) Has an internal configuration such that an entrant could be trapped or asphyxiated by inwardly converging walls or by a floor which slopes downward and tapers to a smaller cross-section; or (4) Contains any other recognized serious safety or health hazard. Because of the severity of the hazards, the confined space requires written authorization for entry.

Physical Hazard – as related to confined space entry, a physical hazard means an existing or potential hazard that can cause death or serious physical damage. Examples include, but are not limited to: explosives; mechanical, electrical, hydraulic and pneumatic energy; radiation; temperature extremes; engulfment; noise; and inwardly converging surfaces. Physical hazard also includes chemicals that can cause death or serious physical damage through skin or eye contact (rather than through inhalation).

Rescue - Retrieving, and providing medical assistance to, one or more entrants who are in a permit space.

Retrieval System - The equipment (including a retrieval line, chest or full body harness, wristlets or anklets, if appropriate, and a lifting device or anchor) used for non-entry rescue of persons from permit space.

10.1. GENERAL

The following types of confined spaces are found on the SPR:

- Pits
- Tanks
- Pipes
- Vaults

The SPR confined spaces listed below shall be considered as one of the four types (above):

- Storage tanks (open top, internal and external floating roof)
- All sumps and pits
- Utility vaults
- Process vessel pits and pit boilers
- Sewers and manholes
- Pig traps and piping
- Oil/water separator units
- Heat exchangers, ventilation or exhaust ducts

NOTE
This list is not exhaustive or all-inclusive. There may be other areas on the SPR that meet the confined space criteria or areas that become confined spaces temporarily due to the nature of the work being performed. The sites will need to ensure that all confined spaces are identified, clearly marked, and an accurate list of confined spaces is maintained.

Spaces with open tops such as diked areas, transformers, excavations, pits, or trenches, may also be considered as confined spaces.

Atmospheric testing will be used to devise and implement adequate control measures for the protection of authorized entrants to a confined space and to determine if acceptable entry conditions are present immediately prior to and during entry.

10.1.1. Preferred Methods of Reducing Risks to Personnel

Protection from exposure to hazards associated with confined spaces -- such as toxic contaminants, oxygen deficiency, flammable/explosive mixtures, and electrical and mechanical hazards -- shall be maintained with engineering controls and supplemented, whenever feasible or necessary, by accepted measures such as general or local ventilation or by redesigning job tasks so that entry into a confined space is unnecessary. The use of PPE as specified in the applicable section of the APM is required when in confined spaces.

10.1.2. Program Administration

- The site director will assign the responsibility and authority for the Confined Space Entry Program to a qualified individual.
- The individual designated as the Confined Space Program Coordinator (CSPC), will administer the program in close liaison with all involved departments.
- The Confined Space Entry Program shall make the procedures for confined space entry available for inspection by employees and their representatives.
- M&O S&H is responsible for the confined space program procedures.
- M&O Security and Emergency Preparedness establish the confined space rescue training requirements.

10.1.3. Program Evaluation

- The CSPC shall appraise the effectiveness of the Confined Space Entry Program annually and document the appraisal results, based on the evaluation of the permit system and performance of the individuals conducting the work.
  - The evaluation must include a review of all Confined Space Entry Debriefing Records.
  - New Orleans Safety will revise this section of the APM if annual CSPC evaluations reveal deficiencies in these procedures.
- Canceled permit attachments for confined space entries shall be retained for at least one year by the CSPC to facilitate review of the Confined Space Entry Program.

NOTE
Confined space air monitoring data is considered an exposure record if the space is entered and must be retained for 30 years per OSHA requirement.

10.2. TRAINING REQUIREMENTS

All designated confined space personnel (attendants, entrants, supervisors, atmospheric testing personnel, and emergency response personnel) shall be provided initial confined space training before assuming assigned duties requiring confined space entry and work. They will be trained further in the specific area of assignment that they will perform prior to performing the assigned task.

- Training Documentation for M&O personnel is tracked in SAP and stored in SharePoint.
- Training documentation is also required of subcontractors working on the site and of their confined space rescue team by the SMTR.
- Additional training may be required when conditions change or additional hazards are introduced.
- Confined space rescue team training requirements are found in ASL 5500.25, ERT Organization Manual, Section 7, Confined Space Rescue Team (CSRT), Sub-Section 7.2 Training Requirements: "The M&O CSRT and any subcontractor provided teams that will work on the SPR shall adhere to NFPA 1006, Standard for Technical Rescuer Professional Qualifications, and NFPA 1670, Standard on Operations and Training for Technical Search and Rescue Incidents."

10.3. PROGRAM REQUIREMENTS

10.3.1. Confined Space Inventory and Initial Baseline Evaluation

- Initially, a baseline inventory was conducted to assist personnel in knowing which areas are designated as PRCS and NPCS.
- The CSPC shall maintain an inventory of all identified confined spaces at the SPR site.
- The confined space list shall be readily available.
- The list shall be reviewed annually and revised if necessary.
- If new confined spaces are added or recognized the list should be revised at that time.

10.3.2. Confined Space Entry Classification

The CSPC will ensure that each confined space receives an initial (baseline) evaluation prior to an entry being performed, and that the space is designated as a PRCS based on consideration of both the severity and the likelihood of hazards. This evaluation must be performed by someone with knowledge of the use, configuration, and potential hazards associated with each space. The following tools may be used by CSPC to aid in the evaluation process.

- The Survey Form for Classifying and Documenting Confined Spaces (AAA9020.31) illustrates confined space entry from identification and classification of spaces to the requirements for safe accomplishment of an entry operation.
- The Permit Required Confined Space Decision Flow Chart is a decision tree for determining the requirements for the space being entered (PRCS, NPCS, and what must be done).
- The Confined Space Rescue Team Decision Flow Chart is to be used to establish whether a rescue team has to be stationed at the confined space location, and whether an operations or technician level rescue team is required.

- When a rescue team is required, the team shall be on standby at the location if there is a potential for an IDLH atmosphere. All other entries require response by rescue team within 15 minutes. Rescue equipment will be pre-staged near the entry of the confined space.

NOTE
The Confined Space Rescue Team Decision Flow Chart is "owned" by Emergency Preparedness; Fire Protection and Emergency Response.

10.3.3. Reclassification of Confined Spaces

NOTE
Per current DOE direction, **all** spaces on the SPR that meet the criteria of being classified as a confined space **shall** be treated as PRCS in the initial classification. The following procedures must be followed to reclassify a PRCS to a NPCS.

A space classified as a PRCS may only be reclassified as a NPCS if **ALL** of the following requirements are met:

- If the permit space poses no actual physical hazards or potential atmospheric hazards and if all hazards within the space are eliminated or isolated without entry into the space (unless the employer can demonstrate that doing so without entry is infeasible), the permit space may be reclassified as a non-permit confined space for as long as the non-atmospheric hazards remain eliminated or isolated.
- If it is necessary to enter the PRCS to eliminate hazards, such entry shall be performed under the regular PRCS entry procedures.
- Control of atmospheric hazards through forced air ventilation does not constitute elimination of the hazards.
- If hazards arise within a space that has been reclassified as a NPCS, all entrants shall exit immediately. The CSPC shall then re-evaluate the space and determine whether it must be reclassified as a PRCS.

The following steps are required to reclassify a permit confined space to a NPCS:

- The confined space entry supervisor shall ensure that the Permit Required Confined Space Reclassification Form (OSF00-0002) supports the reasoning to reclassify, is properly completed, and provided to the CSPC.
  - This form documents the basis for determining that all hazards in a space have been eliminated, through a certification that contains the date, the location of the space, and the signature of the person making the determination.
  - Pay attention to the elimination of hazards in the strict sense, both at the time of reclassification and during follow-on work activities.
- The entry supervisor shall ensure the space has been evaluated by the CSPC, the decision to reclassify the space has been approved by the CSPC, and that the CSPC has signed the form.

- Upon signature from the CSPC, concurrence is required by the Site Safety Specialist (or ES&H Manager) and the Site Director, which is noted by their signature at the bottom of the form.
- Once concurrence is acquired, the CSPC shall forward the completed form to the M&O S&H Director or ES&H APM). Reclassification may not proceed until a response is returned.
- After a response is received from the M&O S&H Director or ES&H APM, the site DOE SSR and/or Engineer shall be advised of the intended actions.
- The entry supervisor shall conduct a documented pre-entry briefing and the reclassification shall be made available to each employee prior to entering the space.

NOTE
Although reclassification to a NPCS may be recommended by the CSPC in accordance with the current procedure, that reclassification will only be implemented with concurrence of a Site Safety Specialist and Site Director (or their designees). Those not designated as CSPC may only reject proposals to reclassify from PRCS to NPCS, not vice versa. The process will continue to be transparent to local DOE, and should local DOE require support, it will be provided by the DOE ES&H Director.

10.3.4. Pre-entry Briefing

Prior to entry into a confined space all affected personnel will meet to discuss all known hazards, mitigation actions, testing, and rescue requirements. The appropriate safe work permit and all other required documentation such as rescue plans, confined space entry permit, reclassification forms, etc. will be prepared and reviewed at this meeting.

- Before initially entering a confined space, personnel shall receive a documented entry-specific briefing from the entry supervisor that answers or resolves all worker questions or concerns.
- At minimum, the briefing will include a review of:
  - potential hazards,
  - signs, symptoms, and consequences of exposure to the hazard,
  - proper use of PPE and controls,
  - the means of communication to be used within the space
  - actions to take in case of an emergency, and
  - the requirement to exit the space and re-evaluate if conditions change from those anticipated.
  - atmospheric monitoring requirements

10.3.5. Confined Space Entry Permit

- The Confined Space Entry Permit (OSF98-0002) form and instructions can be found in the Forms section in the S&H SharePoint site.
- The Confined Space Entry Permit must not be signed until all actions required for safe entry are completed.

- If a condition that is not allowed under the confined space entry permit arises in or near the permit space, work will stop, entrants will exit, the space will be reevaluated, and the entry will be delayed until the confined space entry permit conditions are restored and the entry supervisor receives a new entry permit with the approval of Operations. The new confined space entry permit will be attached to the Safe Work Permit.
- The confined space entry permit will be available along with the SWP at the location where the work is being performed.
  - Anyone checking the permitted conditions will initial at the bottom of the Safe Work Permit in the space provided. This could include SMTRs, supervisors, QA, management, etc.
  - Site Safety shall check confined space permits daily.
- The Confined Space Entry Log (AAA9020.657) shall be used for each confined space entry.
  - This log shall be used as a roster and attached to the confined space permit.
  - This log shall be maintained by the confined space attendant where the confined space is entered.
  - Upon completion of a confined space entry, the entry log shall be attached to the Confined Space Entry Permit.
- After the work is concluded and all entrants have exited, the authorizing supervisor will close the confined space entry permit.

NOTE
The authorized date and time of expiration of the Confined Space Entry Permit must be annotated on the form before approval. A new Confined Space Entry Permit shall be completed at the start of a new operational period, or when a condition that is not allowed under the Confined Space Entry Permit arises in or near the permit space. Confined Space Entry Permits shall not exceed 12 hours in duration.

10.3.6. Debriefing Entry and Attendant Personnel

- The confined space entry supervisor will debrief personnel who performed the confined space entry to determine if any unanticipated hazards were encountered or created during the operation. The CSPC, or designee, shall attend this debrief.
- The debriefing shall be documented using the Confined Space Entry Debriefing section of the Confined Space Entry Permit. If necessary, an additional sheet may be used and attached to the Confined Space Entry form.

10.3.7. Confined Space Warning Signs

The primary purpose of posting signs to identify confined spaces is to prevent inadvertent entry.

- Confined spaces must be posted with a warning.
- Posting of confined spaces will include, but not necessarily be limited to, the following information:
  - DANGER
  - CONFINED SPACE

- PERMIT REQUIRED FOR ENTRY

All confined space signs shall be maintained in a legible condition. Faded signs will be removed and replaced.

10.4. SAFE WORK PRACTICES AND CONTROLS

10.4.1. Warning Systems and Barricades

- Warning systems/signs or barricades shall be used at the entrance(s) to all confined spaces when open and unattended.
- Such protection shall not affect the ventilation of or egress to or from the confined space.

10.4.2. Lockout/Tagout and Isolation

Lockout/tagout shall be used for electrical or mechanical systems servicing (or located within) confined spaces and shall be verified prior to allowing entry into the space in accordance with APM Section 29, Lockout/Tagout.

10.4.3. Purging/Flushing/Ventilation

- Confined spaces shall be emptied, flushed, or otherwise purged of flammable, injurious, or incapacitating substances to the extent required for safe entry.
- Ventilation shall be maintained during confined space occupancy if a potential exists for an atmospheric change to unacceptable levels.
  - If safe levels cannot be achieved and maintained, additional ventilation or other engineering controls or appropriate personal protective equipment will be provided to reduce contaminants to the lowest achievable levels.
  - The CSRT will only enter an IDLH atmosphere for rescue purposes.

WARNING
The process of inerting produces an IDLH oxygen-deficient atmosphere.

10.5. ATMOSPHERIC TESTING AND SURVEILLANCE

10.5.1. Equipment Requirements

- Equipment used for monitoring gases and vapors shall be certified and approved for use in the area of classification and shall contain an audible alarm or danger-signaling device that will alert employees when a hazardous condition develops or that an employee will check the monitor with sufficient frequency to ensure that entrants have adequate time to escape.
- Instruments shall be calibrated in accordance with the manufacturer's guidelines or manuals and calibration records shall be recorded, filed, and maintained in an auditable format.

10.5.2. Pre-Entry Test Criteria

- The attendant must be able to monitor the confined space from outside at all times.
- Confined spaces with potentially hazardous atmospheres will be tested by a trained individual for oxygen concentration, combustible gas, hydrogen sulfide, and carbon monoxide.

- If conditions exist that could create additional atmospheric hazards such as benzene, appropriate testing shall be conducted.
- A sample line or probe attached to the monitoring instrument is inserted into the space and air is drawn into the instrument and the results are displayed. If measurements indicate that the levels are within acceptable limits, and verified by using a second calibrated meter, the entry may proceed.
- If the atmosphere is deemed to be unacceptable, entry must be delayed until the space can be more thoroughly ventilated, or until entrants can be provided with suitable respiratory protection.
- If tests are inconclusive, the atmospheric tester will assume that a hostile environment exists and notify the authorizing supervisor.

WARNING
Use extreme care when opening entrance covers. An explosive buildup of pressure can occur from chemical reactions within a confined space.

10.5.3. Continuous Monitoring During Entry

Although pre-entry testing indicates whether the atmosphere in a space is initially acceptable for entry, atmospheric conditions can change over time. Consequently, continuous monitoring shall be conducted beginning at initial entry and until the job is complete. This will allow quick detection of even minor atmospheric changes.

NOTE
Consult an Industrial Hygienist for assistance with a monitoring plan if necessary.

10.5.4. Continuous Test Criteria

- Verify that the monitoring equipment is certified and approved for use in the area classification.
- Confirm that the latest calibration date corresponds with the manufacturer’s requirements.
- Conduct a field check of the unit exposing the oxygen sensor to atmospheric air and verifying that it reads an acceptable limit.
- Perform warm-up procedures and additional calibration (if any is required) according to manufacturer's instructions.
- Ask entrants if they want to observe the testing of the confined space.

10.6. LIGHTING

Use only lighting that is approved for the area classification in which it will be used (i.e., confined spaces containing or potentially containing flammable vapors or explosive dusts; Class 1, Division 1 and 2 areas).

- Lighting shall provide at least a 5 foot-candle minimum in the work area.
- Lighting shall be adequate to work and exit safely during an emergency.

10.7. ELECTRICAL EQUIPMENT

Electric hand tools will be protected by a ground-fault circuit interrupter. Only tools approved for use in the area of classification shall be used until the hazardous atmosphere is eliminated.

10.8. COMPRESSED GAS/FLAME-PRODUCING EQUIPMENT

- Compressed gas cylinders shall not be taken into confined spaces. Exception: Self-contained breathing apparatus (SCBA) and resuscitation equipment are permitted.
- Confined space entrants shall not carry lighters or matches into spaces.
- When arc welding is to be suspended for any substantial period of time (such as during lunch or overnight), all electrodes must be removed from the holders and the holders must be carefully located so that accidental contact cannot occur. In addition, the machine must be disconnected from the power source.
- Torch valves will be closed and the fuel-gas and oxygen supply to the torch will be positively shut off at some point outside the confined space whenever the torch is not to be used for a substantial period of time (during lunch, overnight, etc.). The torch and hose shall be removed from the confined space.

10.9. VENTILATION EQUIPMENT

- Ventilation shall be used to control the atmospheric hazards of confined spaces by replacing unsafe air with clean, breathable air. For most confined spaces, ventilation must be provided mechanically with fans or other air-moving equipment.
- Ventilation shall be used in a confined space whenever its atmosphere is hazardous in any of these ways; it:
  - contains too little oxygen
  - is flammable
  - contains too much oxygen
  - is toxic
- Ventilation will be started far enough prior to entry so that the air will be safe before anyone enters the space.
- Certain types of work inside a space can make the air unsafe. Examples include hot work, painting, coating, using solvents, and abrasive blasting. In such cases, local exhaust systems will be used as a positive means of removing contaminants at their source. This ventilation shall be used for as long as the activity is performed.
- If any necessary ventilation stops, work stops and the confined space shall be evacuated immediately.
  - The space shall be purged, if needed, to eliminate the risk of a hazardous atmosphere such as a high level of combustibles. Choice of purging medium depends largely on the nature of contaminant in the space.

  - Because static electricity may be generated when compressed gases are introduced, gas-dispensing pipes and nozzles shall be electrically bonded to the space.
- The confined space will be ventilated for a minimum of five air changes per hour, or ten changes per hour if toxic/flammable substances are present or if inert gases have been used.
- Air change calculations will be performed by an Industrial hygienist or registered professional engineer.
- Under no circumstances will oxygen be used for ventilation.
- Ventilating equipment will be located for best effect and to prevent the recirculation of exhausted or contaminated air or the introduction of contaminants, such as traffic exhaust, fumes, or vapor. Exhaust air will be routed to minimize personnel exposure.

10.10. SAFE RETRIEVAL EQUIPMENT

- A mechanical hoisting device shall be provided to retrieve or rescue personnel from a vertical entry into any confined space greater than 4 feet in depth.
- The hoisting device shall not be electrically or pneumatically powered; it must be manually powered by pulleys, ratchets, or similar mechanical advantage items.
- The mechanical hoisting device shall be designed so that the descent speed of suspended loads is limited to prevent injury by entrants falling during entry or rescue.
- The other end of the retrieval line shall be attached to a mechanical device or fixed point outside the confined space.

10.11. HARNESS SYSTEMS

- A safety harness and retrieval line shall be provided for and worn by all entrants performing confined space entries.
- The safety harness will permit lifting or dragging of an unconscious or incapacitated entrant by retrieval line connections either at both shoulders, both wrists, or a single-line connection between the shoulders at the back.
- If use of the retrieval lifeline increases the overall risk of entry (because of structures, equipment, or entanglement with other lines in the confined space), its use may be waived. If waived, visual contact must be maintained at all times.
  - With the appropriate safeguards implemented, the CSPC and site director will provide authority for such an exception.
  - The reason for exception will be documented on the Confined Space Permit.
- The requirement for wearing wristlets, anklets, or harness is still enforced even if a variance identifies that a retrieval line can be hazardous to the authorized entrant(s).

NOTE

The use of a lanyard/retrieval line may be waived by the CSPC if using it would create a greater hazard than not using it (i.e., if the line could become caught on obstacles within the confined space). Document the reason for not using the line in the Additional Safety/PPE Requirements of the SWP. Use of wristlets, anklets, or harness is not optional.

10.12. RESCUE REQUIREMENTS

This procedure requires a rescue team for all PRCS entry. When personnel are required to wear breathing equipment or the atmosphere could become immediately life threatening, rescue personnel and equipment will be in place at the point of entry before entry is made. If no potential IDLH exists, the rescue team must be able to respond within 15 minutes.

NOTE
See the Confined Space Rescue Team Decision Flow Chart for rescue requirements in Figure 10-1.

The CSPC shall determine the level of: staffing, training, and equipment required of the rescue team (Operations or Technician Level) prior to entry. If the CSPC is unable to determine what level of training is needed (operations or technician), the FP/EP department will act as the subject matter experts and make the determination.

The rescue equipment must be readily available at the confined space work location at the time of the entry and remain there until entry is terminated.

The rescue team must be proficient in rescue techniques for the specific space to be entered.

- Site rescue teams will be trained and will practice at least once per year on each of the specific types of spaces on their site.
- The rescue team (regardless of provider) shall demonstrate rescue for the specific confined space prior to the initial entry and start of work.
- Subcontractors must verify and document training/competency of the rescue team prior to confined space entry.
- If entry is to be made into an IDLH atmosphere, or into a space that can quickly develop an IDLH atmosphere (if ventilation fails or for other reasons), the rescue team or service shall be standing by at the confined space site.
    - If the danger to entrants is not an IDLH atmosphere, but is due to other hazards in the confined space, response time shall be 15 minutes or less.
- There shall be enough trained personnel available to perform required rescue.
    - Non-rescue-trained personnel may be used outside the space for labor purposes under direct supervision during a rescue.
    - Only individuals trained in confined space rescue may enter the space to perform rescue.
    - At least two backups trained in confined space rescue must be at the work location for rescue entry.
- A rescue supervisor must be present for rescue entry.
    - The rescue supervisor shall not enter the confined space.
    - The rescue supervisor is authorized to direct the rescue according to the rescue plan
    - The rescue team supervisor shall be notified of any planned permitted entry 24 hours prior to the scheduled entry.

- Rescue Preplans
  - Rescue Preplans must be in place prior to the entry and issuance of a Safe Work Permit.
  - Rescue Preplans shall comply with ASL5500.25, Section 7.4, Confined Space Rescue Preplan.
  - Rescue Preplans shall be developed by the subcontractor providing the rescue team.
  - Rescue Preplans shall be reviewed and approved by the CSPC.
  - Whenever possible, non-entry rescue will be performed.

10.13. SUBCONTRACT REQUIREMENTS

All subcontractors performing work on an SPR facility involving PRCS entry shall have an approved confined space program.

The M&O contractor shall:

- Inform subcontractors that the workplace contains a PRCS and entry is allowed only through compliance with this section.
- Inform subcontractors of the elements of the program, including the hazards identified and pertinent experiences with the space to be entered.
- Inform subcontractors of any precautions or procedures that have been implemented for the protection of employees in or near permit spaces where subcontractor personnel will be working.
- Perform lockout of site equipment as necessary to render the work space safe.
- Perform initial monitoring of the confined space before issuing the Safe Work Permit.
- If subcontractor personnel will enter the confined space, confirm that the subcontractor has an acceptable rescue plan before issuing the permit. The plan shall be reviewed and accepted by the CSPC.
- Verify that confined space rescue teams provided by the subcontractor meet SPR training requirements.
- Observe the subcontractor practice each rescue prior to issuing the initial permit.
- Coordinate entry operation with the subcontractor when SPR personnel and/or subcontractor personnel will be working in or near permit spaces.
- Attend the subcontractor's required debrief of the confined space supervisor at the conclusion of the entry operation, regarding the permit space program followed and any hazards confronted or created in permit spaces during entry operations.

10.14. RESPONSIBILITIES

Site Director

- Appoint the CSPC.

- Supply a trained rescue team for site-specific confined spaces. The rescue team may be used for other subcontractors' projects only if M&O management concurs.

Confined Space Program Coordinator (CSPC)

- Exercise general responsibility and authority for documenting, administering, and overseeing an effective Confined Space Entry Program.
- Perform and document annual program evaluations to assess the effectiveness of the Confined Space Entry Program.
- Identify and classify or approve the identification and classification of confined space entries for the site and maintain a site-wide list of all identified confined spaces.
- Ensure that an initial evaluation is performed of the risks associated with each identified confined space entry and that each entry is labeled as a PRCS.
- Identify the scope of work that will be performed during entry.
- Ensure that trained personnel are used to perform risk evaluations, including atmospheric testing of confined spaces.
- Stop work and report any condition outside expected normal practice.
- Determine the need for a rescue team; and if a team is needed, the level of: staffing, training, and equipment required of the team (Operations or Technician Level) prior to entry.
- Determine if the team must be stationed at the work site.
- Review and accept (or not) subcontractor's Rescue Pre-Plan if the subcontractor is providing the rescue team.
- Maintain a file of confined space permits in accordance with RIDS requirements.
- Review Confined space debriefing

Authorized Entrants

- Recognize hazards in confined spaces that include the warning signs and/or symptoms of exposure to a hazard and the consequences of these exposures.
- Maintain contact with the authorized attendants.
- Use proper PPE as required for entry and as identified on the JHA, understand the means to obtain PPE, and use any external barriers needed for protection from external hazards while in the confined space.
- Understand the need to immediately evacuate confined space if:
  - ordered to do so by the attendant,
  - conditions exist either internal or external to the space that could endanger entrants,
  - conditions exist that are not allowed on the permit(s),
  - an entrant exhibits behavioral effects of exposure to a hazard in the space,
  - the authorized attendant must leave the confined space opening,
  - the oxygen/explosimeter alarm indicates a hazard,
  - the entrant detects a prohibited condition,

  - the entrant recognizes any other warning sign and/or symptom of exposure to a dangerous situation.
- Understand all aspects of the confined space entry permit.
- Understand the use of testing equipment.

Authorized Attendants

- Understand all aspects of the confined space entry permit.
- Remain outside the space at all times during the entry, unless relieved by another authorized attendant.
- Recognize hazards within and outside of the confined space that may affect entrants, such as a site emergency away from confined space, loss of power, or loss of ventilation within the confined space.
- Establish and demonstrate an effective means of communication with entrants prior to entry.
- Maintain continuous visual and/or verbal contact with authorized entrants and an accurate accounting of personnel in the space.
- Order evacuation of the confined space if any emergency occurs.
- Ensure communication is available and summon rescue assistance if an emergency occurs in the confined space.
- Direct any unauthorized personnel away from the space and do not permit them to enter. If unauthorized personnel have entered, require them to exit immediately. Any unauthorized entry must be reported to the entry supervisor immediately.
- If trained in confined space rescue, demonstrate proficiency in the use of retrieval equipment (for example, a tripod device) from outside the space and perform necessary duties to activate an emergency rescue while remaining outside the space.
- Be capable of using test equipment that the authorized attendant is required to use.
- Perform no duties that might interfere with the primary duty to monitor and protect all authorized entrants. Ensure that you are able to observe entrants at all times.
- Know the whereabouts of all fire and safety equipment in the event of an emergency. Know where the nearest fire extinguisher is located and how to use it.
- Know where the welding machine (if any) is located and how to turn it off in an emergency.
- Know where the oxygen and acetylene bottles (if any) are located and how to turn them off in an emergency.
- Know where to obtain emergency lights that are explosion-proof (approved for use in the area of classification) in the event of a power failure. Issue the Confined Space Attendant a flashlight.
- Know where the ventilation for the vessel is and be able to turn it on and off at any time.
- Keep manway and surrounding area clear of obstructions at all times.
- Understand that a trained relief person must be present prior to leaving an entry site. **Never leave personnel unattended within the confined space.**

- Do not enter a space unless you are a trained member of the rescue team and have been relieved by a qualified attendant.
- Assist remote retrieval using tripod and lifelines.
- In case of an emergency, be prepared to tell the rescue team:
  - the number and approximate location of entrants
  - condition of entrants
  - conditions in the confined space
  - any other information that might affect rescue.
- Notify control room of each entry to and exit from the confined space.
- Maintain a log (AAA9020.657) of personnel entry/egress from the confined space.

Entry Supervisor

- Verify that the entry permit is filled out completely and all safety steps listed on it are taken.
- Establish and demonstrate an effective means of communication with entrants prior to entry.
- Check atmospheric conditions to make sure they remain safe throughout the work. This includes continuous monitoring within the confined space.
- If conditions become unsafe, cancel the permit and order everyone out of the space.
- Remove any unauthorized personnel.
- When work is finished, close the permit and conclude operations.
- Sign the Permit-Required Confined Space Reclassification Form (OSF00-0002) certifying that the requirements on the permit are in place and followed.
- Make sure entrants have a chance to observe the monitoring of the confined space.
- Debrief employees at the conclusion of the work and closure of all permit confined space entries. Ensure information from the debriefing is entered on the permit.
- Notify CSPC prior to debriefing.

Site Safety Specialist

- Conduct and document reviews of all confined space entries daily on the SWP to ensure compliance with this program.
- Review list of all spaces determined by CSPC to be confined spaces.
- Provide entry support on request.
- Upon request, assist preparation of SWPs.
- Review all requests for non-routine entry into confined spaces.
- Support the preparation and review of written procedures for entry into confined spaces that cannot be completely isolated from power sources or piping.
- Upon request, make a hazard assessment when test readings are inconclusive or when oxygen deficiency or enrichment remains after three unsuccessful ventilation efforts.

All Site Personnel

- Obey all postings for confined space operations.
- Submit ideas for improving Confined Space Entry Program through debriefing and safety suggestion system or by contacting the CSPC.

Rescue Team Personnel

- Attend initial 40-hour training and subsequent annual refresher training.
- Understand the requirements for PPE needed for personnel rescue.
- Be trained and certified annually on correct methods and procedures to effectively rescue employees in distress within all types of confined spaces on site.
- Be aware of the hazards of the specific confined space to be entered. Know the signs and symptoms of exposure to a hazard and the consequences of these exposures.
- Maintain visual and/or verbal contact with the authorized attendant at all times.
- Be trained on rescue techniques in accordance with NFPA 1006 (Standard for Technical Rescuer Professional Qualifications), and NFPA 1670 (Standard on Operations and Training for Technical Search and Rescue Incidents).
- Practice rescues from the types of confined spaces on site at least annually. These include pipes, pits, tanks, and vaults.

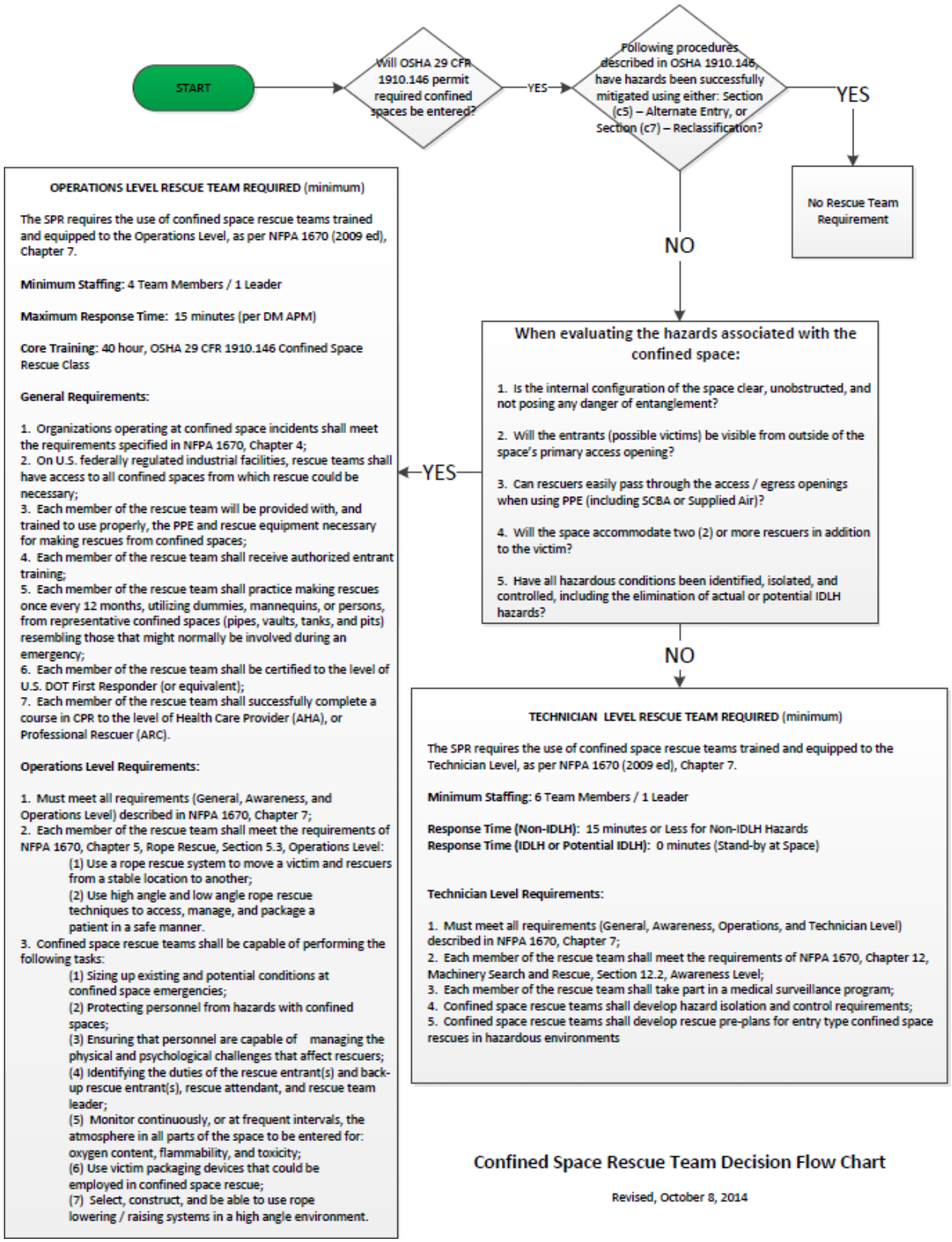
SMTR

- Ensure the subcontractor is made aware of hazards as required.
- Ensure that the subcontractor is made aware of the M&O APM requirements.
- Provide forms related to this section to subcontractors upon request.
- Work with site CSPC to identify individual project related PRCS requirements, including the need for a rescue team.
- Participate in the Pre/Post entry briefings.
- Monitor the performance of subcontractors to ensure compliance with this section.

Subcontractors

- Follow APM confined space procedures while on an SPR facility. This includes rescue team requirements (manning and training), Rescue Pre-Plan, attendant, entrant, supervisor, and any other personnel training requirements.
- Request forms related to this section from the SMTR.

Figure 10-1. Confined Space Rescue Team Decision Flow Chart



11. CONTINGENCY REVIEW COMMITTEE PROCEDURES

PURPOSE

The CRC provides essential safety review, discussion and disposition of cavern and well operations activities.

SCOPE

This section includes the following major sections:

- Introduction
- CRC Responsibilities
- CRC Procedures
- Employee Responsibilities

APPLICATION

This section applies to work activities and employees under the control of the M&O and its subcontractors.

11.1. INTRODUCTION

The Contingency Review Committee (CRC) ensures that all necessary precautions and preparations are completed prior to well workover, drilling, well testing, and other subsurface activities requiring a configuration change. In addition, any change in condition or configuration with a change of risk which impacts the workover operations from a technical or safety aspect after the original CRC shall result in a pause in workover operations and a subsequent meeting of the site contingency review committee prior to resuming work.

Routine wireline services (that is, interface surveys, density surveys, collar logs, gage runs, caliper surveys, temperature surveys, and sonar surveys) do not require prior CRC meetings but do require Safe Work Permits, JHAs, and Pre-Job briefings.

This procedure applies to all M&O and contractor/subcontractor personnel engaged in the performance of activities within the scope of the CRC on SPR sites.

11.2. CRC RESPONSIBILITIES

- The CRC convenes for any well workover, drilling, down hole sampling, testing, or other subsurface activities requiring configuration changes. The CRC provides essential safety review, discussion, and disposition of cavern and well operations activities. Only preparatory actions such as procurement, surface work on the well pad, and cavern depressurization may be initiated before the CRC convenes.

NOTE
Any change in condition or configuration with a change of risk which impacts the workover operations from a technical or safety aspect after the original CRC shall result in a pause in workover operations and a subsequent meeting of the site contingency review committee prior to resuming work.

- Additionally, the CRC Chairman may identify steps in the Workover Execution Plan during the initial CRC that change the risk profile to the extent that the Chairman determines that work should be paused and the CRC re-convened to address the risk prior to proceeding. Depressurization of a cavern prior to the CRC meeting shall be conducted in accordance with the site depressurization procedures.

NOTE
Safety is paramount in all our activities. Workover operations are high risk and deserve a high level of scrutiny and discipline. Disregard for procedures and safe practices will not be tolerated.

- The site cavern engineer, as project engineer, exercises site control over and implements approved workover and drilling programs, sampling and testing procedures, contingency plans for subsurface activities, and other subsurface activities involving a configuration change. The CRC provides site management oversight and ensures that only approved configuration changes according to the Configuration Management Program Manual (SPRPMO Manual 410.1-1) are implemented.
- The CRC does not write procedures, but rather reviews them and supports their implementation. However, the CRC may make any editorial changes necessary for clarity that do not change the intent of the procedures, may update cavern/well status data, and may add site- or task-specific safety requirements, as well as quality assurance hold points.
- During the course of the workover, changes to the workover instruction can only be implemented with approval of the workover engineer or cavern engineer responsible for that particular workover or, if he or she is unavailable, the workover manager. The site engineer, site director, site safety specialist, and DOE senior site representative will be kept informed of any changes, but the CRC does not need to be reconvened for these workover changes. Changes should be documented on the Workover Log.
- The CRC is responsible for ensuring that all procedural requirements for safe, effective activities are strictly followed. This responsibility may not be delegated.
- The CRC identifies required site level support, required reviews, preparations and their status, and ensures timely notice to all concerned of forthcoming activities within its area of responsibility.
- The CRC is not authorized to make substantive changes to approved procedures.
- A signing member of the CRC prepares the minutes of each meeting, ensuring that all pertinent information discussed during the meeting is fully documented. Minimum distribution of the minutes must include all recipients of the approved procedures concerned.
- Disputes between the CRC/site management and the originator of a workover instruction that require resolution by higher-level management will be referred to the operations and maintenance APM in New Orleans.
- If deviation from the approved workover instructions becomes necessary in the course of implementing CRC-approved procedures, the operation will not be halted, unless unsafe practices are apparent or the deviation is beyond the authority of the site cavern engineer.

Well control will be maintained, and the site director, site cavern engineer, site safety specialist, and DOE senior site representative will be notified of the circumstances.

11.3. CRC PROCEDURES

The following procedures describe how the CRC is organized, convenes, approves operations, and documents decisions.

- A CRC is established whenever well workover, drilling, sampling, testing, or other subsurface activities requiring a configuration change will be conducted on site. The CRC is normally composed of the following members (asterisk * indicates minimum required membership):
  - Site director or designated representative *
  - Site Operations manager or designated representative *
  - Site Maintenance manager or designated representative
  - Workover field manager, workover supervisor, or both (mandatory for well workovers)*
  - Site cavern engineer *
  - Fire protection specialist *
  - ES&H Manager or designee *
  - Quality assurance project support coordinator
  - Site safety specialist *
  - Site environmental specialist
  - Site or maintenance engineer
  - Department of Energy (DOE) representative. Participation by the site DOE senior site representative (SSR) or his representative is encouraged, but not required.
  - Workover engineer/Director by conference call (as needed).
- The site director is the chairman of the CRC, and a designated site individual may act as the alternate chairman. If neither can serve, the operations manager may serve as chairman. The minimum required members (*) may participate by teleconference and send their reviews by email or facsimile if they are off site.
- The chairman may expand the CRC membership appropriately to fit the specific work to be done, and to accommodate other circumstances. CRC members are not expected to be expert, or even specifically knowledgeable, in all aspects of well workover or other cavern/well operations. Each member brings specific concerns and expertise to the CRC meeting and should have the opportunity to contribute to a successful operation in his or her area of expertise.
- Copies of the procedures to be considered for approval will be distributed two full workdays in advance of the initial CRC meeting to all members of the committee, except in emergency situations or when activity is already in progress. Procedures provided to the members will include copies of Change Notices (CNs) required for any of the work involved. Any such CN must be properly approved before work can commence.

- The CRC convenes as often as necessary to verify that all procedural requirements for safe, effective operations are observed during a well workover, drilling, well testing, sampling, or other subsurface activities requiring a configuration change.
- Each CRC meeting will be documented in written minutes. The minutes must list attendees, describe any changes approved for the procedures, and contain the signatures of all CRC members designated by the chairman as signing members. The minutes should include any CNs, drawings, plans, charts, or other attachments necessary to explain configuration changes.
- The CRC is responsible for researching and discussing all additional information required to review any action. The chairman identifies the resources and appoints CRC members and others as necessary to investigate the material.
- The CRC will verify that well workover, drilling, sampling, testing, or other subsurface activities and high-pressure operations (that is, pressures greater than the minimum suction required by installed site oil pumps) are not performed without secondary shutoff capability or, if this capability is not present, this must be documented in written procedures and implemented in the field. This requirement may be waived only by written direction from the M&O project manager or the M&O O&M director. In any case in which the action to be taken would open the storage well to the atmosphere, the specific written concurrence of the DOE project manager or his designee is required.
- The workover field manager or workover supervisor normally oversees the actual workover, drilling, or testing process to ensure compliance with written procedures. The CRC is responsible for verifying compliance, and this authority may not be delegated. The CRC chairman may appoint other CRC members to assist in this function as the chairman deems appropriate.

11.4. EMPLOYEE RESPONSIBILITIES

Chairman - Site Director

- Conduct CRC meetings. If absence is unavoidable, arrange for either a designated representative or the operations manager to serve as chairman.
- Designate each member of the CRC as signing or non-signing, depending on the applicability of each area of specialization to the well workover, drilling, sampling, testing, or contingency plans for subsurface activities requiring a configuration change.
- As a minimum, the signing members must include the CRC chairman, the site cavern engineer, and representatives of site Operations, and Safety.
- Appoint one signing member of the CRC to record and publish the CRC meeting minutes.
- Determine whether the CRC must seek additional expertise before approving the written procedures. If such expertise is required, appoint CRC members and additional personnel as necessary to obtain and analyze the data, but do not delay the workover without the cavern integrity APM's approval.
- Convene the CRC as needed to verify compliance with procedural requirements prior to implementing well workover, drilling, sampling, testing, or contingency plans for subsurface activities.

- Assume responsibility for the judgment, oversight, and documentation functions of the CRC.
- Observe, or appoint a signing member of the CRC to observe, all CRC-monitored actions and document any deviations from the written procedures.
- Ensure that configuration changes are properly authorized according to the Configuration Management Plan prior to implementation.

Alternate Chairman - Designated Site Individual or Site Operations Manager

- Assume the duties of the chairman when required by circumstances.
- Assist the chairman in administering the CRC.

All Other CRC Members

- Attend all meetings of the CRC unless excused by the chairman.
- Carefully review procedures to be considered at the CRC meeting prior to the meeting to identify any issues, questions, comments, or points of clarification to be raised at the CRC meeting.
- Render professional judgment within their specific areas of expertise on all appropriate matters during CRC meetings and subsequent field operations.
- Research additional information as directed by the chairman or as required to resolve technical questions.
- Review written procedures carefully for compliance with all appropriate codes, standards, and regulations.
- Monitor, as appointed by the chairman, the conduct of CRC-approved activities.
- Assume responsibility for the professional decisions in their specific areas of expertise as included in the written procedures, documented in the CRC meeting minutes, and implemented in the field.

Signing Members

- Review and sign the minutes of all CRC meetings, signifying concurrence with the decisions described in those minutes.
- Document any deviation from the written procedures.

12. CONTROLLED EVACUATION PROCEDURE

PURPOSE

This section establishes a system for ensuring all necessary precautions are observed and preparations are made to protect the safety of personnel and the prevention of spills for line breaking activities.

SCOPE

This section includes the following major sections:

- Introduction
- Controlled Evacuation Committee
- Personal Protective Equipment
- Responsibilities

APPLICATION

This section applies to work activities and employees under the control of the M&O and its subcontractors.

12.1. INTRODUCTION

This procedure applies to:

- Oil, brine, and raw water systems,
- Abandoned piping systems, and
- Systems that may contain liquid on an SPR site or pipeline, as determined by the M&O Site Operations Manager.
- Systems that may contain liquid in the Degas Plant, as determined by the M&O Degas Operations Manager.

To accomplish safe, upset-free controlled evacuations during line breaks, a Controlled Evacuation Committee (CEC) will be convened and a checklist (AAA9020.747) shall be reviewed and approved during CEC meetings.

Prior to starting work, operations involving line breaks will be assessed using a JHA. The JHA is required for this and other Life Critical operations to ensure that all hazards associated with the work are identified, the likelihood and severity are understood, and control measures are defined that will effectively reduce the risk.

12.2. CONTROLLED EVACUATION COMMITTEE

12.2.1 CEC Membership

The Controlled Evacuation Committee will be composed of the following:

- DOE Representative (optional),
- Site Director or Designee,

- Operations Manager/Designee or Degas Manager/Designee (as applicable),
- Maintenance Manager/Designee,
- Site Safety,
- A representative of the employees performing the work,
- ES&H Manager

In addition, the CEC will include the following designated committee members, as applicable:

- Site Engineer,
- SMTR or Site Construction Manager (for CM projects),
- Quality Assurance Representative.

NOTE
The Controlled Evacuation Committee (CEC) reviews and approves the line breaking activity. The CEC must meet before the commencement of the planned work.

12.2.2 CEC Activities

The CEC will follow these procedures:

- Before a controlled evacuation, the person or group initiating the SWP (or the Technical Representative for the subcontractor) will request the CEC meeting to discuss line isolation, line breaks, controlled evacuation of the line being broken and containment of fluids and present the description of work or the Safe Work Permit to the Operations Manager/Designee for review. The committee may meet at the proposed work location if they determine that an onsite inspection is necessary.
- Operations must be provided with sufficient time to allow for the evacuation of the line.
- The SWP will be issued with all the safety requirements needed to perform the task as discussed during the CEC meeting. An approved Controlled Evacuation Checklist must be attached, or the SWP cannot be issued.
    - A Controlled Evacuation Checklist is a planning tool that supports preparation of systems that have been or are being locked out to determine isolation and lockout points, line break points and how will fluids that may still be in the line are controlled and contained during line break activities.
- Upon review of the checklist and agreement on proposed work procedures, the Chairperson (Operations Manager/designee or Degas Manager/designee) will approve the checklist. Then all attendees must sign the CEC Checklist.
- Any changes in procedures agreed upon in the CEC meeting or in the approved checklist will require the authorization of the Chairperson prior to implementation. If the changes affect the SWP, a new one will be issued or changes noted with the initials of the Chairperson. The new CEC checklist will be attached to the SWP. If for some reason work cannot be performed as approved, work will be stopped and procedures will be revised as described.

NOTE
When opening a crude oil or brine line, SCBA shall be worn until the area is tested safe. The SCBA shall remain at the immediate work location after the initial line break in case monitoring requires its use.

12.4. RESPONSIBILITIES

Site Director

- Delegate to other members of the committee the duties of any of the committee members who may not be available.
- Implement the Controlled Evacuation program.
- Provides final interpretation and determines the applicability of any specific provision of this procedure.

Chairperson (Operations Manager/designee or Degas Manager/designee)

- Review the work order or description of work and the request for a SWP to determine if a CEC meeting is necessary.
- If a CEC meeting is required, ensure that the meeting has been held and that the completed Controlled Evacuation Checklist is attached before approving the SWP for maintenance, operations, or subcontractor personnel to open systems or lines.
- Ensure that all items on the Controlled Evacuation Checklist are addressed and that each member is prepared to assume his or her responsibilities before and during the controlled evacuation.
- Coordinate with the Maintenance Manager/designee and the SMTR (if assigned) to ensure that lines are depressured and blocked at the appropriate valves.
- Ensure that clear communication lines are established among Operations, Maintenance, and subcontractor personnel performing the work.
- Ensure that all applicable equipment and supplies that will be needed to contain the evacuated product (such as washtubs, cattle tubs, vacuum trucks, squeegees, and sorbent) are on the job site.
- Ensure that all safety equipment needed by Operations during the controlled evacuation during the line break is specified on the applicable SWP.
- Ensure that systems are as free as possible from oil and vapors prior to issuing a SWP to perform the work. (Ensure the Controlled Evacuation Checklist contains provisions to safely complete draining if all liquid cannot be removed prior to start of work).
- Prior to the start of work, review the description of work, isolation points and lockout/tagout requirements with employees performing the evacuation.
- Assist the personnel performing the work by identifying methods or locations that are available to verify that the system is safe and that the technician understands how to check.
- If the Controlled Evacuation Checklist is changed, ensure a new SWP is issued or changes are made to the original SWP and initialed according to procedures.

Site Safety

- Review the work order, Controlled Evacuation Checklist, and supporting documentation.
- Ensure that all possible safety precautions have been addressed during the CEC.
- Ensure the subcontractor provides sufficient PPE for employees to wear during line breaking.

Site ES&H Manager

- Ensure that all ES&H concerns have been addressed.

Site Engineer/ Maintenance Engineer/ Construction Manager/Designee

- Assist Operations and Maintenance departments in identifying possible alternative evacuation procedures when requested.
- Provide calculated piping/system volumes.
- Review the description of work and Controlled Evacuation Checklist, as required.

Site Maintenance Manager/Designee

- Review the work order, SWP, and Controlled Evacuation Checklist.
- Ensure that employees understand the task and all safety concerns are addressed.
- Coordinate with the Operations Manager/Supervisor to ensure that lines are depressured.
- Ensure all measures are taken to capture any residual product due to line breaking activities.
- Establish clear communication among Maintenance, Operations, and subcontractor personnel performing the work.
- Ensure maintenance personnel involved in the controlled evacuation use all safety equipment, as specified on the SWP.
- Ensure maintenance personnel do not open (or remove) any additional vents or drains without prior coordination with the Operations department.
- Prior to start of work, review the Controlled Evacuation Checklist with employees to ensure they understand the work and answer all concerns.

SMTR (if involved)

- Review the scope of work, CEC minutes, SWP, and Lockout/Tagout Log.
- Coordinate with the operations manager to ensure that lines are depressured and drained to the extent necessary.
- Establish clear communication among Maintenance, Operations, and subcontractor personnel performing the work.
- Ensure subcontractor personnel involved in the controlled evacuation use safety equipment as specified on the SWP and wear appropriate PPE during line breaking.
- Ensure that all applicable equipment and supplies that will contain the evacuated product, such as washtubs, cattle tubs, and vacuum trucks (as required), are provided.
- Ensure subcontractor personnel do not open (or remove) any additional vents or drains without prior coordination with the Operations department.

- Ensure subcontract personnel understand the CEC requirements.

Employees

- The employee(s) performing the work must be in full compliance with APM Section 29, LOTO.
- Ensure that all possible safety precautions are fully implemented during the controlled evacuation.
- Prior to start of work, understand the requirements of the CEC and follow them.
- Present all their concerns before the work starts and while performing work.
- Be represented on the CEC.

13. SPR HOISTING AND RIGGING OPERATIONS

PURPOSE

This section defines the administrative and operational requirements for the safe operation of cranes and safe use of “below-the-hook” rigging equipment.

SCOPE

This section includes the following major sections:

- Introduction
- Tables

APPLICATION

This section applies to work activities and employees under the control of the M&O and its subcontractors.

13.1. INTRODUCTION

SPR Hoisting and Rigging operations will follow the requirements of the DOE Hoisting and Rigging Standard (DOE-STD-1090-2011). The sections listed in Table 13.1 apply in the DOE Hoisting and Rigging Standard according to equipment and lifts to be performed.

According to DOE Hoisting and Rigging Standard, “this standard invokes applicable OSHA and national consensus standards but also delineates more stringent provisions necessary to accomplish the extremely complex, diversified, critical, and oftentimes hazardous hoisting and rigging work found within the DOE complex.” In doing so, the DOE Hoisting and Rigging Standard addresses the following items that are not covered in detail in the referenced industry or OSHA standards:

- Management responsibility and accountability.
- Definition of critical lifts and the additional requirements for making them.
- The need and responsibilities of a person-in-charge for critical lifts.
- The need and responsibilities of a designated leader for ordinary lifts.
- The definition and special requirements for pre-engineered production lifts.
- Special requirements for the testing, inspection, and maintenance of hoisting equipment in hostile environments.

Prior to starting work, operations involving hoisting and rigging shall be assessed using the Job Hazard Analysis (JHA). The JHA is required for this and other Life Critical operations to ensure that all hazards associated with the work are identified, the likelihood and severity are understood, and control measures are defined that will effectively reduce the risk.

13.2. TABLES: SPR Hoisting and Rigging Operations

TABLE 13.1. DOE Hoisting and Rigging Standard Reference Guide	
Section Number	Title
Section 1	Ordinary lifts
Section 2	Critical lifts
Section 3	Pre-Engineered Production lifts (does not apply)
Section 4	Hostile Work Environments (does not apply)
Section 5	Personnel Qualifications
Section 6	Overhead Cranes
Section 7	Hoists
Section 8	Mobile Crane
Section 9	Forklifts
Section 10	Slings
Section 11	Rigging Hardware
Section 12	Below-the-Hook Lifting Devices
Section 13	Miscellaneous lifting devices

14. DRAWDOWN READINESS SITE SAFETY EQUIPMENT REQUIREMENTS

PURPOSE

This section establishes the requirements for site safety equipment to protect workers participating in drawdown readiness activities.

SCOPE

This section includes the following major sections:

- Requirements

APPLICATION

This section applies to work activities and employees under the control of the M&O and its subcontractors.

14.1. REQUIREMENTS

- Each site will establish their minimum drawdown site safety readiness equipment requirements. Items issued may be counted as available for the purposes of the required on hand inventory. Totals will be items issued and stored.
- Each site director determines the equipment requirements and quantities based on crew size, work patterns, unique system features, the frequency of hazards encountered, and special protection required. Specific site requirements lists will be developed and maintained by the Site Safety Specialist and approved by the site director, adding or deleting items or quantities based on the factors mentioned above.
- These lists reflect only the minimum equipment required and each site may have more equipment than is reflected on the list. Some of the equipment may also be issued to employees and stationed at various locations on the site. This will be verified by the Site Safety Specialist.
- Each site will dedicate 10 SCBA units and 10 matching reserve SCBA air cylinders available for ERT use only.
- This list will be available for review upon request.

15. ELECTRICAL SAFETY-RELATED WORK PRACTICES

PURPOSE

This section establishes safe work practices and procedures to be used by SPR employees and subcontractors when conducting electrical work.

SCOPE

This practice includes the following major sections:

- Introduction
- Requirements
- Electrical Training and Qualification for Qualified Employees
- Electrical Equipment Approval
- Class I Requirements
- Electrical Safety Program
- Electrical Incident Reporting
- Electrical Arc Flash Hazards and Requirements
- Storage Batteries
- Responsibilities
- Tables

APPLICATION

This section applies to work activities and employees under the control of the M&O and its subcontractors.

15.1. INTRODUCTION

Electrical safety-related work practices include, but are not limited to the following:

- De-energizing electrical equipment as the primary way to protect workers.
- Use of Energized Electrical Work Permit (AAA7012.9) and a Pre-Job Briefing and Planning Checklist (AAA7012.10) for work on energized equipment.
- Limiting work on energized equipment to qualified employees.
- Prohibiting the use of portable metal ladders around exposed energized parts.

Prior to starting work, operations involving electrical work shall be assessed using a JHA. A JHA is required for this and other Life Critical operations to ensure that all hazards associated with the work are identified, the likelihood and severity are understood, and control measures are defined that will effectively reduce the risk.

15.2. REQUIREMENTS

15.2.1. General

All employees working on SPR facilities will use electrical safety-related work practices to prevent electric shock or other injuries resulting from either direct or indirect electrical contacts when work is performed near or on equipment or circuits that are or may be energized.

Specific electrical safety-related work practices will be consistent with the nature and extent of the associated electrical hazards.

Before an employee works on or near live parts, all the live parts will be de-energized, unless the employer can demonstrate that de-energizing introduces additional or increased hazards, or that de-energizing is not possible due to equipment design or operational limitations.

- Live parts that operate at less than 50 volts to ground need not be de-energized if there will be no increased exposure to electrical burns or to explosion due to electric arcs.

If equipment cannot be locked out and work must be done on energized equipment, an Energized Electrical Work permit must be issued and a Job Planning and Briefing Checklist will be reviewed.

WARNING
Serious and/or fatal consequences may result if the following is not recognized and adhered to: A circuit is energized until it is **opened**, **locked**, **tagged** per approved procedures, and **verified** by an approved testing device known to be in proper working order.

- Examples of increased or additional hazards include:
  - Deactivating emergency alarm systems,
  - Shutting down hazardous location ventilation equipment,
  - Removing lights from an area.
- The following types of work may be performed on or near energized circuit paths when an equipment design deficiency or operational limitations exist:
  - Testing electrical circuits that can only be performed with the circuit energized,
  - Working on circuits that form an integral part of a continuous industrial process that would otherwise require complete shutdown in order to permit work on one circuit.
  - For voltages below 50 volts, the decision to de-energize should include consideration of the capacity of the source and any over-current protection between the energy source and the worker.
- When protective devices trip, such as circuit breakers, the cause of the trip will be determined and corrected before the device is reset. Trained Operations personnel shall not attempt to make electrical repairs but may reset molded case breakers that are 480 volts and below. They may reset a breaker only one time.
- If exposed live parts are not de-energized because of additional or increased hazards, or if de-energization is not possible, employees will use electrical safety-related work practices to protect against exposure to electrical hazards, against direct body contact with energized circuit parts, and against indirect body contact through some other conductive object. These work practices will suit both the work conditions and the voltage level of the exposed electric conductors or circuit parts.

15.2.2. Basic Safeguards

Identifying electrical hazards is the first step in preventing them. Once identified, a qualified employee must correct the hazards. The following safeguards will improve workplace safety:

- Maintain good housekeeping and cleanliness.

- Identify potential hazards and methods of controlling them.
- Using an Energized Electrical Work Permit for live work.
- Recognize and anticipate problems.
- Resist pressure to "hurry up."
- Plan and analyze for safety in each step of the task to be performed
- Identify work on the Safe Work Permit.
- Ensure independent verification of safety-related work.
- Become trained and maintain CPR and first aid certifications.
- Know and conduct drills on applicable emergency procedures.
- Use properly rated test equipment and verify the condition and operation of equipment before use.
- Use only nonconductive equipment in the vicinity of exposed live electrical equipment.
- Maintain safe work clearance and practices as prescribed in the National Electrical Code (NEC).
- Inspect extension cords, electrical power tools, cords, GFCI, and other such items before each use.
- Monitor tools and equipment for operational problems, including signs of overheating or excessive sparking.
- When working with live equipment, always barricade the area so that unqualified individuals will not enter.

15.2.3. Work Practices

Qualified employees performing electrical repairs, modifications, testing, and similar functions on energized electrical systems, parts, and equipment will comply with the following procedures:

NOTE
Service technicians that are factory trained or otherwise considered qualified by the manufacturer to perform troubleshooting, preventative maintenance, or repair of equipment, such as treadmills, x-ray machines, and other specialized equipment possess the necessary core competencies and are considered qualified employees.

An Energized Electrical Work Permit (AAA7012.9) and Job Briefing and Planning Checklist (AAA7012.10) shall be used if live parts are not placed in electrically safe condition (i.e., for reason of increased or additional hazards or infeasibility).

NOTE
Exemption to use of Energized Electrical Work Permits. Work performed on or near live parts by qualified persons related to tasks such as testing, troubleshooting, voltage measuring , etc., may be performed without an energized electrical work permit, provided appropriate safe work practices and personal protective equipment is used as identified in the JHA.

While working on energized circuits, employees should not rely on insulated tools alone for complete protection, but will use double protection combining insulated tools with protective equipment such as gloves, blankets, sleeves, or mats.

- Each live-line tool will be wiped clean and visually inspected for defects before use each day. If there are any defects that could adversely affect insulating qualities or mechanical integrity, the tool will be removed from service and tested.
- Live-line tools used for primary employee protection will be removed from service and tested every 2 years and the results documented.

Employees who face a risk of electrical hazard that is not reduced to a safe level by the applicable electrical installation requirements, as well as emergency response personnel (ERT) shall be trained to understand the specific hazards associated with electrical energy.

- They shall be trained in safety-related work practices and procedural requirements, as necessary, to provide protection from the electrical hazards associated with their respective job or task assignments.
- They shall be trained to identify and understand the relationship between electrical hazards and possible injury.
- They shall be trained in methods of release of victims from contact with exposed energized electrical conductors or circuit parts.
- Emergency Response Team (ERT) members shall be trained to provide Emergency Medical Responder (DOT First Responder Equivalent), and American Heart Association – Health Care Provider CPR / AED, care as per ASL 5500.25 ERT Organization Manual.
- Non-ERT personnel having the potential for exposure to electrical hazards (including escorts) shall receive annual training in “hands only” CPR / AED.

When measuring voltage, qualified employees will use protective equipment that is appropriate for the voltage levels involved.

A ground fault circuit interrupter will be used when equipment is used outside or in wet locations. Regarding ground-fault interrupters:

- All 120-volt, single-phase 15- and 20-ampere receptacle outlets that are not a part of the permanent wiring of the building or structure and are in use by employees shall have approved ground-fault circuit interrupters for personnel protection.
- If receptacle(s) are installed or exist as part of the permanent wiring of the building or structure and are used for temporary electric power, ground-fault circuit-interrupter protection for personnel shall be provided.
- Cord sets or devices incorporating listed ground-fault circuit-interrupter protection for personnel identified for portable use shall be permitted.

NOTE

Circumstances may arise when a service provider may only send one technician to repair, troubleshoot, or maintain specialized equipment. These technicians, although considered "qualified," must be escorted by an employee trained in CPR and AED use, and what to do in the event of an electrical injury. The SMTR or responsible supervisor will ensure that the JHA details the role of the escort should an electrical injury occur. The following details must be specified on the JHA:

- How to safely turn off the source of electricity, if possible.
- The escort will carry a radio at all times and fully understand how to notify emergency response personnel.
- Treat victims of electrical shock ONLY when certain that an electrical current is not running through their body, and ONLY provide treatment at the level of care for which they have been trained and currently certified to provide.

15.2.4. Safe Work Procedures

15.2.4.1. Prior to Beginning Work

Fill out the electrical safety requirements of the task on the Safe Work Permit, the Energized Electrical Work permit and the Job Briefing and Planning Checklist when equipment is going to be worked on live and not locked out.

Verify that work will be performed according to written procedures.

Hold a pre-job planning meeting.

- Before starting each job, the person in charge shall conduct a job briefing with the employees involved. The briefing shall cover such subjects as hazards associated with the job, work procedures involved, special precautions, energy source controls, and personal protective equipment requirements.
- If work or operations to be performed during the work day or shift are repetitive and similar, at least one job briefing shall be conducted before the start of the first job of the day or shift. Additional job briefings shall be held if significant changes that might affect the safety of employees occur during the course of the work.
- On routine work, a brief discussion will be satisfactory if the employee(s), by virtue of training and experience, can reasonably be expected to recognize and avoid the hazards involved in the job.

15.2.4.2. Beginning Work

As work begins, work will be performed:

- as directed by a qualified supervisor,
- based on analysis of the job and hazards, and
- using specific procedures and required PPE for the tasks to be performed.

15.2.4.3. Testing Instruments and Equipment

Only qualified employees may perform testing work on electrical circuits of equipment.

Test instruments and equipment and all associated test leads, cables, power cords, probes, and connectors; these will be visually inspected for external defects and damage before use.

- Damaged equipment will be identified, tagged, and segregated until repaired.

Test instruments, test equipment, and all accessories will be rated for the circuits and equipment, and environment in which they will be used.

Where flammable materials might exist, do not use electric equipment capable of igniting them unless measures are taken to prevent a hazardous condition from developing.

Equipment will be calibrated as specified in M&O's Calibration Master Plan, ASL4330.8.

15.2.5. Personal Protective Equipment

The M&O will provide employees with insulated protective equipment and tools that have been rated for the circuits and equipment for which they will be used or connected with, and the equipment and tools will be suitable for the environment in which they will be used.

- Employees shall only use equipment and tools they have been trained to use.
- When working with live equipment, employees will wear the PPE identified on the arc flash analysis. If the equipment does not have an arc flash analysis, employees shall use the arc flash PPE categories in the most recent revision of the NFPA 70-E.
- All PPE will be of safe design and construction for the work to be performed.
- All PPE required testing will be up to date.

15.2.5.1. PPE Requirements

Design requirements of insulating blankets, matting, covers, line hose, gloves, and sleeves made of rubber will meet the following requirements:

- The manufacturing process and product marking will meet industry standards.
- Blankets, gloves, and sleeves will be produced by a seamless process.
- Each item will be clearly marked with its electrical class (for example, Class 0 will be marked Class 0).
- Electrical PPE will be capable of withstanding the AC proof-test voltage specified in Table 15-1, or the DC proof-test voltage specified in Table I-2 in 29 CFR 1910.137.
- Equipment will be free from any harmful physical irregularities.

Electrical protective equipment will be tested at the following intervals:

- Rubber insulating line hose and covers will be tested when indications show that its insulating value seems inadequate.
- Rubber insulating blankets will be tested before first issue and every 12 months thereafter.

NOTE
Insulating equipment, including newly purchased equipment, must have been electrically tested within the previous 12 months.

- Rubber insulating gloves will be tested before first issue and every 6 months thereafter.
- Rubber insulating sleeves will be tested before first issue and every 12 months thereafter.

15.2.5.2. Use of PPE

Appropriate PPE will be used to perform any of the following actions:

- Verifying operational shutdown
- De-energizing circuits
- Applying lockout/tagout
- Installing personnel safety grounds
- Testing/verifying for de-energized circuit
- Attempting operation of equipment
- Establishing a standby/safety watch
- Performing safe energized (live) work, if required
- Conducting de-energize tests
- At release for operational restart.

15.2.6. Portable Electric Tools and Equipment

15.2.6.1. Inspection and Maintenance

- Portable cord-and-plug connected equipment and extension cords must be visually inspected before use on any shift for external defects (such as loose parts, deformed and missing pins, or damage to outer jacket or insulation) and for possible internal defects or damages (such as pinched or crushed outer jacket).
- Any defective cord or cord-and-plug connected equipment must be removed from service, and replaced.

15.2.6.2. Conditions of Use

- Portable electric tools, equipment, and GFCIs shall not be used in hazardous locations unless marked to indicate suitability for use.
- Portable electric tools and equipment shall not be handled or suspended by their cords. Tools and equipment shall be used only for their intended purpose, and when guards are required, such guards shall be in place and functional.
- Portable electric powered tools shall be double insulated or properly grounded, and shall not be used when the ground pin is damaged or missing.
- All tools and equipment shall either be grounded via the case, double-insulated, specially approved, low-voltage types or self-contained, battery-operated types.
- Tools and equipment used in damp areas shall be approved for such use. Generally, electrical tools are not approved for use in wet or damp areas without some means of protection.

15.2.6.3. Use of Extension Cords

- Use of extension cords shall be minimized.
- Extension cords shall be suitable for the intended use, such as waterproof connectors for wet or damp areas, and are subject to the same conditions as the tool or equipment cord.

- Generally, “daisy chaining” (attaching one cord to another) of extension cord set is prohibited unless specially allowed by manufacturer and listed for this application.
- Extension cords shall be visually inspected before each use.
- Extension cords used with portable metal electric tools and appliances on construction sites shall be of the three-wire type and shall be designed for hard or extra-hard usage.

NOTE
Extension cords approved for outdoor use must be identified by “outdoor” or “W-A” on the jacket.

- OSHA-recognized hard service cord (types S, ST, SO, and STO) and junior-hard service cord (SJ, SJO, SJT, and SJTO) shall be used as appropriate for extra-hard and hard use.
- Flexible cords sets will be listed as an assembly by a nationally recognized testing laboratory.
    - The cords shall be hard use or extra-hard use as specified in the NEC.
    - Flexible cords used with temporary and portable lights shall be designed for hard or extra-hard use.
    - Flexible cord sets used on construction sites shall contain the number of conductors required for the circuit plus an equipment grounding conductor.

15.3. ELECTRICAL TRAINING AND QUALIFICATION OF QUALIFIED EMPLOYEES

15.3.1. Requirements

NOTE
Specialized equipment, such as treadmills and x-ray machines require the use of outside vendors and manufacturers who may send a service technician to troubleshoot, repair, or maintain that equipment at the SPR. Although these technicians may not meet all of the electrical training requirements outlined in this section, they possess the necessary core competencies and are to be considered “qualified employees.” If in doubt about a specific piece of equipment contact the New Orleans Safety staff.

Only qualified employees shall work on electrical equipment and systems. Qualification training can be obtained on the job or in the classroom. Training will include:

- Safety-related work practices of 29 CFR 1910.331 through 1910.335.
- Skills and techniques necessary to distinguish exposed live parts and other electrical equipment.
- Skills and techniques necessary to determine:
    - Nominal voltage of exposed live parts,
    - Clearance distances specified in 29 CFR 1910.333(c), and
    - Corresponding voltages to which a qualified employee might be exposed.

- Procedures on how to perform electrical tasks safely and properly.
- Procedures on how to protect unqualified employees on jobs that require close proximity to exposed parts of electrical circuits operating at 50 volts (V) or more to ground.
- Lockout/tagout procedures per the Lockout/Tagout section of this manual.
- Other types of training:
  - Standard for Electrical Safety in the Workplace (NFPA-70E),
  - National Electrical Safety Code (NFPA 70),
  - Use of personal protective grounds 29 CFR 1926.954,
  - Use of testing and measuring equipment 29 CFR 1910.334(c),
  - Safe Work Permit and work authorization procedures (Section 30),
  - Use and care of personal protective equipment 29 CFR 1910.335(a) and 1910.137, and
  - Proper clothing required for arc flash and arc blast protection.
- CPR and first aid.
- If involved in the generation, transmission, and distribution systems of an electrical system, training on 29 CFR 1910.269 (for example, work on electrical substations).

15.4. ELECTRICAL EQUIPMENT APPROVAL

15.4.1. Requirements

Electrical equipment components and conductors must be approved for their intended use through the following methods:

- If equipment is not “listed” by a Nationally Recognized Testing Laboratory (NRTL), an authority knowledgeable for enforcing National Electrical Codes (NECs) can determine that the equipment complies with NEC standards.

WARNING
M&O procurement of portable heaters for personal comfort is permitted provided that the heaters are UL-listed and Government procured. M&O employees are prohibited from bringing privately owned heaters to work.

- Custom-made equipment can be approved if the "authority having jurisdiction" (AHJ) determines that the equipment is safe for its intended use.
- On site AHJ authority is based on Electrical Safety Committee’s (ESC’s) approval of written program documentation, evaluation methods, and procedures.
- All appliances for personal use in the workplace, such as coffee pots, refrigerators, and radios, will be listed by the National Recognized Testing Laboratory (NRTL).

15.5. CLASS I REQUIREMENTS

M&O requires the use of “approved for use in the area” classified equipment in electrical Class 1 (Division 1 or 2) areas whenever possible. When equipment or operations require hot work

within these areas, and no other practical alternative is possible, the hot work will be kept to a minimum, and employees will follow special hazard controls in accordance with hot work permit requirements.

15.6. ELECTRICAL SAFETY PROGRAM

15.6.1. Purpose

The purpose of the Electrical Safety Program for the SPR is:

- to promote a safe workplace, free from electrical hazards, for all employees and subcontractors, and
- to implement all M&O and DOE electrical policies and procedures, and to achieve compliance with all federal, state, and local regulations.

The electrically safe workplace will be achieved by:

- mandating and implementing the electrical subparts of 29CFR1910 and 29CFR1926,
- applying the National Electrical Code (NFPA 70) and Standard for Electrical Safety in the Workplace (NFPA 70E) and any additional requirements mandated by applicable state and local laws or regulations or DOE for the design, construction, operation, and maintenance of SPR facilities,
- applying SPR design and construction criteria and standard specifications,
- complying with M&O electrical policies and safe work procedures,
- implementing the Electrical Safety Program, which meets the minimum requirements of the DOE Model Electrical Program,
- encouraging employee participation in program development, implementation, and ongoing improvement,
- using the Energized Electrical Work Permit and Job Planning and Briefing Checklist for work that must be done on energized equipment, and use the specified arc flash clothing, labeling and distance specified in Tables 15.1 and 15.2.

15.6.2. Scope

The electrical safety program applies to all site organizations, both at the operating sites and in New Orleans, and to all contractors and subcontractors.

Requirements for visitors, contractors and subcontractors.

- Meet all applicable, current OSHA requirements.
- Conform to the sites' electrical safety requirements by documenting that each employee has received and understands the training required for electrical work.
- Prepare a record that contains the identity of the employee, the date of training, and the means used to verify the employee understood the training.
- Conform to local, city, county, parish, or state jurisdictional requirements.
- Each site director shall appoint an electrical safety committee to be program owner at the site.

- The committee will include craftsmen, the site engineer, and supervisors, as well as management representatives.
- The purpose of the committee is not to make electrical design decisions; those will be left to Engineering and Construction, as appropriate.
- The purpose of the committee is to have a trained group ready to make day-to-day safety decisions.
- The chain of command for design work and professional interpretation is already established.
- New Orleans Occupational Safety and Health will own the M&O (corporate) program, plan, and implementation guidance. The ultimate, final AHJ is the SPR Project Management Office (SPRPMO).

15.6.3. Performance Objectives

The Electrical Safety Program has the following objectives.

- Establishing the AHJ for initially interpreting OSHA, NFPA 70, NFPA 70E and other requirements for electrical work at the sites.
- Establishing criteria, matrices, and documentation for self-assessment of the Electrical Safety Program.
- Providing continuous opportunity for improvement.
- Evaluating the Electrical Safety Program on an annual basis on AAA.9020.546, SPR Electrical Safety Program Annual Self Assessment form; evaluation will be followed by action plans that respond to findings, if any.
- Establishing requirements and controls for implementing the program.
- Providing guidance to all departments, as well as assistance in developing and implementing safe operating and maintenance procedures, which include electrical requirements.
- Ensuring a safe workplace with the lowest reasonable risks from electrical hazards by:
    - Establishing a training program that meets the requirements of initial and refresher training for "qualified" and "unqualified" electrical workers as defined by OSHA, and establishes safe work practices for all personnel engaged in or exposed to electrical work, in accordance with 29CFR1910.331-335 and NFPA 70E “Electrical Safety in the Workplace.”
    - Establishing minimum training requirements for electrical supervisors or foremen.
    - Complying with all applicable electrical requirements of the codes listed below.
        - Electrical Equipment Maintenance (NFPA 70B)
        - National Electrical Code (NEC) NFPA 70
        - Electrical Safety Requirements for Employee Workplaces (NFPA 70E)
        - American National Standards Institute (ANSI) C.2, National Electrical Safety Code (NESC)
        - 29CFR1926, subparts K and V
        - R1910, subparts S and 1910.269
        - State, county, parish, and local versions of the requirements
        - DOE orders and design criteria

- SPR orders, and design and performance criteria
- M&O policies and procedures

- Requiring that resources be allocated for implementing this program.
- Requiring documented approval of alternative electrical hazard controls, such as the "approved for use in the area" classification equipment required by Class I, Division 1 or 2 areas in compliance with the Hot Work Permit Procedure section of the APM. Documentation must include the alternate hazard controls that will provide adequate protection. The proposed, temporary process configuration will be reviewed and concurred with by the site Electrical Safety Council and physically inspected by the supervisor signing the permit and the site safety professional. (The Hot Work Permit Procedure section of this APM provides specific controls for using alternative controls in Class I areas.)

15.6.4. Conducting the Annual Self-Assessment

Sites shall conduct an annual self-assessment of the Electrical Safety Program. The assessment shall be documented on the SPR Electrical Safety Program Annual Self Assessment form (AAA.9020.546). The form includes specific items that the Electrical Safety Program should have in place to assure compliance with OSHA 29 CFR 1910.333 and NFPA 70E. The form is available on the S&H SharePoint site.

This assessment is intended for use by M&O Safety personnel to annually assess and determine the effectiveness of the Electrical Safe Work Practices (ESWP) requirements, as well as identify potential improvements or gaps of the Electrical Safety Program.

Site Safety is responsible for completing the assessment annually. Site Safety shall seek assistance from the site I&E supervisor.

Upon completion of the assessment, Site Safety shall forward a copy of the AAA9020.546 Form or a hyperlink to where the file can be accessed to the S&H Director or designee to show completion of the annual assessment.

15.7. ELECTRICAL INCIDENT REPORTING

All electrical incidents -- including electrical shock, unplanned employee exposure, or “near miss” -- will be reported in accordance with the Reporting –Recording Procedures outlined in Section 38.

15.8. ELECTRICAL ARC FLASH HAZARDS AND REQUIREMENTS

15.8.1. Arc Flash Requirements

Equipment must be put in a “safe working condition” (NFPA 70E) and the lockout/tagout procedures used to keep workers safe. Verifying the absence of energy potential is required in both NFPA 70E and OSHA 1910.333b.

The process of de-energizing the electrical equipment and putting it into a safe condition introduces employees to risk. Since testing for the absence of potential is considered working on live parts according to OSHA 1910.333(b) and NFPA 70E, personal protective equipment is required. An arc flash analysis has been performed to determine the amount of arcing fault energy that equipment has and the boundary at which injury can be sustained by working on

this equipment. The SPR will provide arc flash protection for employees working on live equipment in accordance with NFPA 70E.

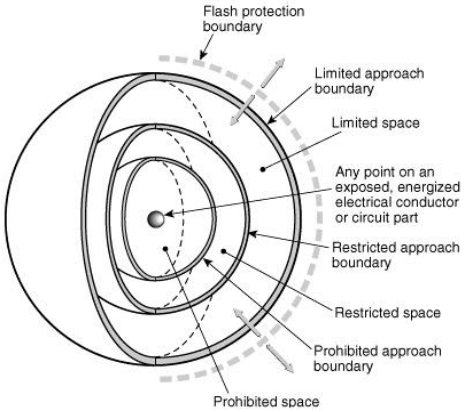
The M&O will mark all switchboards, panel boards, industrial control panels, and motor control centers in other than dwelling occupancies, that are likely to require examination, adjustment, servicing, or maintenance, in order to warn qualified persons of potential electric arc flash hazards. The marking shall be located so as to be clearly visible to qualified persons.

The required label will be placed on the above equipment and the PPE worn will be the maximum required for flash hazards based on the Tables 15-1 and 15-2 in the most recent version of NFPA 70-E.

For most equipment calculations have not been done within the past five years, therefore, Table 15-1 and Table 15-2 must be used to establish the:

- Flash Boundary Protection
- PPE Required
- Voltage shock hazard
- Limited shock approach boundary
- Restricted shock approach boundary
- Prohibited approach boundary

15.8.2. Limits of Approach



15.8.2.1. Shock Hazard Boundary Distances

- The Limited Approach Boundary is the distance from an exposed live part within which an electrical shock hazard exits.
- The Restricted Approach Boundary is the distance from an exposed live part within which there is an increased risk of electrical shock, due to electric arc combined with inadvertent movement, for personnel working in close proximity to live parts.
- The Prohibited Approach Boundary is the distance from an exposed live part within which work is considered the same as making contact with the energized part.

15.8.2.2. Flash Hazard Boundary Distances

- The Working Distance is the dimension between the possible arc point and the head and body of a worker positioned in place to perform a task on the energized part.
- The Flash Protection Boundary is the distance from exposed live parts within which a person could receive a second degree burn on unprotected skin if an electrical arc flash were to occur.

15.8.2.3. Limited Spaces

- The area within the limited approach and the restricted approach boundaries is designated the limited space.
- The area within the restricted approach and the prohibited approach boundaries is designated the restricted space.
- The area within the prohibited approach boundary and the energized live part is designated the prohibited space.
- The area within the arc flash boundary and the exposed live parts is designated the flash hazard space.

15.8.3. Unqualified Persons

Unqualified persons shall maintain a safe approach distance outside of the Limited Approach Boundary unless continuously escorted by a qualified person

Unqualified persons shall not cross the Flash Protection Boundary unless they are wearing appropriate personal protective clothing and are under the close supervision of a qualified person.

CAUTION
Under no circumstances may an unqualified person cross the Restricted Approach Boundary, where special shock protection techniques and equipment are required.

15.8.4. Qualified Persons

A person qualified to perform a job/task is allowed to cross the Limited Approach Boundary and enter the limited space.

A person qualified to perform a job/task is allowed to cross the Restricted Approach Boundary and enter the Restricted Space, if:

- personal protective equipment is used that is appropriate for working near exposed energized conductors or circuit parts, and is rated for the voltage and energy level involved,
- they are certain that no part of the body enters the prohibited space, and
- they have a documented and approved work plan.

A person qualified to perform a job/task is allowed to cross the Prohibited Approach Boundary and enter the Prohibited Space if:

- the employee has specialized training in work on energized conductors or circuit parts, i.e., an electrician.

- they use personal protective equipment that is appropriate for working on exposed energized conductors or circuit parts and is rated for the voltage and energy level involved, and
- they have a documented and approved JHA and work plan justifying the work. An Energized Electrical Work Permit must be issued and meet the work plan requirement.

15.8.5. Personal Protective Equipment (PPE) Requirements for Arc Flash

Employees working in areas where electrical hazards are present shall be provided with, and shall use, protective equipment that is designed and constructed for the specific part of the body to be protected and for the work to be performed. A JHA shall be performed before any work is performed on electrical equipment.

CAUTION
Conductive articles of clothing and jewelry **shall not be worn** in conjunction with the electrical safety personal protective equipment or clothing. Such articles include: metal headgear, metal frame glasses, metal aprons, cloth with metal buttons or conductive thread, metal watchbands, bracelets, rings, key chains and necklaces.

15.8.5.1. General

When an employee is working within the Flash Protection Boundary, he/she shall wear arc flash clothing and other personal protective equipment in accordance with NFPA 70E Tables 15.1 and 15.2. A JHA shall be developed before working on electrical equipment.

15.8.5.2. Movement and Visibility

When arc flash clothing is worn to protect an employee, it shall cover all ignitable clothing and shall allow for movement and visibility.

15.8.5.3. Head, Face, Neck, and Chin Protection

Employees shall wear nonconductive head protection whenever there is a danger of head injury from electric shock or burns due to contact with live parts or from flying objects resulting from electrical explosion. Employees shall wear nonconductive protective equipment for the face, neck, and chin as specified on the arc flash equipment tables whenever there is a danger of injury from exposure to electrical arcs or flashes or from flying objects resulting from electrical explosion.

15.8.5.4. Eye Protection

Employees shall wear protective equipment for eyes whenever there is danger of injury from electrical arcs, flashes, or flying objects resulting from an electrical explosion.

15.8.5.5. Body Protection

Qualified employees shall wear arc flash clothing wherever there is possible exposure to an electrical arc flash above the threshold incident-energy level for a second degree burn, 5J/cm2 (1.2 cal/cm2).

CAUTION
Generally, a higher degree of protection is provided by heavier weight fabrics and/or by layering combinations of one or more layers of arc flash clothing. In some cases, one or more layers of arc flash clothing are worn over flammable non-melting clothing. The arc flash clothing must always be the outermost layer.

15.8.5.6. Hand and Arm Protection
Employees shall wear rubber insulating gloves where there is a danger of hand and arm injury from electric shock due to contact with live parts. Hand and arm protection shall be worn where there is possible exposure to arc flash burn. When rubber Insulating gloves are not required, suitable work gloves should be worn while handling materials and equipment to prevent the possibility of slivers, cuts, and skin irritation.

15.8.5.7. Foot and Leg Protection
Where insulated footwear is used as protection against step and touch, potential dielectric overshoes shall be required. Insulated soles shall not be used as primary electrical protection.

15.8.5.8. Protective Clothing When Hazard/Risk Category Identified
Once the Hazard/Risk Category has been identified, Tables 15.1 and 15.2 shall be used to determine the required personal protective equipment for task. NFPA 70-E Table 130.7(C)(10) lists the requirements for protective clothing and other protective equipment based on Hazard/Risk Category numbers 0 through 4. This clothing and equipment shall be used when working on or near energized equipment within the Flash Protection Boundary.

15.8.5.9. Protective Clothing Use
Clothing and equipment that provide the worker protection from shock and arc flash hazards shall be worn. Clothing and equipment required for the degree of exposure shall be permitted to be worn alone or integrated with flammable non-melting apparel. If arc flash clothing is required, it shall cover associated parts of the body as well as all flammable apparel while allowing movement and visibility. Wearing arc flash clothing does not eliminate the need for other PPE based upon the hazards of the work to be performed.

WARNING
While Arc flash clothing meets the Flame Resistant Clothing requirements, FRC **does not** provide arc flash protection.

NOTE
Protective arc-flash clothing includes shirts, pants, coveralls, jackets, and parkas worn routinely by workers who, under normal working conditions, are exposed to momentary electrical arc and related thermal hazards.

15.8.5.10. Layering
Non-melting, flammable fiber garments shall be permitted to be used as under layers in conjunction with arc flash garments in a layered system for added protection. If non-melting, flammable fiber garments are used as under layers, the system arc rating shall be sufficient to prevent break-open of the innermost arc flash layer at the expected arc exposure incident energy level to prevent ignition of flammable under layers. (Note: A typical layering system might include cotton underwear, a cotton shirt and trouser, and an arc flash rated coverall. Special tasks might call for additional flame-resistant layers to achieve required protection level.)

Outer Layers: Garments worn as outer layers over arc flash clothing, such as jackets or rainwear, shall also be arc flash rated.

Under Layers:

- Meltable fibers such as acetate, nylon, polyester, polypropylene, and spandex shall not be permitted in fabric under layers (underwear) next to the skin.
    - Exception: An incidental amount of elastic used on non-melting fabric underwear is allowable.
- Flame-resistant underwear or undergarments used as under layers generally provide a higher system arc rating than non-melting, flammable fire underwear or undergarments used as under layers.
- Clothing shall cover potentially exposed areas as completely as possible. Shirt sleeves shall be fastened at the wrists, and shirts and jackets shall be closed at the neck.

Tight-fitting Clothing:

- Tight-fitting clothing shall be avoided.
- Loose-fitting clothing provides additional thermal insulation because of air spaces.
- The garment selected shall result in the least interference with the task but still provide the necessary protection.
- The work method, location, and task will influence the protective equipment selected.

15.9. STORAGE BATTERIES

Storage batteries are considered a live source and appropriate precautions must be taken by personnel working around them.

15.9.1. Spacing

- Adequate space shall be provided around storage batteries for safe inspection, maintenance, testing, and cell replacement.
- Space shall be left above cells to allow for operation or lifting equipment when required, for addition of water and for taking measurements.

15.9.2. Location

- Storage batteries shall be located in a protective enclosure or area accessible to qualified persons.
- A protective enclosure can be a battery room, a control building, or a case, cage, or fence that can protect the contained equipment and minimize the possibility of inadvertent contact with energized parts.

15.9.3. Ventilation

- The battery storage area must be ventilated by either a natural or powered ventilation system to prevent accumulation of hydrogen.
- The ventilation system must limit the hydrogen accumulation to less than explosive levels.

15.9.4. PPE for Battery Storage and Handling

- PPE capable of protecting employees from acid splashes shall be used by those working on or servicing batteries

- The minimum acceptable PPE shall include acid resistant gloves, aprons, and chemical goggles with a full face shield to protect the face.
- The design and use of PPE for wear when servicing batteries shall comply with OSHA requirements.
- Safety showers are required in close proximity and eyewash stations which can be reached within no more than 10 seconds or immediately adjacent to work using strong acid or caustic materials

15.9.5. Tools

Tools used for working on batteries shall be equipped with handles listed as insulated for the maximum working voltage and non-sparking.

15.9.6. Additional Information

Other information about storage batteries and battery banks is in DOE-HDBK-1092-2004 (DOE Handbook for Electrical Safety).

15.10. RESPONSIBILITIES

New Orleans Maintenance

- Develop and implement an electrical preventive maintenance program with safe work practices for electrical work.
- Provide changes to related operating and maintenance procedures that safely control electrical hazards.
- Provide procedures that include adequate CAUTIONS and WARNINGS to identify hazards related to the maintenance of the equipment/facility.
- Provide technical assistance in electrical accident investigations, root cause analysis, and similar functions.

Instrumentation &Electrical (I&E) Supervisors and Leads

- Identify and document all electrical hazards.
- Ensure that all personnel are aware of identified hazards.
- Ensure that all personnel follow safe work practices when performing electrical tasks.
- Ensure that electrical safety awareness training and other task-specific electrical safety training are provided as required by law, codes, and standards, including 29 CFR 1910.332 and 137.
- Conduct periodic inspections of work areas to ensure that employees are following safe electrical work practices.
- Ensure that direct supervisors are adequately trained and qualified in safe electrical work practices.
- Document and correct all electrical deficiencies using the Assessment Tracking System (ATS) or the work order system.
- Conduct or attend electrical safety committee meetings at least twice a year and when needed.

- Ensure that subcontractors under their daily supervision use safe work practices.

Engineering

- Verify that all new or changed equipment/facilities are designed to comply with OSHA, ANSI, NEC, state, local, and DOE requirements.
- Verify that purchased electrical equipment and appliances are listed by an NRTL, such as UL when available.
- Provide operating/maintenance procedures as requested by O&M during the design review process.
- Review electrical operating and maintenance procedures for compliance.
- Ensure that vendors provide the manufacturer's operating and maintenance procedures for electrically-powered equipment before use.
- Ensure that flash hazard analysis is done on new or modified electrical equipment and the information is provided to the site.
- Ensure that the flash hazard analysis is validated (and revised if need be) every three years.

Configuration Management (CM)

- Enforce CM policies and procedures for physical changes to equipment and facilities.
- Assess compliance with CM procedures and include the timeliness of procedural changes in the assessment.

Site Director

- Select the Electrical Safety Committee chairperson, and approve the site committee's charter and membership.
- Ensure equipment that presents an arc flash hazard is labeled.
- Approve and sign Energized Electrical Work Permit for work performed on energized equipment.
- Approve site Technical Competent Persons in writing.

Operations Manager or Designee

- Review and issue Safe Work Permits verifying that electrical equipment has been made safe for work to be performed.
- Ensure that Operations personnel working with or in the proximity of energized equipment receive electrical safety awareness training.
- Approve temporary alternate controls for Class 1, Divisions 1 and 2 areas for maintenance, testing, workover, or repair that involves equipment that is not approved for use in the area classification. This includes permitting, stipulating and documenting extraordinary hazards controls and a physical inspection and acceptance with SPR policy, in compliance with the Hot Work Permits section of this APM. For example, continuous monitoring may be required.
- Approve and sign Energized Electrical Work Permit for work done on energized equipment.

Maintenance Manager

- Ensure that a Job Hazard Analysis (JHA) is performed on all electrical tasks.
- Verify that modifications in the work area comply with 29 CFR 1910. Subpart S, NFPA 70, and SPR Configuration Management requirements.
- Ensure that equipment that presents a flash hazard has the required warning labels.
- Approve and sign Energized Electrical Work Permit for work done on energized equipment.
- Maintain a log of work completed under the Exemption to the Energized Electrical Work Permit showing date, job description, and hazard controls used.

Supervisors

- Review Safe Work Permit requirements with employees before the tasks are started. During this review, discuss the hazards and the controls that will be in place (example: lockout/tagout). Encourage employee feedback and participation.
- Review the Job Hazard Analysis with employees.
- Review specific lockout/tagout and safe electrical work practices before the task is started.
- Ensure that employees assigned to tasks are trained on the equipment and are trained in and understand safe electrical work practices.
- Provide and oversee on-the-job training and job hazard analysis.
- Inspect employees' work areas daily to make sure safe electrical work practices are used.
- Ensure that employees do not work with live electrical equipment unless de-energizing presents a greater danger or unless de-energizing is not possible. Ensure that if equipment must be worked on live, an Energized Electrical Safe Work Permit is issued and reviewed by employees or that an Exemption to the EESWP has been approved and documented.
- Review temporary alternate hazard controls for Class I, Divisions 1 and 2 areas for maintenance or repair that involves equipment that is not approved for use in the area classification. This includes stipulating and documenting extraordinary hazard controls, issuing a safe work permit, a physical inspection and acceptance, in accordance with SPR policy.
- Ensure that the buddy system is used when work requires it, such as when working with live equipment at 50 volts and above. The buddy must be a qualified electrician trained to NFPA 70E and OSHA standards, familiar with equipment and how to release the affected individual from the power.
- Ensure that Energized Electrical Work Permit and Job Briefing and Planning checklist is reviewed with employees performing the task.
- Ensure that training is duly recorded and documented. The employee's supervisor must sign the documentation certifying the employee as qualified and must periodically check the employee's job performance and knowledge to maintain qualifications. This periodic check will also be documented. The performance-based training checklist may be used to accomplish this task.

Site ES&H Manager

- Assist in the development of and oversee site-specific electrical procedures.
- Approve and sign an Energized Electrical Work Permit for work done on live equipment (AAA7012.9).

Site Safety Specialist

- Assist the site line safety organization in developing site operating procedures, in reducing the requirement for work on live electrical circuits as much as possible, and in specifying adequate hazard controls when working with live circuits.
- Investigate electrical accidents and incidents to determine and document the root cause, and recommend corrective action. Also, help identify and disseminate lessons learned.
- Conduct assessments of electrical programs at least annually.
- Provide technical expertise to operators and craftsmen performing JSAs/JHAs on the electrical tasks.
- Assist in conducting electrical safety training.
- Periodically review site procedures for operating and maintaining electrical equipment to ensure the adequacy of hazard controls and appropriate CAUTIONS and WARNINGS.
- Informally observe electricians performing tasks to determine if they are practicing safe behavior while working with electrical equipment.
- Review and bring the Energized Electrical Work Permit to Electrical Safety Committee to ensure that live work was required and electrical safe practices were followed.

Technically Competent Person

- Approve and sign the Energized Electrical Work Permit for work done on energized equipment.
- Review and sign the safe work permit for work done on 480 volts and above to ensure that electrical safe work practices are followed.

Electrical Safety Committee

- Act as the local AHJ for enforcing electrical codes and regulations at the site. (Note: This responsibility primarily applies to reviews of hazard controls, work procedures, and other tasks related to code compliance. The design AHJ is M&O Engineering and, ultimately, DOE.) The ultimate AHJ is the SPR Project Management Office (SPRPMO).
- Maintain and oversee the Electrical Safety Program, adapting the M&O program to site conditions while complying with the structure and requirements of this section.
- Develop and maintain site-specific electrical safety procedures that comply with M&O policies and are based on standards, regulations, and the DOE program. The SPR project manager has directed that the SPR program meet the DOE-national requirements of a “model” program.
- Assist departments in interpreting the electrical requirements of OSHA, DOE orders, and other codes, standards, and site practices.
- Maintain a copy of all interpretations issued.

- The committee shall meet at least twice a year and more frequently when needed to address electrical problems at the site. Publish Electrical Safety Committee minutes and forward a link of the same to the NOLA Safety Manager.
- Transmit unresolved electrical issues beyond the technical expertise of the site to M&O Electrical/Control Systems Engineering and ultimately to DOE as final AHJ, if required.

Subcontract Manager's Technical Representative

- Verify that the requirements established by codes and regulations are enforced during construction of all facilities by requiring that qualified personnel oversee electrical inspections.
- Verify that designated, qualified personnel received training in the NEC (NFPA 70) and electrical safety awareness and are qualified (as defined in this program) to perform electrical inspections.
- Provide subcontractor oversight to ensure that subcontractors comply with all site-specific safety requirements, including electrical safety, as required by 29 CFR 1910.119.
- Provide reports of electrical injuries and "near misses" to M&O S&H.

Qualified Person

- Ensure that live parts are de-energized, unless de-energizing introduces additional or increased hazards, or that de-energizing is not possible due to equipment design or operational limitations.
- Report every electrical accident/incident and all hazards contributing to occurrence.
- Report any electrical shock to the supervisor
- Read, understand, and follow all applicable procedures that have electrical requirements.
- Use appropriate controls such as lockout/tagout, personal protective equipment, or other devices when performing tasks.
- Only perform work on equipment after appropriate training and qualifications are obtained.
- Review procedures, hazards, and controls before performing an electrical task.
- Attend appropriate electrical safety awareness training and other training as required by 29 CFR 1910.332 and demonstrate satisfactory performance after training.
- M&O subcontractor will participate in developing electrical maintenance operating procedures to comply with 29 CFR 1910.119, "Process Safety Management."
- Work only on equipment equal to level of training achieved.
- Participate in the identification and use of appropriate PPE as required by 1910.132 and 1910.137.
- O&M will address concerns and interface with their representatives on the Electrical Safety Committee.

- When equipment has to be worked on live, review the Energized Electrical Work Permit & Job Briefing and Planning Checklist to ensure that all the controls will be in place and the proper PPE shall be worn.

Employees

- Be aware of the electrical hazards in their work areas.
- Before use on any shift, visually inspect portable cord and plug connected equipment for external defects (such as loose parts, deformed and missing pins) and for evidence of possible internal damage (such as pinched or crushed outer jacket).
- Inspect extension cords for damage before use and tagout if damaged.

15.11. TABLES: ELECTRICAL SAFETY-RELATED WORK PRACTICES

TABLE 15.1. HAZARD/RISK CATEGORY CLASSIFICATION AND USE OF RUBBER INSULATING CLOVES AND INSULATED AND INSULATING HAND TOOLS-DIRECT CURRENT EQUIPMENT			
Tasks Performed on Energized equipment	Hazard/Risk Category	Rubber Insulating Gloves	Insulated and Insulating Hand Tools
Panel boards or other Equipment Rated 240 V and Below Parameter: Maximum of 25 kA short circuit current available Maximum of 0.03 sec (2 cycle) fault clearing time minimum 18 in. working distance Potential arc flash boundary with exposed energized conductors or circuit parts using above parameters: 19 in.			
Perform infrared Thermography and other non-contract inspections outside the restricted approach boundary	0	N	N
Circuit breaker (CB) or fused switch operation with covers on	0	N	N
CB or fused switch operation with covers off	0	N	N
Work on energized electrical conductors with circuit parts including testing	1	Y	Y
Remove/Install CBs or fused switches	1	Y	Y
Removal of bolted covers (to expose bare, energized electrical conductors and circuit parts)	1	N	N
Opening hinged covers (to expose bare, energized electrical conductors and circuit parts)	0	N	N
Work on energized electrical conductors and circuit parts of utilization equipment fed directly by a branch circuit of the panel board	1	Y	Y
Panel boards or other equipment rated > 240 V and up to 600 V Parameter: Maximum of 25 kA short circuit available; maximum of 0.03 sec (2 cycle) fault clearing time; 18 in. working distance Potential arc flash boundary with exposed energized conductors or circuit parts using above parameters: 30 in.			
Perform infrared thermography and other non-contact inspections outside the restricted approach boundary	1	N	N
Circuit breaker (CB) or fused switch operation with covers on	0	N	N
CB or fused switch operation with covers off	1	Y	N
Work on energized electrical conductors and circuit parts, including voltage testing	2	Y	Y
Remove/install CBs or fused switches	2	Y	Y
Removal of bolted covers (to expose bare, energized electrical conductors and circuit parts)	1	N	N
Open hinged covers (to expose bare, energized electrical conductors and circuit parts)	0	N	N
Work on energized electrical conductors and circuit parts of utilization fed directly by a branch circuit of the panel board	2	Y	Y
600 V class motor control center (MCCs) Parameter: Maximum of 65 kA short circuit current available; maximum of 0.03 sec (2 cycle) fault clearing time; minimum 18 in. working distance Potential arc flash boundary with exposed energized conductors or circuit parts using above parameters; 53 in.			
Perform infrared thermography and other non-contact inspection outside the restricted approach boundary	1	N	N

TABLE 15.2. PROTECTIVE CLOTHING AND PPE	
Hazard/Risk Category	**Protective Clothing and PPE Required**
0	Protective clothing, non-melting or untreated natural fiber (i.e., untreated cotton, wool, rayon, or silk, or blends of these materials) with a fabric weight of at least 4.5 oz/yd2 Shirt (long sleeve) Pants (long) Protective Equipment Safety glasses or safety goggles Hearing protection (ear canal inserts) Heavy duty leather gloves
1	**Arc-rated clothing, minimum arc rating of 4 cal/cm2** — Arc-rated long-sleeve shirt and pants or arc-rated coverall — Arc-rated face shield or arc flash suit hood — Arc-rated jacket, parka, rainwear, or hard hat liner (AN) **Protective Equipment** — Hard hat — Safety glasses or safety goggles — Hearing protection (ear canal inserts) — Heavy duty leather gloves — Leather footwear
2	**Arc-rated clothing, minimum arc rating of 8 cal/cm2** — Arc-rated long-sleeve shirt and pants or arc-rated coverall — Arc-rated flash suit hood or arc-rated face shield and arc-rated balaclava — Arc-rated jacket, parka, rainwear, or hard hat liner (AN) **Protective Equipment** — Hard hat — Safety glasses or safety goggles — Hearing protection (ear canal inserts) — Heavy duty leather gloves — Leather footwear
3	**Arc-rated clothing selected so that the system arc rating meets the required minimum arc rating of 25 cal/cm2** — Arc-rated long-sleeve shirt (AR) — Arc-rated pants (AR) — Arc-rated coverall (AR) — Arc-rated arc flash suit jacket — Arc-rated arc flash suit pants — Arc-rated arc flash suit hood — Arc-rated gloves — Arc-rated jacket, parka, rainwear, or hard hat liner (AN) **Protective Equipment** — Hard hat — Safety glasses or safety goggles — Hearing protection (ear canal inserts) — Leather footwear
4	**Arc-rated clothing selected so that the system arc rating meets the required minimum arc rating of 40 cal/cm2** — Arc-rated long-sleeve shirt — Arc-rated pants — Arc-rated coverall (AR) — Arc-rated arc flash suit jacket — Arc-rated arc flash suit pants — Arc-rated arc flash suit hood — Arc-rated gloves — Arc-rated jacket, parka, rainwear, or hard hat liner (AN) **Protective Equipment** — Hard hat — Safety glasses or safety goggles — Hearing protection (ear canal inserts) — Leather footwear

16. EMPLOYEE BEHAVIORAL SAFETY PROCESS (EBSP)

PURPOSE

This section provides instructions and requirements on how the M&O will sustain and assess an Employee Behavioral Safety Process (EBSP).

SCOPE

- Introduction
- Specific Responsibilities
- Technical Performance Measures
- Permanent and/or Temporary Subcommittees

APPLICATION

All storage sites participate in the EBSP. New Orleans employees participate in a modified lean behavioral process.

16.1 INTRODUCTION

The M&O uses the Behavioral Safety Process to gather behavioral risk data at the employee level and to provide feedback to employees to allow continuous reduction of injury risk. Because unique processes, systems, and workers characterize each M&O site, each one has a unique combination of issues contributing to its safety culture. Identifying the right issues is essential to successfully tracking and documenting efforts to manage safety-related behavior.

16.2. SPECIFIC RESPONSIBILITIES

Each SPR storage facility will strive to have all of the employees trained to the observer level and to maintain a contact rate of one per month.

The New Orleans M&O office will maintain a cadre of employees trained to the observer level in sufficient number to support the requirements of a lean behavioral process and maintain a contact rate of 0.25 per month.

Behavioral Safety Steering Committee
Each site, including the New Orleans office/warehouse complex, will maintain a behavioral safety steering committee that will be responsible for:

- Holding meetings,
- Performing observations,
- Training and coaching observers, and
- Reporting progress and concerns at the Safety Management Council meetings.

Each steering committee will have a signed charter, bylaws, member roles, historical files, an observer training material set and access to computer(s) with current version of behavioral software. Steering committee will:

- Meet quarterly or as necessary, to maintain the process and to review and address “at-risk behaviors” identified in observations.
- Be responsible for capturing, protecting and using the data gathered to reduce at-risk behaviors and never releasing the names of people observed.
- Act as owner of all site behavioral data and protecting the integrity of the process.
- Maintain process training materials and historical information and support all other company programs, processes, or systems, (such as the VPP, ISM, and ergonomics) that rely upon the EBSP for employee involvement and observations.
- Work to increase the behavioral knowledge and skills of all employees.
- Develop and track internal and external technical performance measures and utilize the information to improve the process and reduce risk.
- Forwarding the general information collected to site department managers for inclusion in the next scheduled departmental safety meeting.
- Forward those “at-risk behaviors” and their associated controls to the Job Hazard Assessment (JHA) owner for revision, if applicable.
- Establish permanent and/or temporary subcommittees when needed, if approved by management.

Internal Consultants/Expert
The internal consultants will be trained and licensed to utilize the copyrighted materials of the licensing process contractor(s). They will:

- Maintain a set of historical files of past events and site activities, a set of training materials, current copies of process software, and a process reference library.
- Maintain process management files addressing; budget, training, process development, process communication, onsite support, database administration, data reports, annual summary reports, benchmarking data, and milestones.
- Remain current on process developments by attending internal consultant meetings, training, and special events such as internal and external conferences, classes, workshops, and benchmarking company activities.
- Develop management skills and behavioral knowledge in fellow employees, act as behavioral safety database administrators, train all steering committee members, develop procedures and training courses, and advise management for process growth.
- Review internal and external technical performance measures and give success and guidance feedback.
- Provide technical direction and process oversight to behavioral safety steering committee and management.
- Manage, coordinate, and support all aspects of the EBSP, including budget development, coordination with the licensing contractor(s), onsite support, database administration, and ad hoc reporting.
- Develop, schedule, and provide behavioral safety training.

Management

Management at all levels will support the process and encourage participation by:

- Allowing time for designated employees to fulfill their duties as described in this section
- Making necessary physical resources available
- Allowing themselves and their employees to be observed at least as often as needed to meet or exceed current Performance Evaluation Criteria requirements, thereby ensuring a contact rate sufficient to change behavior
- Fulfilling their process roles as described in the site process bylaws
- Actively participating in action planning as requested by the steering committee
- Attending an observer class to better understand the process
- Never attempting to determine which employees were observed

Site Safety Specialist

- Act in an advisory capacity to the site steering committee
- Provide liaison to the site safety management council
- Be a resource person to the steering committee

Employees

- Act in an advisory capacity to the site steering committee
- Provide liaison to the site safety management council
- Be a resource person to the steering committee

16.3. TECHNICAL PERFORMANCE MEASURES

Internal performance measures identify risk and process performance based on process-sensitive data. They are developed and controlled by the steering committees for process improvement and are audited only by the internal consultants.

External performance measures are developed by the steering committees and internal consultants. Examples of these are the:

- Monthly contact rate (number of people observed divided by the observable headcount per site per month)
- Number of action plans initiated, ongoing, and completed by site
- Number of observers coached

16.4. PERMANENT AND/OR TEMPORARY SUBCOMMITTEES

- Each steering committee shall have the ability to establish permanent and/or temporary subcommittees when needed, if approved by management.
- Permanent subcommittees, which can only be chartered by M&O S&H, will comply with the operational guidelines of full committees.
- Temporary committees, such as action planning teams, will establish and document their operating principles and purpose during the first meeting.

17. ENVIRONMENTAL FACTORS

PURPOSE

This section provides the procedures to manage the prevention of temperature-related illnesses and other environmental factors at SPR sites.

SCOPE

This section includes the following major sections:

- Thermal Stress Management Program
- Cold Stress Management Program
- Other Environmental Factors
- Responsibilities

DEFINITIONS

Acclimation – Is the gradual adapting of the human body to cope with higher heat exposure. Acclimation occurs over a period of approximately 2 weeks but may be lost within 1 week of removal of the heat exposure.

Buddy System - is a process in which two people, the buddies, operate together as a single unit so that they are able to monitor and help each other. Buddies must stay in one another's line of sight (approximately 200 feet).

Climate-controlled - the break area shall provide cooling mechanisms that keep the temperature of the break area cooler than the work area, for examples, providing shade, fans, misting machines, etc.

Enhanced Buddy System - is a process in which two people, the buddies, operate together as a single unit so that they are able to monitor and help each other. Buddies must stay in close proximity of one another (20 feet apart).

Heat Stress – The general term that describes a variety of symptoms produced when the human body is exposed to a combination of heat and work that interferes with the body's ability to dissipate the heat energy. Heat stress is a function of total heat load and includes the level of activity and environmental conditions.

Heat Rash – Often referred to as "prickly heat." This skin rash is caused by excess sweating or the skin being wet with sweat. The rash usually disappears with acclimation or removal from heat.

Heat Stroke – This is a serious, life-threatening medical condition. The person has a temperature in excess of 104 degrees F (40 degrees C), sweating often stops, the skin is hot, pulse is rapid, there may be dizziness, weakness, headache, nausea, and visual disturbances. The person may be aggressive and irrational and convulsing. Urgent medical attention must be sought.

Heat Exhaustion – Heat exhaustion may take many days to develop and be characterized by a progressive decline in work performance; lack of appetite; headache; cold, clammy, pale skin; rapid, weak pulse; nausea; and vomiting. The person may collapse.

Heat Cramp – There are painful muscle cramps of the limbs and/or abdomen, muscle twitching, tingling, or pins and needles in the hands and feet. The person may experience tiredness and nausea. The symptoms may be due to a salt imbalance.

WBGT – WBGT is the acronym for Wet Bulb Globe Thermometer. The WBGT is the best way to measure heat stress hazards. A WBGT is an instrument used to measure a composite temperature which estimates the effect of temperature, humidity, wind speed and visible and infrared radiation (usually sunlight) on humans. The WBGT instrument consists of three devices: a wet bulb thermometer (w), a globe thermometer (g), and a dry bulb thermometer (d). The measurements from the three thermometers are combined to generate the WBGT value using the formula:

$WBGT = 0.7T_w + 0.2T_g + 0.1T_d$

17.1. THERMAL STRESS MANAGEMENT PROGRAM

The Thermal Stress Management Program provides guidance in the recognition, evaluation, and control of conditions that could lead to temperature-related illnesses.

It provides a means to reduce the risk of temperature-related illnesses to acceptable levels while maintaining operational efficiency.

Monitoring the work environment is required whenever the combination of air temperature, radiant heating, and humidity might exceed the heat stress screening criteria established by the American Conference of Governmental Industrial Hygienists (ACGIH ®).

The use of the RealFeel® temperatures and accompanying program is not applicable for use inside confined spaces such as storage tanks. The use of Wet Bulb Globe Temperature-Inside (WBGT-Inside) and the ACGIH® Table in the Threshold Limit Values (TLVs®) Book will be used for this condition.

17.1.1. General

Heat stress refers to the effect of heat, from any source, on the organs of the body and the person as a whole. The stresses of heat on the body manifest themselves in 5 common ailments:

- Heat exhaustion
- Heat cramps
- Heat stroke
- Heat syncope (fainting)
- Heat rash

Heat stress, obviously, can occur when working in hot conditions. But heat stress can also occur when working strenuously or when wearing less breathable or encapsulating clothing in milder conditions. Typical examples include:

- Working outside in the full sun in the summer.
- Working in hot confined spaces such as inside tanks or other enclosed confined spaces.

- Working near hot process equipment (heat exchangers or furnace).
- Working in deep excavations with poor ventilation.
- Working with, on or beside metal or other reflective materials in the full sun.

17.1.2. Acclimation State and Heat Tolerance

Acclimation is the body's ability to adapt to different environmental conditions. Generally, a period of five days of work in a new environment is necessary for an individual to become acclimated to new conditions and decrease their susceptibility for experiencing a heat-related illness. Remember that NO ONE is acclimated during the first few days of a heat wave.

When personnel are unacclimated or have been away from their usual work environment for more than five days, the supervisor or designee should monitor employees for re-acclimation to the environment.

NOTE
Unacclimated workers MUST be slowly introduced into hot working conditions and monitored during acclimation.

One way to accomplish acclimation is on the first day; start with about 20% of the normal work (metabolic) demand. Add another 20% each day until you reach the expected work demands in about a week.

The supervisor or designee should further ensure that all un-acclimated workers are aware of the increased risk for developing heat-related illnesses.

Additionally, five days away from a work environment in which an individual is accustomed to working increases their susceptibility for heat-related illnesses upon their return to their usual work environment.

Also, individuals who have experienced a heat-related illness or have other medical conditions may have reduced heat tolerance levels. In this case, the supervisor shall consult the NOLA IH department.

NOTE
Not every individual has the same normal baseline temperature. In cases where core body temperature baseline monitoring indicates a consistently lower or higher than normal temperature, the supervisor shall consult the NOLA IH department.

17.1.3 Task Evaluation

All field tasks have been identified as potential thermal stressors.

The Storage sites retrieve the RealFeel® forecasted temperatures from the AccuWeather internet site (www.accuweather.com) for the times between 8 AM and 6 PM. The temperatures are provided at the morning meeting to plan work for the day. Weather conditions are monitored again mid-day (and as necessary) as the day progresses for any significant changes, such as escalating

temperatures, and updates are provided if the initial forecast changes. After 6 PM, continue to monitor if the RealFeel® temperature is 81°F or above, and adjust work accordingly.

The supervisor or designee should check on their employees throughout the day.

17.1.4. Control Measures and Implementation

Routine controls listed below shall be implemented and included in a Job Hazard Analysis (JHA) based on the forecasted temperatures for that day.

17.1.4.1 Routine Controls

Routine controls prevent the progression of minor heat-related disorders.

Fluid Replacement: Cool, non-carbonated, non-caffeinated liquids (water) are provided close to the work area.

- Workers are encouraged to drink small amounts frequently throughout the day. Once consumed, it takes the body about an hour to absorb and begin using one quart of water. For this reason, it is better to drink small amounts of water several times an hour rather than drink larger amounts more infrequently. About one 4-6 oz. cup (250 milliliters) every 15 minutes will assure that the body always has a supply of water to use.
- During strenuous work, fluid replacement should be approximately 1 quart (1liter) per hour.

Scheduling: Strenuous work should be planned for the cooler part of the day when possible. Whenever possible, high-risk heat exposure tasks/projects (such as tank cleaning) will not be scheduled while the Heat Stress Management Program is in effect without the use of an New Orleans IH department approved heat stress mitigation plan. Use the predictive RealFeel® temperatures to assist in scheduling that day's activities.

Self-Determination: Workers are allowed and encouraged to monitor their own condition for adverse physical conditions and are given latitude to limit themselves.

- Individual employees shall interrupt their work if discomfort is detected.
- Supervision shall encourage a slower pace for tasks to avoid heat-related illness.

17.1.4.2. Level I Controls

When the RealFeel® values reach 81°F, but are less than 106°F, the following controls **shall** be instituted by the supervisor or designee:

- Enhanced hydration – Enough cool water will be available for each employee to consume one quart (1 liter) per hour.
- Buddy System – Depending on the task and level of difficulty, employees shall utilize the buddy system (with line of sight at approximately 200 feet) unless other documented control measures are in place such as constant radio communications, access to climate controlled vehicles/buildings, and/or segmenting operator rounds.
- Increased Rest Time – Longer rest times are required (See Figure 17-1). Breaks will be in climate-controlled areas with seating.

- Personal Heat Stress Monitoring: Core body temperature shall be monitored for a representative sample (10% of the exposed workforce) at the beginning of each break and recorded using Core Body Temperature Log Form (AAA9020.444-LOG 1).

If any employee's core body temperature as measured with an aural thermometer reaches 99.7 °F, the supervisor or designee will:

- Conduct core body temperatures of all employees performing the same task.
- Determine if other workers are experiencing any signs or symptoms of heat stress. If anyone is exhibiting or reports signs or symptom the Control Room will be notified to summon the ERT.
- Determine and implement any control measures that need to be increased or adjusted (such as extending/doubling rest breaks and shortening/halving work time, increasing fluid intake, providing additional shade, providing fans or cooling mists, implementing the enhanced buddy system, etc.).
- Return non-affected employees to work following the break and make sure that changes in control measures are in place prior to returning to work.
- Monitor the affected employee(s) until core body temperature returns to their normal baseline and return affected employee to work once the core body temperature returns to their normal baseline temperature Core body temperatures should be recorded on the Employee Core Body Temperature Log.
- Take core body temperature readings for everyone working the task at the beginning of subsequent breaks and repeat this process if necessary.

If any employee's core body temperature reaches 100.4°F:

- The supervisor or designee shall record this information on the Employee Core Body Temperature Log.
- The supervisor or designee shall notify the Control Room to summon the ERT to perform medical evaluation of the affected employee and determine if other personnel performing the same tasks are experiencing symptoms of heat stress.
- WorkCare (888-449-7787) may be consulted.
- Double rest breaks for the remainder of that day or task (whichever ends first).
- Other employees may return to work after the increased break and ERT release.

17.1.4.3. Level II Controls

All non-essential field work shall cease when the RealFeel® temperature reaches 106°F.

Each Site Director shall determine essential field work for their respective site.

The Control Room should announce that 106º RealFeel® has been reached.

Essential field work will be allowed to continue with the following controls in place:

- The enhanced buddy system shall be utilized.
- Breaks will be observed according to the accompanying break schedule (Figure 17-1).

- Rest periods shall be in a shaded area with additional means of cooling and seating for personnel.
- If an employee exhibits signs/symptoms of heat illness, an immediate break will occur and the Control Room shall be notified.
- Enhanced hydration shall be provided. Enough cool water will be available for each employee to consume one quart (1 liter) per hour.
- Engineering controls (ventilated work area, canopy shade over work area, etc.) shall be used and controls shall be tailored to fit the task being performed.
- Administrative controls (such as scheduling heavy work in the morning or evening during cooler temperatures) shall be utilized.
- Personal Heat Stress Monitoring: Core body temperatures shall be taken for all employees working in the field at the beginning of each break and recorded using the Core Body Temperature Log Form (AAA9020.444-LOG 1).

If any employee's core body temperature reaches 99.7 °F

- The supervisor or designee shall notify the Control Room to summon the ERT to perform a medical evaluation of the affected employee and to determine if other personnel performing the same task are experiencing symptoms of heat stress.
- The supervisor or designee shall adjust the work/rest regimen by doubling the rest breaks and halving the work time for the rest of the day for employees performing the same task.
- Non-affected employees may return to work following the increased break upon release by the ERT.
- The supervisor or designee may return the affected employee to work once the core body temperature returns to normal (98.6°F). Core body temperatures are recorded on the Employee Core Body Temperature log.
- Core body temperature readings will be taken for everyone working the task at the beginning of subsequent breaks and work/rest regimen shall be adjusted based upon these temperatures.

If any employee's core body temperature reaches 100.4°F

- The supervisor or designee shall record this information in the Employee Core Body Temperature Log.
- The supervisor or designee shall notify the Control Room to summon the ERT to perform medical evaluation of affected employee and to determine if other personnel performing the same tasks are experiencing symptoms of heat stress.
- WorkCare (888-449-7787) may be consulted.
- Other employees may return to work after the increased break and ERT release.

All field work will cease when the RealFeel® temperature reaches 112 °F. Working while exceeding this maximum RealFeel® temperature requires the implementation of Site Safety and/or the IH department approved heat stress mitigation measures and the approval of the M&O Assistant Project Manager for O&M (for site projects), the M&O Assistant Project Manager for E&P (for construction projects), or the M&O Project Manager.

NOTE
These controls do not apply to intermittent, short term exposures such as an operator making routine rounds (leaving an air conditioned truck, going on the well pad, and getting back in the truck).

17.1.4.4. Additional Controls

Additional controls can be implemented by the supervisor or designee, based on environmental conditions and task characteristics. The supervisor or designee, working with site safety, should decide the number and type of additional controls. Additional controls shall be documented in a JHA. In addition to the above controls, one or more of the following may be instituted:

- Worker Health Confirmation – A line supervisor or their designee seeks explicit confirmation from workers that each can continue work without experiencing heat stress. The line supervisor or designee observes the workers closely to determine if there are obvious symptoms of heat disorders or if there is any sense of diminished capacity.
- Use of Ice Cooling Garments – Ice vests can be worn under work clothes to provide cooling for periods up to four hours.
- Use of Reflective Shielding – Reduce radiant heat transfer in the work area. Reflective shields provide protection against heating effects of sunrays.
- Use of Portable Evaporative Coolers – These fans blow air across water, delivering a fine water mist with the air. Use these for localized cooling where air-conditioning is not possible.
- Use of Portable Cooling Stations - As an example, an open trailer with a roof, seating areas, cooling system, and hydration fluids.

Figure 17-1. Work/Break Cycle while Heat Stress Program is in Effect

Break Time per Hour (minutes)	Light	Moderate	Heavy	Very Heavy
15	87.0ºF	85.0 ºF	83.0 ºF	81.0 ºF
20	98.0 ºF	95.0 ºF	92.0 ºF	88.0 ºF
25	103.0 ºF	101 ºF	98.0 ºF	95.0 ºF
30	106.0 ºF	104.0 ºF	102.0 ºF	100.0 ºF

1. Temperatures in the above table are AccuWeather RealFeel® Temperatures.
2. Break Time per hour is the number of minutes per hour an employee performing the category of work will rest.
3. Safety and Supervisor will meet and agree concerning work category and this decision will be documented on the Safe Work Permit.
4. It is possible to work up to 2 hours without a break but the subsequent break will be 2x the normally scheduled break according to the above table.

Light: Walking from truck to wellhead/gauges, reading gauges, checking pipes for leaks, and walking back to truck.
Moderate: Some workover tasks, operating manual valves, wrenches, and hand tools.
Heavy: Replacing valves, pig launching, grass cutting, construction.
Very Heavy: Some workover, tank cleaning in summer (other confined space tasks performed in the summer). Also includes fast-paced work.

17.1.5 Heat Stress Sampling Protocol

Aural thermometers have been developed for accurate, safe and fast human body temperature measurements in the ear. The shape of the thermometer prevents it from being inserted too far into the ear canal to damage the eardrum. However, as with any thermometer, proper technique is critical to obtaining accurate temperatures.

Before using the thermometer, read all instructions carefully and thoroughly and keep the user's manual handy for future reference.

When taking core body temperatures follow these steps:

- Take a representative sample of your employees' temperature ranges before they begin for the day. Use the same employees to take periodic readings throughout the day (at the beginning of breaks).
- Use the sleeves that come with the thermometers. Use a different sleeve each time and discard properly after each use.
- Perform an ear tug to straighten the ear canal, much like you would when inserting an ear plug. This gives the thermometer a clear view of the eardrum. An ear tug is best performed by using your free hand to grasp the outer edge of the top half of the ear.
- Fit the probe snugly into the ear canal and press the activation button. Release it when you hear a beep.
- Inform the employee of their results and log the information.
- Continue sampling throughout the day. Note: Sample anyone exhibiting heat-related symptoms whether they were part of the initial random sampling or not.
- Send a copy of the log weekly to Site Safety and New Orleans IH as well as any IH monitoring forms (with employees' names). If samples indicate a heat problem for a job or an employee presents special concerns contact New Orleans Industrial Hygiene for assistance.

NOTE

The right ear reading may differ from the reading taken at the left ear. Therefore, always take the temperature in the same ear. The ear must be free from obstructions or excess earwax buildup to take an accurate reading. External factors may influence ear temperatures, including when an individual has had their ears covered.

After each sampling session replace the lens filter. Store the thermometer and the filters in a dry location free from dust and contamination and away from direct sunlight. The ambient temperature at the storage location should remain fairly constant and within the range of 50°F to 104 °F.

Do not expose the thermometer to temperature extremes below - 4 °F or over 122 °F (- 20 / 50 °C) or excessive humidity (> 95 % RH non-condensing).

17.1.6. Protecting Yourself from Heat Stress

- Monitor your physical condition and your coworkers for signs and symptoms of heat stress.
- Wear light-colored, loose-fitting, breathable clothing, such as cotton, is preferable.
- Avoid non-breathable synthetic clothing.
- Gradually build up to heavy work.
- Schedule heavy work during the coolest parts of the day.
- Take more breaks when doing heavier work, and in high heat and humidity.
- Take breaks in the shade or a cool area.
- Drink water frequently. Drink enough that you never become thirsty. Avoid alcohol, caffeine, and carbonated beverages.
- Be aware that protective clothing or personal protective equipment may increase the risk of heat-related illness.

17.1.7. Awareness Safety Meeting/Training

An awareness safety meeting shall be held annually for all personnel.

The meeting should be held during the required monthly safety meeting, preferably during the months of March or April before the onset of extreme summertime heat.

Suggested topics for Heat Stress Awareness Safety Meetings:

- Signs and symptoms of heat stress
- Factors contributing to heat stress
- Certain medications (check precautions provided with medications)
- Consumption of alcohol and caffeine
- Age and physical condition
- Consuming heavy meals prior to heat exposure
- Failing to consume sufficient fluid
- Preventing heat stress – The Heat Stress Management Program
- Occupational Exposure Limits
- Acclimation
- Routine controls
- Additional controls
- Work Stoppage conditions
- Heat stress measurements
    - RealFeel® temperature readings
    - Personal heat strain monitoring.

Heat Stress knowledge and prevention should also be included in other safety and health meetings during the season.

NOTE
As stated in the subcontract boilerplate, contractors working on the site shall follow the procedures in this section or submit an equal to or better heat stress program for review and approval by New Orleans IH.

Site Safety or NOLA IH will provide and document OJT for supervisors and designees to conduct core body temperatures using the aural thermometers and monitor heat stress conditions.

17.2. COLD STRESS MANAGEMENT PROGRAM

The goal of the cold stress management program is to provide awareness and other information regarding potential injuries related to workers exposed to extreme cold, or who work in cold environments. Information provided should be used as a tool to reduce potential cold stress injuries.

17.2.1. Protecting Yourself from Cold Stress

- Monitor your physical condition and that of your coworkers.
- Wear appropriate clothing:
  - Wear several layers of loose clothing for insulation
  - Avoid tight clothing as it reduces blood circulation to the extremities; some clothing may restrict movement resulting in a hazardous situation.
  - Protect ears, face, hands and feet in extremely cold or wet weather.
  - Wear waterproof and insulated boots.
  - Wear a hat and/or helmet liner to reduce the loss of body heat from your head.
- Move into warm locations during breaks; limit the amount of time outside.
- Carry extra socks, gloves, hats, jacket, blankets, a change of clothes and a thermos of hot liquid.
- Include chemical hot packs in your first aid kit.
- Avoid touching cold metal surfaces with bare skin.

17.2.2. Symptoms of Cold Stress

The symptoms for cold stress are gradual depending on body temperature, and include the following:

- Pain in the extremities (fingers and toes) is the first sign of danger.
- Severe shivering will begin when the core body temperature falls to 95 °F.
- Severe hypothermia occurs below a core body temperature of 91.4 °F.

17.2.3. Prevention of Cold Stress Injury or Illness

Where RealFeel® temperatures are 50°F or less:

- Employees should perform very detailed work with small parts indoors whenever possible.
- Employees should utilize wind breaks when possible.
- The buddy system is required when RealFeel® temperature is between 50°F and 32°F. AccuWeather predicted temperatures are presented at the work planning meeting.
- The enhanced buddy system is required when the RealFeel® temperature is below 32°F.
- Use of vibration creating equipment (such as impact wrenches and jackhammers) is not permitted when RealFeel® temperature is below 40°F unless control measures are in place to raise the RealFeel® temperature above the 40°F limit. These measures may include, but are not limited to windbreaks, impact gloves, rotation of workers (every 5 minutes), warming or heating the areas with approved heating devices, and establishing climate controlled area until work begins.
- Contact a New Orleans IH for approval of control measures prior to start of work.
- These controls are not mandatory for intermittent, short term exposures such as an operator making routine rounds (leaving a heated truck, going on the well pad, and getting back in the truck).

17.2.4. Extra Precautions While Working Around Water

- Employees shall work under the buddy system.
- A means of rescue shall be determined before work commences.
- Boats shall have insulating blankets on board to wrap employees who fall into the water.
- Employees shall utilize cabin area of boats whenever possible during cold weather.
- Slicker suits shall be available for boat crews/passengers if they do not have access to cabin area.
- A means of immediate rescue for man overboard is required.

17.3. OTHER ENVIRONMENTAL FACTORS

Report encounters with insects and animals to the CRO.

Stay away from tall grass, flooded areas, etc. if possible.

Employees are encouraged to notify their supervisor of any allergic reaction precautions that need to be taken.

17.3.1. Rodents, Snakes, and Insects

Insects, Spiders, and Ticks

To protect yourself from biting and stinging insects:

- Wear long pants, socks, and long-sleeved shirts.
- Use insect repellents that contain DEET or Picaridin.
- Treat bites and stings with over-the-counter products that relieve pain and prevent infection.
- Avoid fire ants; their bites are painful and can cause blisters. Severe reactions to fire ant bites may include: chest pain, nausea, sweating, loss of breath, serious swelling or slurred speech. Fire ant bites may require immediate medical treatment.
- Bees and wasps are found at all sites. In the event that they swarm, evacuate the area. If stung, get medical attention immediately and notify the Control Room Operator.

Rodents and Wild or Stray Animals: can spread diseases, such as Rat Bite Fever and Rabies.

- Avoid contact with wild or stray animals.
- Avoid contact with rats or rat-contaminated buildings.
- If you can't avoid contact, wear protective gloves and wash your hands regularly.
- Dispose of dead animals as soon as possible.
- Do not feed feral animals.
- If bitten/scratched, get medical attention immediately and notify the Control Room Operator.

Snakes:

- Watch where you place your hands and feet when removing debris. If possible, don't place your fingers under debris you are moving. Wear heavy gloves.
- If you see a snake, step back and allow it to proceed.
- Wear boots at least 10 inches high or protective leggings as addressed in the PPE section.
- Watch for snakes sunning on trees or other debris.
- Be aware that a snake's striking distance is about 1/2 the total length of the snake.
- If bitten, note the color and shape of the snake's head to help with treatment.
- Keep bite victims still and calm to slow the spread of venom in case the snake is poisonous. Apply first aid: lay the person down so that the bite is below the level of the heart, and cover the bite with a clean, dry dressing.
- Seek medical attention as soon as possible and contact the Control Room Operator.
- Do not cut the wound or attempt to suck out the venom.

Alligators:

- Stay away from alligators. DO NOT FEED ALLIGATORS.
- Back away slowly if you have a close encounter with an alligator.
- Never make the mistake of thinking that an alligator is slow and lethargic. Alligators are extremely quick and agile and will defend themselves when cornered.
- If you see an alligator in the roadway or work area, DO NOT attempt to move it! Notify your supervisor and the Control Room Operator immediately so the alligator can be handled safely.

- Be aware of surroundings when working above or near water that alligators may inhabit.
- Be aware that alligators may be in tall grassy areas and flooded areas.

17.4. RESPONSIBILITIES

Site Director

- Provide managers and supervisors with resources to maintain an adequate work pace while implementing environmental control measures.
- Document the designee and backup who will retrieve RealFeel® temperatures.

ESH Manager

- Ensure environmental factors are being controlled in accordance with these procedures.

Line Supervisors (Or Crew Designee)

- Ensure implementation of the programs in this section.
- Take appropriate core body temperatures, record on the Core Body Temperature log, and provide to Site Safety.

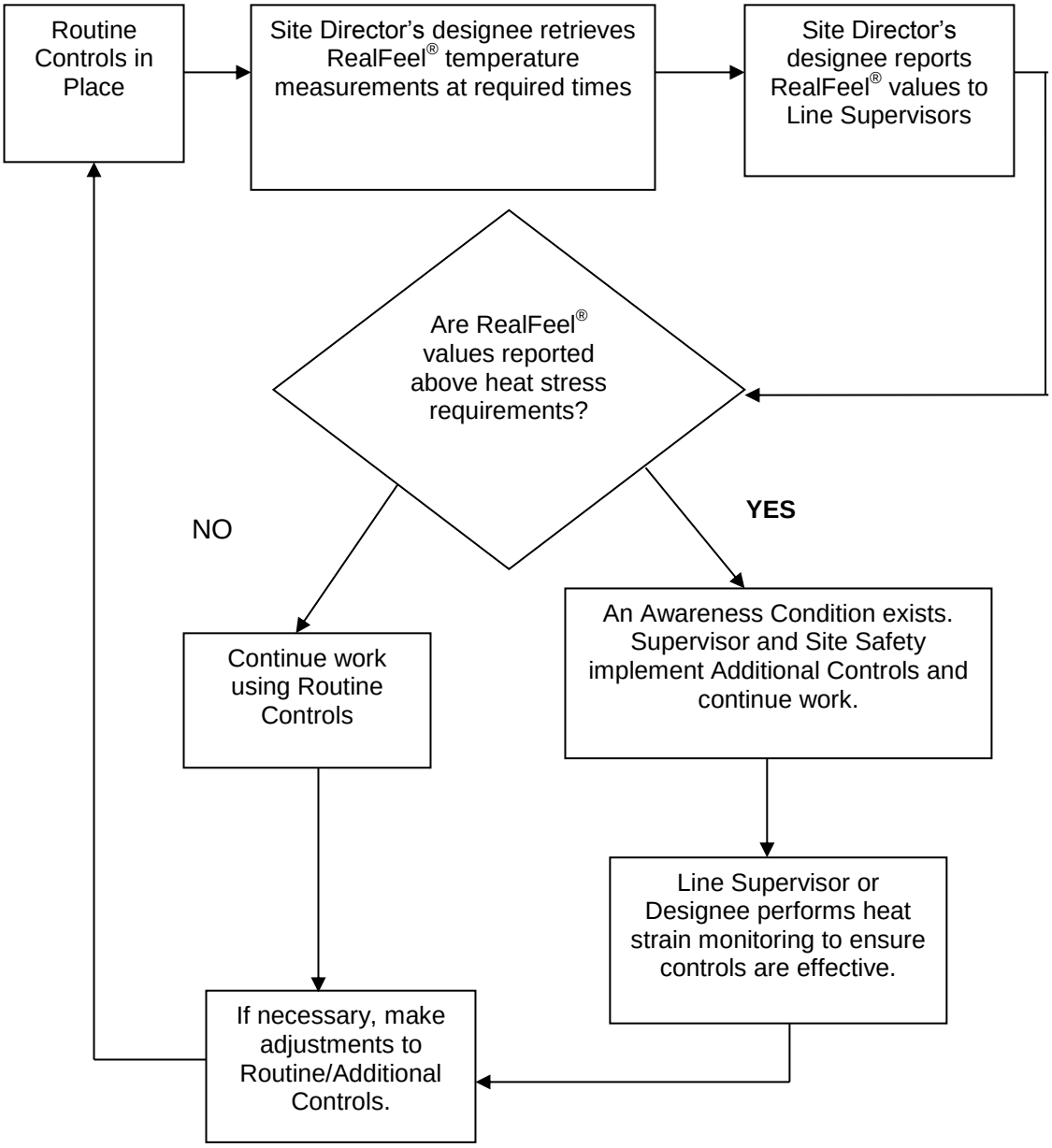
Site Safety

- Manage the site thermal stress program and coordinate industrial hygiene support when necessary.
- Establish a thermal stress awareness condition when necessary.
- Assist line supervisors in determining appropriate controls.
- Ensure the annual heat stress awareness safety meeting is provided.
- Send core body temperature logs to NO IH in a timely manner.

Employees

- Drink plenty of fluids during the day.
- Let supervisor know if not feeling well.
- Take rests as required depending on weather conditions.

17.5. FLOWCHART: THERMAL STRESS CONTROLS



18. ERGONOMICS PROGRAM

PURPOSE

This section provides information and guidance to line management and employees in the area of ergonomics. The use of proper ergonomics will assist in achieving higher quality work, greater productivity, and, at the same time, reduce the potential for work-related injuries.

SCOPE

This section includes the following major sections:

- Introduction
- Program Requirements
- Ergonomic Hazard Identification and Information
- Job Hazard Analysis and Control
- Requesting, Purchasing, and Distributing Ergonomic Equipment
- Responsibilities

APPLICATION

This section applies to work activities and employees under the control of the M&O and its subcontractors.

18.1. INTRODUCTION

Ergonomics is the science and art of optimizing the interaction between employees and their work environment. Its goal is the prevention of Work Related Musculoskeletal Disorders (WMSDs) and improvement in the efficiency of the tasks performed by the worker. At work, this goal is accomplished through inspections and detailed analysis of each work area and worker interaction in order to recommend specific administrative and engineering controls. Musculoskeletal disorders may be related to non-work activities. Employees are encouraged to consider ergonomic hazards at home as well as work.

18.2. PROGRAM REQUIREMENTS

Line management is responsible for ensuring that the ergonomic principles outlined in this program are understood and implemented into all office and field activities on the SPR. All employees shall understand and follow the guidelines in this program and are encouraged to report signs and symptoms of WMSD to their supervisor or Site Safety. In addition, employees may participate in the various program elements such as ergonomic job hazard analysis, developing controls for their work areas, training development, and program evaluation.

18.2.1. Controls

Administrative Controls. Examples of administrative controls for ergonomic risk factors include the following:

- Employee Rotation
- Adjustment of work pace

- Behavioral modifications
- Redesign of work methods

Engineering Controls. Examples of engineering controls for ergonomic risk factors include changing, modifying, or redesigning the following.

- Workstations
- Tools
- Facilities
- Equipment
- Materials
- Processes

18.2.2. Signs of Work Related Musculoskeletal Disorders (WMSDs)

Signs of WMSDs include objective physical findings which when linked to work activities become the basis for an OSHA recordable MSD. Signs of WMSDs include:

- decreased grip strength,
- loss of function,
- deformity,
- swelling,
- cramping, and
- redness or loss of color.

18.2.3. Symptoms of Musculoskeletal Disorders (WMSDs)

Symptoms or physical indications that an employee may be developing a musculoskeletal disorder can vary in severity depending on the employee's exposure level. Symptoms often appear gradually, beginning as muscle fatigue or pain while engaged in an activity which disappears during rest.

Usually symptoms become more severe as the exposure continues. (For example, tingling at work may continue when the employee is at rest, then numbness or pain may occur and make it difficult to perform on the job, and finally pain may become so severe that the employee is unable to perform physical work activities.) Examples of WMSD symptoms include the following.

- Numbness
- Burning
- Pain
- Tingling
- Aching
- Stiffness

18.2.4. Work Related Musculoskeletal Disorders (WMSDs) Criteria

A WMSD is limited to a disorder that meets these criteria:

- It is recordable on OSHA 300 log.
- It occurred in a job where the risk factors present could reasonably be expected to have caused or contributed to the type of WMSD reported.
- A significant part of the injured employee's regular job duties involves exposure to these risk factors (that is, not an incidental exposure).

18.2.6. Management of Musculoskeletal Disorders

The M&O Human Capital department is responsible for coordinating the workers' compensation claim related to the medical issues for employees who have a WMSD or who report signs and symptoms of a WMSD.

18.2.6.1. Medical Treatment and Diagnosis of WMSDs

Medical treatment protocols and diagnosis of WMSDs will be established by the health care provider and coordinated with the workers' compensation. The M&O may require that the employee may be required to be seen by the contracted physician/clinic. Treatment can include but is not limited to:

- work restrictions,
- braces and splints,
- physical therapy,
- exercise regimes, and
- surgery.

Information relating to controls recommended by the Health Care Provider will be provided to the New Orleans Medical Services and IH staff in order to effectively oversee the management of MSD on the SPR.

18.2.7. Program Evaluation

Program overview is provided by the New Orleans IH staff on an annual basis. Results of the formal evaluation will be provided to the ESC. Program activities include elements such as:

- assessment and inspection activities, and
- total program costs.

Outcome measures include:

- the number of OSHA recordable WMSDs, and
- the costs associated with managing WMSDs.

The evaluation includes a measurement of both program activities and outcomes.

18.2.8. Record Keeping

See the table at the end of this section, Ergonomic Record Keeping Requirements, for information on record retention responsibilities and schedules within the ergonomics program.

18.3. ERGONOMIC HAZARD IDENTIFICATION AND INFORMATION

It is important for all employees to be able to recognize signs and symptoms of WMSDs and to understand the importance and mechanism for early reporting. In addition, all employees must be able to recognize ergonomic hazards that are reasonably likely to cause or contribute to WMSDs. This section describes mechanisms by which ergonomic hazards are identified and communicated to Site Safety, supervisors, and safety monitors so appropriate controls can be developed.

18.3.1. Employee Participation

- All employees shall report signs and symptoms of WMSDs to their supervisor or Site Safety.
- If an employee is experiencing MSD symptoms, advise the supervisor so work assignments can be structured so as not to contribute to further aggravation of the condition. M&O Industrial Hygienists will assist at the supervisor's or employee's request.

18.3.2. Reporting WMSDs

- For WMSD symptoms that require medical response use the Injury and Illness Incident Report (Form AAA9020.680).
- Supervisors will report employee signs and symptoms of WMSDs that do not require medical response to M&O Industrial Hygiene.

18.3.3. Site Inspection Procedures

Site Safety and safety monitors should include ergonomic hazards. Site Safety should ensure that inspections are conducted:

- whenever a significant change in the workstation has occurred (for example, an employee changes offices, or a change in equipment or tools in the field),
- at the request of an employee,
- whenever an employee reports signs and symptoms of a WMSD.

18.4. JOB HAZARD ANALYSIS AND CONTROL (ERGONOMICS)

18.4.1. Purpose

- The purpose of a Job Hazard Analysis (JHA) in the ergonomics program is to develop specific administrative and engineering controls for ergonomic hazards in the office and field environments.
- Although supervisors are responsible for conducting JHAs, a more detailed JHA can be conducted by a New Orleans industrial hygienist upon request using a systematic approach that involves Site Safety, supervisors, and individual employees.
- The final goal of a JHA is to reduce the risk factors associated with each task and prevent the occurrence of WMSDs using the best control measures possible.

18.4.2. Process

- Site Safety is an important part of the JHA process by providing assistance to the New Orleans IH staff in conducting an advanced JHA when required.
- The overall JHA process involves the supervisor and/or Site Safety assessing the hazard and recommending the appropriate controls within the scope of their training.
- If assistance is needed, Site Safety may request assistance from a New Orleans industrial hygienist in developing advanced control measures for identified ergonomic hazards.
- Site Safety, supervisors, and employees then assist the industrial hygienist in developing and implementing appropriate controls.

18.5. REQUESTING, PURCHASING, AND DISTRIBUTING ERGONOMIC EQUIPMENT

Several departments are involved in the overall support of the ergonomic program. They provide the needed equipment recommended by a JHA or safety inspection. These departments include:

- Information Services (IS),
- Facility Support,
- Procurement.

18.5.1. Identifying Equipment Needs

- All ergonomic equipment needs must be identified by a formal ergonomic assessment conducted by a New Orleans industrial hygienist or through correspondence from a licensed health care provider.
- Minor ergonomic equipment can be recommended by Site Safety based on formal safety monitor inspections or supervisor JHAs.

18.5.2. Requesting and Purchasing Ergonomic Equipment

Requests for major ergonomic equipment such as chairs and furniture are submitted by the New Orleans IH staff to Facility Support.

Requests for major ergonomic equipment such as computer devices (phone headsets and mice) are submitted by the New Orleans IH staff to IT&S.

Once Facility Support and/or IT&S receive the requests for these purchases from the New Orleans IH staff, these departments are responsible for entering purchase requests for the identified equipment and subsequently distributing the equipment to the employee identified. Requisitions must contain at a minimum the following:

- type of equipment needed as listed in the Material Management catalog, and
- name of the individual needing the equipment.

Procurement will purchase all ergonomic equipment according to the description provided by the Material Management catalog.

18.5.3. Ergonomic Equipment Use and Maintenance

- Once ergonomic equipment is issued, each employee is responsible for the proper use, maintenance, and care of the ergonomic equipment issued to them for the duration of their employment on the SPR.
- Requests for repair or replacement should be submitted to Site Safety.
- Assistance in the use of ergonomic controls will be provided to each employee by Site Safety or a safety monitor.
- Site Safety will coordinate repair/replacement of minor equipment through New Orleans IH staff to the extent that they have been trained.
- Major equipment repair/replacement should be coordinated through the appropriate department (i.e., Facility Support or IS).

18.6. RESPONSIBILITIES

Employees

- Responsible for understanding elements of the ergonomics program and for being able to identify hazards that contribute to development of WMSDs. In addition, each employee should be able to identify when he or she is experiencing the various signs and symptoms of WMSDs and report them immediately to their supervisor.
- All employees shall report signs and symptoms of WMSDs to their supervisor or to the Site Safety.
- Participate in the development and implementation of controls.

Line Management

- Responsible for ensuring their employees understand all requirements in this program.
- Ensure that controls recommended from an ergonomic assessment or JHA are being used effectively.
- Be aware of the mechanism for reporting signs and symptoms of WMSDs through the AAA9020.680 form and for requesting assistance in developing controls for preventing these types of injuries.
- Responsible for performing a JHA or hazard assessments as described in this APM.
- Be able to identify potential ergonomic risk factors and ergonomic hazards when they are present during the JHA process.
- Use the AAA9020.680 form to report employee signs and symptoms of WMSDs, assessing the hazard and recommending appropriate controls within the scope of their training.

Site Safety

- Assist and support line management, safety monitors, and employees in understanding the objectives of the ergonomics program and the use of recommended controls.
- Assist New Orleans Industrial Hygiene (IH) staff in implementation and development of controls for identified ergonomic hazards.

- Be the primary point of contact at each site for the distribution of ergonomic equipment.
- Provide assistance to the New Orleans IH staff in conducting ergonomic assessments and advanced JHA when required
- Assess the hazard and recommend appropriate controls within the scope of their training
- Ensure that inspections are conducted as follows:
  - whenever a significant change in the workstation has occurred (examples: an employee changes offices or there's a change in equipment or tools in the field),
  - at the request of an employee,
  - whenever an employee reports signs and symptoms of a WMSD.
- If assistance is needed, the Site Safety may request assistance from a New Orleans IH in developing advanced control measures for identified ergonomic hazards.

Behavioral Observers

- Note ergonomically at risk behaviors and provide feedback to the employee.
- With the employee's permission, the observer can request a detailed evaluation by the Industrial Hygiene staff.
- Behavioral Steering Committee
- Ensure ergonomic definitions are included in all Critical Behavior Inventories.
- Measure the risk by measuring the frequency that ergonomic-related behaviors are performed at-risk.
- Evaluate the frequency at which the at-risk behaviors are performed, thus enabling the steering committee to make collective suggestions and verify that ergonomic controls are or are not in place.

Safety Monitors

- Responsible for identifying ergonomic hazards in their monthly inspections of their areas. Monitors can assist Site Safety in developing and implementing controls or by assisting employees in the use of recommended controls.
- Ensure that inspections are conducted as follows:
  - whenever a significant change in the workstation has occurred (examples: an employee changes offices or there's a change in equipment or tools in the field),
  - at the request of an employee,
  - whenever an employee reports signs and symptoms of a WMSD.

New Orleans Safety and Health

- Directs and supports the entire ergonomic program by providing assistance and consultation to the ESC (Executive Safety Council), SSMC, Behavioral Steering Committees, and departments responsible for requesting and purchasing ergonomic equipment intended to control identified ergonomic hazards. New Orleans industrial hygienists are responsible for conducting detailed ergonomic assessments and for assisting site implementation of the appropriate controls.

- A more detailed JHA is conducted by a New Orleans industrial hygienist using a systematic approach that involves Site Safety, supervisors, and individual employees.

Engineering

- Participate in the development and implementation of controls.
- Medical Services
- The M&O Medical Services department is responsible for coordinating prompt, effective workers' compensation claims filing and medical management for employees diagnosed with a WMSD or who report signs and symptoms of a WMSD.
- The New Orleans IH staff assists the Medical Services department in the overall coordination of services and/or accommodations if requested of WMSDs by providing them with information about ergonomic hazards and a list of available controls.

TABLE 18.1. ERGONOMIC RECORD KEEPING REQUIREMENTS

RECORD TYPE	LOCATION	RESPONSIBLE PARTY	RETENTION TIME*
Employee Comfort Surveys	Each site	Site Safety	As per note below.
	New Orleans Safety and Health	New Orleans Industrial Hygiene	As per note below.
All Professional Reports and Evaluations	New Orleans Safety and Health	New Orleans Industrial Hygiene	As per note below.
Ergonomic JHAs	Each Site	Site Safety	As per note below.
	New Orleans Safety and Health	New Orleans Industrial Hygiene	As per note below.

*NOTE ON TABLE: Retention Time.
Inactive records that are no longer required for current use should be removed from the office. Records are to be prepared and sent to storage in accordance with procedures listed in ASI1400.29, "Records Management Program." The only approved disposition and retention authorities for all Federal records are the Federal schedules as published by the Archivist of the United States at the National Archives and Records Administration in Washington, D.C (NARA). The M&O Records Inventory and Disposition Schedule (RIDS) is a drill-down of these Federal schedules, and is to be used to determine the handling of specific M&O records. Once the retention period stated in the Federal schedules has been reached, records will be dispositioned (permanent records transferred to NARA and temporary records destroyed) in accordance with the Federal Schedules. In the absence of an approved RIDS (i.e., a RIDS that has been signed by the M&O Records Officer), contact the Records Management Department for handling instructions.

19. EXCAVATIONS

PURPOSE

This section establishes the requirements for excavating, trenching, and shoring. It includes such operations as spiking; driving of poles, piles, and pipes; chasing; and excavations.

SCOPE

This section includes the following major sections:

- General Requirements
- Soil Classification
- Protection of Employees
- Access/Egress
- Mobile Equipment
- Hazardous Atmosphere
- Consideration to Classify as Confined Space
- Excavation Planning Process
- Responsibilities

APPLICATION

This section applies to work activities and employees under the control of the M&O and its subcontractors.

DEFINITIONS

Access and Egress – For the purposes of this procedure, access and egress mean "entry" and "exit," and refer to the safe means for employees to enter or exit an excavation or trench.

Competent Person Excavations (CPE) – is one who is capable of identifying existing and predictable hazards in the surroundings or working conditions which are unsanitary, hazardous, or dangerous to employees, and who has authorization to take prompt corrective measures to eliminate them. CPEs shall have specific training in, and be knowledgeable about, soils analysis, the use of protective systems, and the requirements of 29 CFR 1926 Subpart P.

Excavation – Any man-made cut, cavity, trench, or depression in the earth's surface formed by earth removal, which produces potentially unsupported earth conditions by reason of the excavation work.

> **NOTE**
> An excavation is defined as any groundbreaking with power or hand tools, including removal of slabs on-grade and blacktop. Small groundbreaking penetrations, such as the driving of concrete form stakes, leveling ruts, and scraping the ground to clean up spills, are excluded from this definition provided the total depth of the penetration does not exceed 12 inches.

Protective Systems – a method of protecting employees from cave-ins, from material that could fall or roll from an excavation face or into an excavation, or from the collapse of adjacent structures.

Protective systems include support systems, sloping systems, shield systems, and other systems that provide the necessary protection.

Registered Professional Engineer (RPE) – A professional engineer who is registered in any state is deemed to be a "registered professional engineer" within the meaning of 29 CFR 1926 Subpart P when approving designs for "manufactured protective systems" or "tabulated data" to be used in interstate commerce.

Shield System - a structure used in an excavation to withstand cave-ins and which will protect employees working within the shield system. Shields can be permanent structures or portable units moved along as work progresses. Shields used in trenches are usually referred to as trench boxes or trench shields.

Shoring System – a structure that is built or put in place to support the sides of an excavation to prevent cave-ins.

Sloping System - a method of protecting employees from cave-ins by excavating to form sides of an excavation that are inclined away from the excavation so as to prevent cave-ins. The angle of incline required to prevent a cave-in varies with differences in such factors as the soil type, environmental conditions of exposure, and application of surcharge loads.

Surcharge - means an excessive vertical load or weight caused by spoil, overburden, vehicles, equipment, or activities that may affect trench stability.

Tabulated Data - tables and charts approved by a registered professional engineer and used to design and construct a protective system.

Trench – a narrow excavation (in relation to its length) made below the surface of the ground. In general, the depth is greater than the width, but the width of a trench (measured at the bottom) is not greater than 15 feet. If forms or other structures are installed or constructed in an excavation so as to reduce the dimension measured from the forms or structure to the side of the excavation to 15 feet or less (measured at the bottom of the excavation), the excavation is also considered to be a trench.

19.1. GENERAL REQUIREMENTS

Prior to starting work, operations involving excavation, trenching, and shoring will be assessed using the JHA, or approved equivalent. The JHA is required to ensure that all hazards associated with the work are identified, the likelihood and severity are understood, and control measures are defined that will effectively reduce the risk.

19.1.1. Identification of Buried Utilities/Structures

Excavations performed at SPR work locations where the possibility of other owner's pipelines or utilities may be present, require notification of appropriate State (Louisiana and Texas) authorities prior to the initiation of any excavation work.

Prior to excavation, the competent person shall make every effort to clearly identify any possibility of underground obstructions, piping, or utilities. The methods used to determine their location shall include any one of the following or a combination of several techniques:

- Research of site baseline drawings identifying obstructions
- Call before you dig (LA or TX One Call), Dial “811”
- Hand excavation with PPE (Dielectric Gloves, Boots are required when excavating near energized underground electrical circuits)
- Probing
- Use of utility and metal detectors
- Hydro excavation
- Lockout/tagout of electrical utilities or other approved methods

NOTE
Backhoes or other mechanical digging equipment used in excavation activities shall have the teeth removed from the bucket, or the teeth shall be covered with a steel plate.

Excavations require a Safe Work Permit. The permit issuer shall ensure that the area has been checked for underground lines, utilities and obstructions by reviewing the completed Excavation and Trenching Safety Checklist (AAA9020.702).

When excavation operations approach the estimated location of underground installations, the exact location of the installations will be determined by safe and acceptable means, such as hand digging and pot holing.

- Before hand excavation begins, employees shall check the area for underground lines.
- All personnel performing hand excavation where known or suspected electrical hazards are identified on the safe work permit, which cannot be de-energized through lockout/tagout methods, are required to wear dielectric boots and dielectric gloves.
    - Hand excavation is required when locating underground lines whose actual location is uncertain.
- While the excavation is open, underground installations will be protected, supported or removed as necessary to safeguard employees.

19.1.2. Inspections by a Competent Person

Excavations and trenches, as well as adjacent areas, shall be inspected by an Excavation Competent Person prior to the start of work and throughout the day as needed, and after hazard-increasing occurrences. If any of the following conditions exist, exposed employees shall be removed from the hazardous area until the necessary precautions have been taken to ensure their safety.

- Possible slides or cave-ins
- Indications of failure of protective systems
- Hazardous atmosphere
- Other hazardous conditions

Inspections shall be documented using the Daily Inspection of Trenches and Excavations (AAA9020.703). This form is to be used just prior to and during personnel entry into the excavation and when conditions change that could affect the safety of employees working in the excavation.

- The safety inspection file shall be maintained on site by the competent person until the work is completed. The competent person inspection file is then placed in the site work order package and maintained as required by RIDS.
- Subcontractors working at an SPR site shall perform inspections. Inspections performed by the subcontractor's competent person shall be documented in contract files by the SMTR.

19.1.3. Designated Competent Persons

At a minimum, Two M&O Excavation Competent Persons shall be designated at each site.

Subcontractors performing excavations and trenching work shall designate competent persons in writing in accordance with required contract submittals.

Candidates selected to be competent persons shall be trained in accordance 29 CFR 1926, Subpart P with an approved competent person training course. The competent person shall receive initial training and a refresher training every three years.

See APM Section 2 for additional information regarding competent persons.

19.1.3. Water Accumulation

Employees shall not work in excavations in which there is accumulated water, or in excavations in which water is accumulating, unless adequate precautions have been taken to protect employees against the hazards posed by water accumulation. If water accumulation is controlled or prevented by water removal equipment, the Competent Person shall monitor the removal activities to ensure proper operation.

19.1.4. Endangered Adjacent Structures

If an excavation or trench endangers the stability of buildings or walls, shoring, bracing, or underpinning shall be provided. Excavations and trenches that are adjacent to backfilled excavations or trenches, or subject to vibrations from railroad or highway traffic, or the operation of machinery (such as shovels, derricks, cranes, and trucks), shall be made safe by a support system, shield system, or other protective systems (such as sheet pile shoring or bracing). Sidewalks, pavements and appurtenant structure shall not be undermined unless a support system or another method of protection is provided to protect employees from the possible collapse of such structures.

Excavation below the level of the base or footing of any foundation or retaining wall that could be reasonably expected to pose a hazard to employees shall not be permitted except when:

- a support system, such as underpinning, is provided to ensure the safety of employees and the stability of the structure; or
- a RPE has approved the determination that the structure is sufficiently removed from the excavation so as to be unaffected by the excavation activity; or

- A RPE has approved the determination that such excavation work will not pose a hazard to employees.

19.1.5. Barricades and Tags

Barricades shall be erected in accordance with APM Section 41, Barricades, Signs, and Tags.

19.1.6. Fall Protection

Fall protection measures are required around all excavations regardless of depth at all SPR work locations. Refer to APM Section 21, Fall Protection.

19.2. SOIL CLASSIFICATION

All soils on the SPR sites shall be classified as Type C, per 29 CFR 1926, Subpart P. Soil that is considered any other classification must be verified by two excavation Competent Persons (one must be M&O) prior to excavation. Soil reclassification shall be based on the results of at least two visual and at least two manual analyses. Soil classification shall be documented on the Excavation and Trenching Safety Checklist (AAA9020.702), and be signed and dated by the Competent Person conducting the inspection.

NOTE: Soil reclassification can only be to type B soil.

19.3. PROTECTION OF EMPLOYEES

Each employee in an excavation shall be protected from cave-ins by adequate and approved protection systems.

- Employees shall be protected from excavated or other materials and equipment that could pose a hazard by falling or rolling into excavations. Protection will be provided by placing and keeping such materials or equipment at least two feet from the edge of the excavation, by the use of retaining devices that are sufficient to prevent materials or equipment from falling or rolling into excavations, or by a combination of both.
- Protection systems will have the capacity to resist all loads that are intended, or could reasonably be expected, to be applied or transmitted to the system.
- Sides, slopes, and faces of all excavations shall be scaled, rock-bolted, wire-meshed, or secured by other approved equally effective means.
- Portable trench boxes or sliding trench shields may be used instead of shoring or sloping. Such boxes or shields shall be of strength at least equivalent to the sheeting or shoring that would be required for the classification of the soil.

NOTE
Protective systems for excavations greater than 20 feet in depth shall be designed by a Registered Professional Engineer.

19.3.1. Sloping System

All simple slope excavations 20 feet or less in depth in Type C soil shall have a maximum allowable slope of 1 ½:1(horizontal to vertical) or no more than 34 degrees.

19.3.2. Support, Shield, and Other Protective Systems

Designs of support systems, shield systems, and other protective systems shall be selected and constructed by the CPE in accordance with the following requirements:

19.3.2.1. Support, Shield, and Other Protective Systems

Designs of support system, shield system, and other protective systems will be selected and constructed in accordance with 29 CFR 1926, Subpart P, Appendices C, D, and E or other tabulated data.

19.3.2.2. Tabulated Data

Designs of sloping systems, support systems, shield systems, or other protective systems shall be selected from and in accordance with tabulated data, such as tables and charts. The tabulated data shall be in written form and shall include all of the following:

- Identification of the parameters that affect the selection of a sloping system drawn from such data;
- Identification of the limits of use of the data, to include the magnitude and configuration of slopes determined to be safe;
- Explanatory information as may be necessary to aid the user in making a correct selection of a protective system from the data.

At least one copy of the tabulated data, which, when required, identifies the RPE who approved the data, shall be maintained by the CPE. Tabulated data is not required when working within the sloping parameters established above.

19.3.2.3. Exceptions

Excavation that are less than feet in depth where examination of the ground by a CPE reveals no indication of a potential cave-in.

19.4. ACCESS/EGRESS

In trenches 4 feet or more in depth, ladders, steps, ramps, or other safe means of access/egress shall be provided and located no more than 25 feet apart laterally.

19.4.1. Structural Ramps

Structural ramps used solely by employees as a means of access or egress from excavations shall be designed by a competent person. Structural ramps used for access or egress of equipment shall be designed by a competent person, and shall be constructed in accordance with the design.

- Ramps and runways constructed of two or more structural members shall have the structural members connected together to prevent movement or displacement.
- Structural members used for ramps and runways shall be of uniform thickness.
- Cleats or other appropriate means used to connect runway structural members shall be attached to the bottom of the runway or shall be attached in a manner to prevent tripping.
- Structural ramps used in place of steps shall be provided with cleats or other surface treatments on the top surface to prevent slipping.
- Walkways, ramps, or bridges with standard guardrails shall be provided at all excavations and trenches where employees may cross over.
- The crossing structure shall be made of tightly secured and uniformly sized planking or other similar material.

19.4.2. Earthen Ramps

Earthen ramps may be used as a means of egress only if a worker can walk them in an upright position and only if they have been designed and evaluated by the competent person.

19.4.3. Ladders

If ladders are used, all applicable requirements of Section 28 of the APM shall be met.

- The ladder shall extend three feet above the original surface of the ground and shall be secured.
- Two or more ladders shall be provided every 25 feet if employees will be conducting work in an excavation where ladders serve as the primary means of egress, or where ladders serve two-way traffic.

19.5. MOBILE EQUIPMENT

- When mobile equipment is used or permitted to operate adjacent to excavations or trenches, barricades or “stop” logs shall be provided. Wells, pits, shafts, trenches, or other similar ground fall hazards shall be barricaded or covered.
- No one shall be allowed under loads handled by mobile equipment (such as shovels, derricks, or hoists), or near vehicles being loaded by mobile equipment.
- Employees exposed to mobile equipment and vehicular traffic shall be provided with, and shall wear, warning vests or other suitable garments marked with or made of reflectorized or high-visibility material.

19.6. HAZARDOUS ATMOSPHERE

If the potential for a hazardous atmosphere exists or could reasonably be expected to exist, such as excavations in areas where hazardous substances are stored nearby, the following requirements shall apply:

- The atmosphere in the excavation shall be tested before employees enter excavations greater than 4 feet in depth.
- Adequate precautions shall be taken to prevent employee exposure to atmospheres containing less than 19.5 percent oxygen and other hazardous atmospheres. These precautions include providing proper respiratory protection or ventilation.
- Adequate precautions shall be taken such as providing ventilation, to prevent employee exposure to an atmosphere containing a concentration of a flammable gas in excess of 10 percent of the lower flammable limit of the gas.
- When controls are used that is intended to reduce the level of atmospheric contaminants to acceptable levels, testing/monitoring shall be continuous.

Emergency rescue equipment

- Emergency rescue equipment, such as breathing apparatus, a safety harness and line, or a basket stretcher shall be staged at the location where hazardous atmosphere conditions exist or may reasonably be expected to develop during work in an excavation.
- In the unlikely event that employees enter bell-bottom pier holes, or other similar deep and confined footing excavations, the entrant shall wear a harness with a lifeline securely attached to it. The lifeline shall be separate from any line used to handle materials, and shall be individually attended at all times while the employee wearing the lifeline is in the excavation.

19.7. CONSIDERATION TO CLASSIFY AS CONFINED SPACE

Note: In accordance with 29 CFR 1926.20(d)(1), “If a particular standard is specifically applicable to a condition, practice, means, method, operation, or process, it shall prevail over any different general standard which might otherwise be applicable to the same condition, practice, means, method, operation, or process.” Therefore, since a General Industry Standard regarding excavation or trenching does not exist, Construction Industry Standards (29 CFR 1926 Subpart P) shall apply before applying the confined space standards.

- All trenches and excavations four feet or deeper shall be assessed for designation as a confined space by the CPE and the CSPC.
- To be considered a confined space, an excavation or trench shall meet all three of the following criteria:
  - Large enough and so configured that employee can bodily enter and perform assigned work.
  - Limited or restricted means for entry or exit. In order to provide for safe access and egress, the trench or excavation must have adequate protection from cave-ins, and meet or exceed the criteria specified in Section 19.5.
  - Not designed for continuous employee occupancy.
- If the excavation or trench meets all three requirements listed above to be considered a confined space, entry into the space shall follow the requirements outlined in Section 10 of the APM.

NOTE
When determining if an excavation is a confined space or not, excavations that are either shallower than four (4) feet or sloped back at an angle of 1 ½ to 1(horizontal to vertical) or more, regardless of depth, are **not** confined spaces by definition.

19.8. EXCAVATION PLANNING PROCESS

When an excavation is required at SPR facilities this planning process shall be initiated which will result in a decision that either site (M&O) resources (considering capabilities, availability of manpower, availability of equipment, and schedule needs) or outside resources (by others) will be used to perform the work. The process may also result in a Site Director's decision that no further excavation planning is required because employees will not enter the excavation, or that a waiver to the excavation plan may be considered for excavations that are less than four feet deep with no other hazard characteristics. Figure 19-1 shows the planning, reviewing, and implementing process flow for non-CM led excavations.

19.8.1. Preliminary Planning

A competent person shall prepare an excavation planning package, which will describe the technical aspects of the required excavation.

The package shall be sufficiently detailed to allow the site director to determine a "make" or "buy" decision. (Make or buy decisions do not apply to CM led tasks).

The package shall include, but not be limited to:

- The work order that requires the excavation
- The approximate depth of the excavation
- Sketches (elevations, plan, and cross sections) showing the locations of above ground and known below ground encumbrances and obstructions (for example, structures, foundations, buildings, utilities, duct banks, and direct buried cables)
- The proposed protection system
- Other known hazards
- Whether employee entry into the excavation is required
- The estimated cost of the excavation work if performed by others under M&O supervision, if applicable.
- Whether a waiver for an excavation plan is to be requested.
- Whether the excavation is also determined to be a confined space, i.e., does it meet the definition of a confined space
- Whether the excavation could have a possible hazardous atmosphere

The level of detail in the package must reflect the exposure employees may need to know and anticipated hazards. All packages will be reviewed, and if found adequate, approved by a competent person.

19.8.2. "Make" or "Buy" Decision

Based on the contents and requirements of the package, the site director shall decide on the method to perform the required excavation; three options are available.

- The first option is to use site personnel (“make” decision).
- The second is to enter into a contract with others based on the excavation plan developed by the competent person, provided the total price of the contract is less than $2,000. For this option, the M&O would supervise the contractor.
- The third option is to “buy” the service or requirement, applying construction safety and health requirements outlined in the subcontract safety “boilerplate” language.
    - If this option is exercised, the site director initiates procurement action.
    - The site director will complete the form SPR Site Excavation “Make” or “Buy” Decision Review (AAA7012.15), indicating the decision and assign further actions.
- The planning package review will also determine if an excavation plan is or is not required based on whether employees will enter the excavation. Examples of such excavations are fence posts holes and narrow trenches formed by trench diggers.
- The decision to use site personnel will not be made if:
    - the site does not have the capability (equipment, personnel, etc.) to provide adequate support systems
    - the nature of the excavation requires the services of a RPE to make safety determinations and design protective systems, for example if:
        - an adjacent structure (building, wall, or other) is in the vicinity of the excavation operations
        - the excavation will be below the level of the base or footing of any foundation or retaining wall that could be reasonably expected to pose a hazard, or
        - the excavation is greater than 20 feet deep.
- If an excavation plan waiver is requested, the waiver request shall be submitted with the “make” or “buy” decision form.

19.8.3. Excavation Plan

- A competent person will prepare an excavation plan if the site director’s decision was to “make” or “buy” (with M&O supervision) the excavation.
- If a competent person is unavailable, the site director should seek assistance from the M&O Construction Directorate and Construction Safety.
- The excavation plan shall always be approved by a competent person.
- The outline listed in Figure 19-4 shall be used to establish the excavation plan.

19.8.4. Excavation Safety Review Boards

NOTE
Construction Management has lead responsibility for the excavation planning process and approval for work under its supervision, including preparation of plans and achieving the functions of the described Site Excavation Safety Review Board.

An excavation safety review board shall review all excavation plans.

- For Construction Management led projects, the board is composed of the following:
- Site Construction Manager, or designee (must be a designated CPE)
- New Orleans Construction Safety
- Site Safety Specialist, or Associate Site Safety Specialist
- others at the request of the site director
- For all other excavations, the board is composed of the following:
- Site Director
- Site Engineer
- Maintenance Manager
- Site Safety Specialist, or Associate Site Safety Specialist
- others at the request of the site director

The review shall ensure that the excavation plans(s) are consistent with the APM requirements, OSHA requirements for the Construction Industry (29 CFR 1926), and best management practices.

The competent person approving the excavation plan shall initiate and coordinate the review board meeting, which will be chaired by the site director (or Site Construction Manager for CM projects).

- The competent person shall prepare the Site Excavation Review Board Form (AAA7012.17).
- The site excavation safety review board shall complete the form, and the site director will assign actions as indicated for subcontractors, other than those led by CM.

Completion of all excavation safety review board actions is mandatory before a Safe Work Permit will be issued.

Excavation safety review board documents shall be filed, retained, and disposed of according to the RIDS schedule.

19.8.5. Excavation Plan Waiver

A waiver to the preparation of an excavation plan may be approved by the site director (or Site Construction Manager for work performed under CM supervision) for excavations that employees will enter that pose no significant risk according to the competent person's recommendations. The Site Excavation Plan Waiver (AAA7012.16) is a waiver request form to be used in such cases. Excavations being performed under the waiver must have a designated competent person and inspections must be performed using the Excavation and Trenching Safety Checklist (AAA9020.702), or an approved checklist submitted for subcontractors. To obtain the waiver, all of the following conditions must be met:

The excavation must have specific characteristics that are defined below:

- The excavation must be less than four feet deep and the competent person must have agreed that no significant risk exists.
- No surface structures or underground encumbrances are within the bounds of the excavation, excluding the object of the excavation.

- Additional space is available beyond the 1½ (horizontal) to 1 (vertical) slope to cut back the excavation if there are signs that the soil is in a condition where a cave-in is imminent or is likely to occur.
- No atmospheric hazards are present.

An excavation work order/safe work permit for a subcontractor must include the following:

- Signature of the competent person certifying the characteristics in 19.3. above
- The name of the competent person designated to inspect the excavation work and instruct employees performing the work in hazard recognition and avoidance

A competent person must inspect any excavation into which an employee will enter.

CAUTION
If at any point in executing work that has been granted a waiver under this procedure and the characteristics differ from that certified by the competent person, the excavation work shall be stopped promptly until an approved excavation plan is in effect.

19.8.6. Excavation Plan Variations

When field conditions require variations to an approved excavation plan, a competent person shall review the conditions and prepare the variation. Depending on the type of variation (major or minor), review by the site excavation safety review board may or may not be required.

The following variations require review by the site excavation safety review board

- protective system design
- stability of adjacent buildings, walls, foundations, or other structures
- protection of underground systems and utilities
- hazardous atmospheres

For other variations (minor), the competent person may assume responsibility and implement the variation without further review.

Approved variations shall be appended to the original excavation plan and kept at the work location and with the work order.

19.9. RESPONSIBILITIES

Site Director

- After reviewing a work request/work order requiring an excavation, determine the method (option) to complete the requirements.
- Approve excavation plan waivers.
- Chair the site excavation safety review board.
- Designate the competent persons on the site.

Site Construction Manager

- Chair excavation safety review boards for CM projects.
- Coordinate all excavation activities for CM projects with site prior to performing work.
- Approve excavation plan waivers for CM projects.

Excavation Safety Review Board

- Approve excavation plans and review and approve major variations.
- Address excavation safety concerns that arise on site

Site Engineer

- Assist the M&O competent person in the preparation of the excavation planning package and in preparing variations to approved excavation plans.

M&O Competent Person – Excavations (CPE)

- Provide excavation safety expertise during the “make” or “buy” decision process.
- Prepare the excavation planning package.
- Approve the excavation plan.
- Prepare and/or approve variations to approved excavation plans.
- Ensure that air quality tests are taken before employees enter excavations more than four feet in depth when a hazardous atmosphere exists or could be expected to exist.

Designated Competent Person – Excavations (CPE) – M&O and Subcontractors

- Instruct employees assigned to the work in the hazards specific to that excavation.
- Subcontractor CPE is responsible for preparing and submitting the excavation plan to the SMTR to be approved.
- Ensure that construction of the sloping, shoring, or other protective system is consistent with the approved excavation plan.
- Perform the daily inspection required by the excavation plan.
- Stop the excavation or repair work if hazardous conditions are present and allow work to continue only when the hazardous conditions are eliminated.
- Ensure that the atmospheric tests are conducted if the potential for a hazardous atmosphere exists or when toxic gases may be introduced.
- Determine the degree of slope reduction below the maximum allowable level when equipment, material, or personnel loads are imposed.
- Monitor water removal operations for control or prevention of accumulation of water in an excavation.
- Evaluate excavations more than 4 feet deep for the application of a protective system.
- Evaluate the work area for potential hazards that have not been addressed.

- Conduct daily inspections of excavations, adjacent areas, and protective systems for evidence of a situation that could result in possible cave-ins, indications of failure of protective systems, and for hazardous atmospheres or other hazardous conditions.
- When inspection reveals evidence of a situation that could result in a possible cave in, indications of protective systems failure, hazardous atmospheres, or other hazardous conditions,
- Remove employees from the hazardous area until the necessary precautions have been taken to ensure their safety.

Site Maintenance Manager

- Provide the site director with estimated resources and other data required for the “make” or “buy” decision.
- Serve as a member of site excavation safety board.

Site Safety Specialist or Associate Site Safety

- Conduct periodic safety inspections of excavation and repair activities, including equipment, processes, work practices, and methods, as needed.
- Review excavation plans when requested.
- Be a member of the all excavation safety boards.

Site Quality Assurance

- Perform random checks of the work to confirm that work order and safe work permit conditions are being met.

Occupational S&H Director

- Monitor the SPR excavation program.

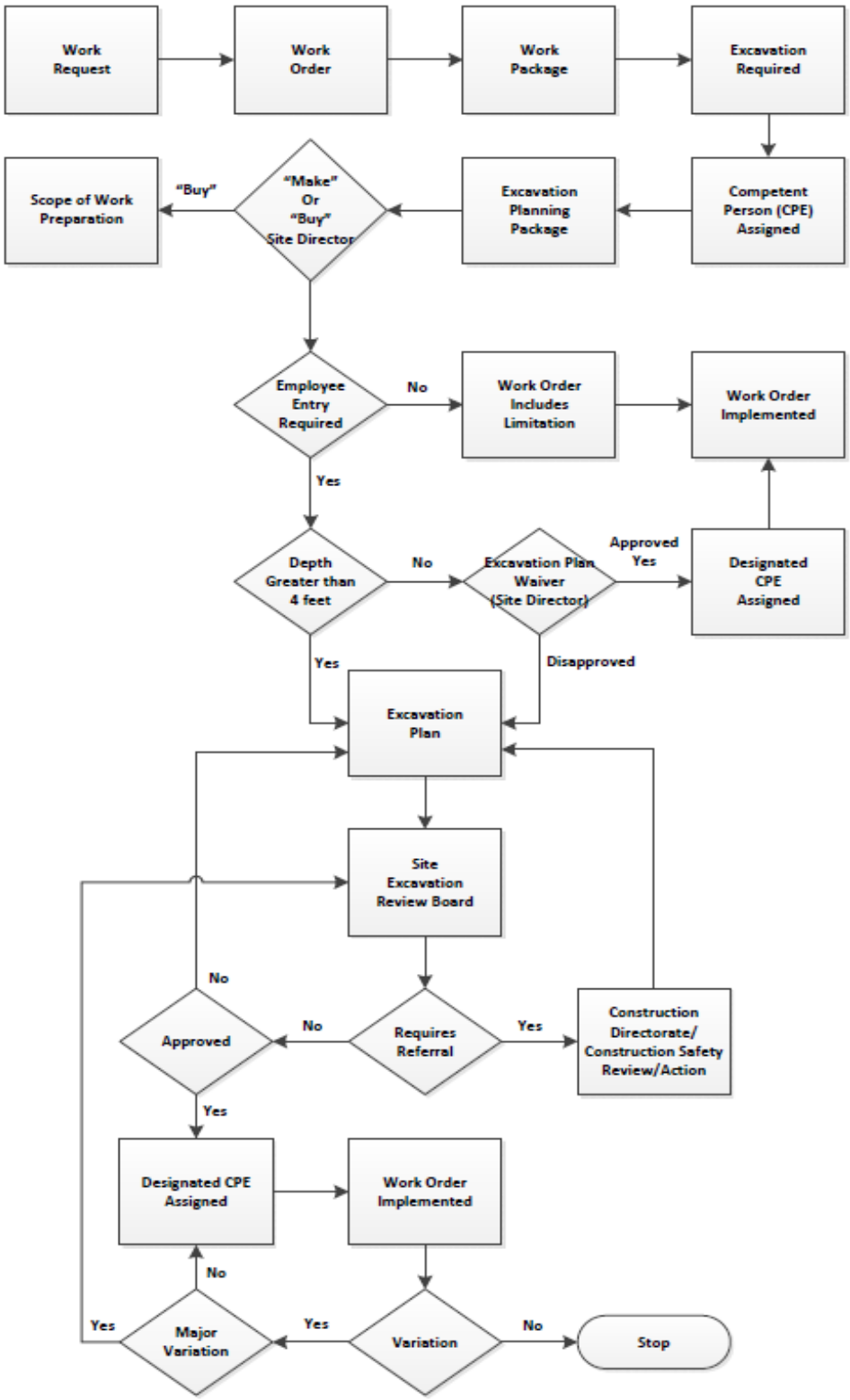


Figure 19-1 Site Excavation Planning, Reviewing, and Implementing Process

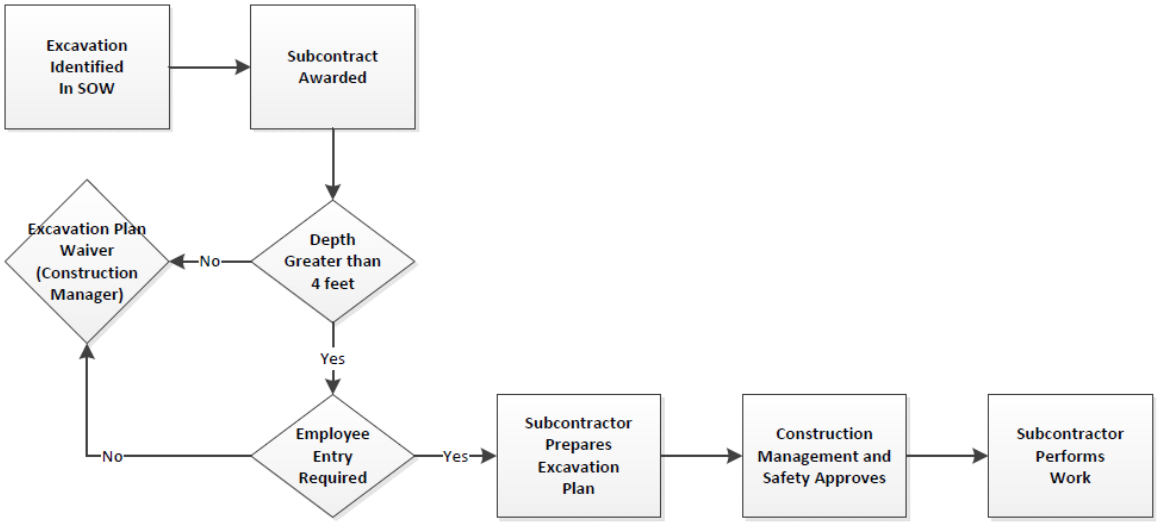


Figure 19-2 CM Project Excavation Planning, Reviewing, and Implementing Process

EXCAVATION SPECIFIC SAFETY INSTRUCTIONS

1. The applicable Occupational Safety and Health Regulation is: 29 CFR 1926, Subpart P, “Excavations,” and appendixes.
2. Excavation work is the most hazardous type of work done in the construction industry. The primary type of accident of concern is a cave-in.
3. Exposure to vehicular traffic and the personal protective equipment that must be worn, if applicable, must be addressed.
4. Exposure to falling loads if lifts will be a part of the maintenance work must be addressed.
5. Warning systems, barricades, and hand or mechanical signals when mobile equipment will be operated next to the excavation must be addressed.
6. An observer must be designated, who remains outside of the excavation when mechanical excavation work will be performed, to watch for buried objects and provide signals to the operator when he cannot see the edge of the excavation. The observer is to be instructed to keep a safe distance from the mechanical excavator and never place himself under the bucket or between the bucket and the equipment.
7. Proper testing for potential hazardous atmospheres must be addressed and employees directed to immediately stop work and move a safe distance from the location if there is any indication (smell) that gases or other noxious substances are present.
8. Employees must be advised that if water begins to accumulate in the excavation to stop work immediately and call the designated competent person - excavation (CPE), who will initiate corrective actions.
9. Employees must be advised that if obstructions that have not been previously identified in the excavation plan are encountered during the excavation process, they must stop work and call the designated CPE, who will initiate corrective actions.
10. Employees must be instructed that when excavations are greater than four feet deep, a ladder or other safe means of access and egress must be available in the excavation and at intervals of not more than 25 feet.
11. Employees must be instructed about hazards from falling soil or soil rolling from an excavation face. To mitigate this hazard, the excavated material must be kept at least two feet from the edge of the protective system (slope, support, shield, etc.).
12. Employees must be instructed in the fall protective systems (barriers, barricades, warning line, etc.) to be employed for this excavation work.
13. The protective system for this excavation (sloping, support, shield, etc.) must be addressed. If the protective system is other than sloping specific training is required in the installation of that protective system.
14. Describe how employees may, during the course of the work, determine if the sloped protective system (soil) shows signs of possible cave-ins, or if the support, shield, or other protective system employed may be subject to failure.
15. Employees must be instructed to be watchful of any changes to the protective system. If changes are noticed or if they believe changes have occurred, they are to be instructed to stop work, vacate the excavation immediately and contact the designated CPE and management to resolve their concern.
16. An excavation can be a confined space if it meets all three of the requirements specified in section 10 of the Accident Prevention manual.
17. Workers are required to wear warning vests or other reflective or high-visibility garments in excavations in high traffic areas, or where motorized equipment is used.

Figure 19-3 Excavation Hazard Recognition and Safe Work Practices
(All Employees Prior to Start of Excavation and Repair Work)

Excavation Plan Outline

I. Site
II. Applicable Standards
III. Probable Hazards
    A. Underground Utilities & Obstructions
    B. Surface Encumbrances
    C. Protective System
    D. Determination of Confined Space
    E. Inspection of Excavation(s)
    F. Physical Barrier Protection
    G. Access and Egress
    H. Exposure to Vehicular Traffic
    I. Hazardous Atmospheres
    J. Water Hazards
IV. Hazard Elimination / Mitigation
    A. Method of Excavation & Backfilling
    B. Warning Systems for Mobile Equipment
    C. Placement of Excavated Materials
    D. Drainage of Surface Water
    E. Exposure to Falling Loads
    F. Prevention of Associated Hazards of Equipment
    G. Personnel Walkways
V. Designated Competent Person(s)
VI. Stability of Adjacent Structures
VII. Attachments

Figure 19-4 Excavation Plan Outline

20. EXPLOSIVES SAFETY

PURPOSE

This section establishes the requirements for explosive storage at the SPR sites.

SCOPE

This section includes the following major sections:

- Introduction
- Site Protection
- Other Purpose
- Responsibilities

APPLICATION

This section applies to personnel authorized to handle explosives on the SPR.

20.1. INTRODUCTION

The SPR sites store small amounts of explosive materials for K-9 training and site protection purposes. It is also possible that small amounts of explosives may be used during construction projects and training exercises. Even with the minimal amount stored at the facilities, responsible personnel must abide by the storage requirements listed below.

NOTE
Only authorized personnel are allowed to handle and store explosives.
M&O Security maintains the list of authorized personnel.

20.2. SITE PROTECTION

SPR operations involving explosives for K-9 training, Force on Force Exercises (FOFs), and Site Protection will follow the requirements of the DOE Explosives Safety Standard (DOE-STD-1212-2012). DOE-STD-1212-2012 “provides the basic technical requirements for an explosives safety program necessary for operations involving explosives, explosives assemblies, pyrotechnics and propellants, and assemblies containing these materials.”

20.3. OTHER PURPOSE

SPR operations involving explosives for construction use, such as with propellant-actuated power devices will follow the requirements listed in 29 CFR 1910.109 and 29 CFR 1926.904. Also, refer to Federal explosives regulations at 27 CFR, Part 555, Subpart K for more specific storage requirements.

20.4. RESPONSIBILITIES

S&H Director

- Ensure the requirements of this standard practice remain current with applicable DOE directives and OSHA standards.

Site Safety

- Oversee site personnel to ensure the explosive safety procedures are followed.
- Ensure only authorized personnel are allowed to handle and store explosives.
- Site Security Specialists/ Site Security Captains
- Ensure that elements of this policy are being followed by conducting inspections, reviews, spot-checks, and other follow-up actions.
- Conduct or arrange for inspections in the area in which explosives are stored.
- Ensure that proper procedures are in place for the handling of explosives during training.
- Initiate corrective action for deficient items noted during inspections.
- Security Personnel
- Follow the requirements of this explosive storage procedure.
- Employees
- Do not handle, transport, or store explosives unless authorized to do so.

21. FALL PROTECTION

PURPOSE

This section establishes the requirements for protecting workers from falls and falling object hazards, including the selection, use, and inspection of fall protection systems.

This section provides information on preventing injuries and fatalities caused by falls from elevated work places (4 feet or higher), including ladders, scaffolding, manlifts, crane baskets, catwalks, and platforms or worksites adjacent to pits, trenches, and docks.

NOTE
Fall protection shall be provided and used by employees working at heights of 4 feet or more. Fall protection includes scaffolding, railings, aerial lifts, edge watch, and similar items.

SCOPE

This section includes the following major sections:

- General Requirements
- Elimination of Fall Hazards
- Substitution with Other Methods
- Engineered Controls
- Administrative Controls
- Personal Fall Arrest Systems (PFAS)
- Positioning Device Systems
- Anchorages
- Protection From Falling Objects
- Equipment Inspection and Testing
- Responsibilities

APPLICATION

This section applies to work activities and employees under the control of the M&O and its subcontractors.

DEFINITIONS

Anchor Point - A secure point of attachment for lifelines, lanyards, or deceleration devices. An anchorage must be capable of supporting a minimum dead weight of 5,000 pounds for each person attached to it.

Competent Person - An individual designated by the employer who is capable of identifying existing and predictable hazards in the surroundings or working conditions which are unsanitary, hazardous, or dangerous to employees and who has authorization to take prompt corrective measures to eliminate them.

Energy Absorber – Any mechanism, such as a rope grab, rip-stitch lanyard, specially-woven lanyard, tearing or deforming lanyards, and self-retracting lifelines/lanyards, whose primary function

is to dissipate energy and limit deceleration forces which the system imposes on the body during fall arrest.

Floor Hole – An opening measuring less than 12 inches but more than 1 inch in its least dimension, in any floor, platform, pavement, or yard.

Floor Opening – An opening measuring 12 inches or more in its least dimension, in any floor, platform, pavement, or yard through which persons may fall, such as a hatchway, stair or ladder opening, pit, or large manhole.

Floor Opening Covers – The construction of floor opening covers may be of any material that meets the strength requirements. Covers projecting not more than 1 inch above the floor level may be used providing all edges are chamfered to an angle with the horizontal of not over 30 degrees and sufficiently delineated with high visibility tape or paint. All hinges, handles, bolts, or other parts must set flush with the floor or cover surface.

Guardrail - A passive system of horizontal rails and vertical posts that prevent a person from reaching a fall edge.

Lanyard - A component consisting of flexible rope, wire rope, or strap, which typically has a connector at each end for connecting to the body support and to a fall arrestor, energy absorber, anchorage connector, or anchorage.

Lifeline - A component of a fall protection system consisting of a flexible line designed to hang either vertically (vertical lifeline), or for connection to anchorages or anchorage connectors at both ends to span horizontally (horizontal lifeline). Must be capable of supporting at least 5,000 pounds of dead weight, per employee attached.

Open Sides and Ends – The edges of a platform that are more than 14 inches away horizontally from a sturdy, continuous, vertical surface (such as a building wall) or a sturdy, continuous horizontal surface (such as a floor), or a point of access. Exception – For plastering and lathing operations, the horizontal threshold distance is 18 inches.

Personal Fall Arrest System (PFAS) – A system used to arrest an employee in a fall. It consists of an anchorage, connectors, a body harness, and may include a lanyard, deceleration device, lifeline, or suitable combinations of these.

Qualified Person - One who, by possession of a recognized degree, certificate, or professional standing, or who by extensive knowledge, training, and experience, has successfully demonstrated the ability to solve or resolve problems related to the subject matter, the work, or the project.

Self Retracting Device, Retractable Lifeline or Inertia Reel - A fall-arrest device that allows free travel, without slack rope, but locks instantly when a fall begins. Retractable lifelines may be used, but horizontal movement must be limited.

Rope Grabs - Automatic lifeline devices that act by inertia (resistance to movement) to grab the lifeline if a fall occurs. Rope grabs are used when vertical movement is required such as work from boatswain chairs or suspended scaffolds.

Harness, Full Body - An approved design of straps that may be secured about the employee's body in a manner to distribute the fall-arrest forces over at least the thighs, pelvis, waist, chest, and shoulders, with a means for attaching it to other components of a PFAS.

Wall Opening - An opening at least 30 inches high and 18 inches wide, in any wall or partition, through which employees may fall such as a yard-arm doorway or chute opening.

21.1. GENERAL REQUIREMENTS

Fall protection with continuous attachment shall be used by M&O employees as well as all subcontractors in work areas not protected by guardrails where a danger exists of employees falling from a distance of 4 feet or greater (distance based on elevation where the person is standing or sitting).

NOTE
The fall protection requirements in OSHA 29 CFR 1926 (Construction standards) do not apply to vehicles. Walking/working surfaces exclude vehicles or trailers on which employees must be located in order to perform their job duties. In most circumstances, fall protection is not required when standing on or in a vehicle. Where no OSHA General Industry standard exists, the M&O applies the relevant construction standard.

Work areas shall be evaluated to identify fall hazards 4 feet or more through the Job Hazard Analysis (JHA) and Safe Work Permit (SWP) processes, and appropriate controls shall be established and implemented to prevent inadvertent worker exposure. Control measures to protect against fall hazards shall be selected in accordance with the hierarchy of controls as follows:

- Elimination
- Substitution
- Engineered Controls
- Administrative Controls
- Personal Fall Arrest Systems (PFAS)

The most protective control measures shall be used wherever feasible to eliminate potential fall exposure. Operations involving fall protection shall be assessed using a JHA prior to starting work. A JHA is required for this and other Life Critical operations to ensure that all hazards associated with the work are identified, the likelihood and severity are understood, and control measures are defined that will effectively reduce the risk.

21.1.1. Rescue and Retrieval Considerations

M&O and subcontractor personnel shall provide for prompt rescue of employees in the event of a fall or shall ensure that employees are able to self-rescue. An employee shall never be put in a situation where, in the event of a fall, prompt rescue would be impractical or impossible.

The ability of an employee to perform self-rescue shall be considered upon completion of the JHA in order to be effective.

After a fall, in order to perform self-rescue the victim must be:

- Conscious
- Not severely injured
- Within reaching distance of the structure

The purpose of the JHA is to identify fall protection and self-rescue requirements. When developing this JHA, supervisors should consider using self-rescue capabilities to limit the length of free fall and limit the distance suspended away from the structure as much as possible. The following should be considered when possible:

- Use of SRLs (Self Retracting Lifeline) rather than a 6 ft. lanyard
- Use of a ladder climbing system
- Never work alone at heights

If self-rescue capabilities are not available or feasible, an SPR High Angle Rescue Preplan shall be developed and approved by the CSPC (Confined Space Program Coordinator).

21.2. ELIMINATION OF FALL HAZARDS

21.2.1. Walking/Working Surfaces

Wall openings and chutes where there is a drop of 4 feet or more must be properly guarded to prevent falls. A toe board or equivalent protection must be provided where there is exposure below to falling materials.

Open-sided floors or platforms 4 feet or more above the adjacent floor or ground level must be guarded on all open sides by a standard railing or the equivalent, except where there is an entrance to a ramp, stairway, or fixed ladder.

Employees on ramps, runways, and other walkways shall be protected from falling 4 feet or more to lower levels by guardrail systems.

Elevated work requiring the use of fall protection shall be stopped whenever inclement weather conditions are present, such as snow, ice, thunderstorms, and winds greater than 30 miles per hour.

21.2.2. Stairways and Ladders

Stairs, ladders, or ramps shall be provided for elevated areas used on a routine basis.

A stairway or ladder shall be provided at all personnel points of access where there is a break in elevation of 19 inches or more and no ramp, runway, or sloped embankment has been provided.

When personnel are working from portable ladders and the work requires them to be outside the “confines of the ladder,” a fall-restraint device must be used.

Handrails shall be provided for stairs with 4 or more risers or those over 30 inches high. A landing shall be provided where doors or gates open directly onto a stairway.

21.2.3. Floor and Roof Strength

Floors or roofs shall have the structural strength to support the intended work activities and equipment or storage anticipated for the area.

A roof on which people are required to work must be able to withstand the weight of employees and equipment being used to carry out the work unless specifically required otherwise.

If the roof is “suspect” from a safe work load perspective, a “good faith roof assessment” shall be completed. Suspect means known or suspected hazards related to roof strength.

- If a Good Faith Roof Assessment (AAA9020.831) is required, it shall be performed and documented by a 3-member team consisting of the supervisor, an engineer, and Site Safety. The team shall:
  - Assess the structure’s outer and inner walls to determine the condition of, and potential damage to, the structure.
  - Assess the underside of the roof first (to the extent possible) to determine its condition and potential damage to it.
  - Assess the roof to determine its condition and potential damage.
  - Identify and document the intended load to be placed on the roof during the activity (number of employees times 300 pounds, plus the weight of equipment, plus weight of materials) on the cover sheet of the Good Faith Roof Assessment.
- The completed Good Faith Roof Assessment shall be:
  - Returned to the Site Maintenance Manager or designee, and be valid for one calender year.
  - Briefed to personnel that are required to carry out work on the roof.

21.2.4. Permanent Fixed Platform/Walkway

A permanently engineered standard platform with handrails attached to a permanent structure (such as a work platform or access way) may be used.

21.2.5. Relocation of Work to Ground Level

Consideration shall be given to performing certain work activities at ground level to eliminate the need for personnel to work at height. Where possible, construction work shall be performed on the ground before lifting or tilting it to an elevated position, and tool extensions shall be used to perform work from the ground.

21.2.6. Work Practices

Employees should avoid climbing on equipment such as pipes, pumps, exchangers, valve hand wheels, transformers, electric motors, handrails, structures, or any other facilities not specifically designed for climbing, unless specific controls are identified and documented on the JHA to mitigate the hazard.

NOTE
Security personnel are required to conduct mandatory fence climb operability and performance testing. Personnel may only perform fence climbing activities with an approved Risk Assessment and proof of training.

Climbing on conduit, cable trays, or other similar equipment is not permitted. Climbing of vertical beams is not permitted.

Employees working less than 4 feet above dangerous equipment shall be protected from falling into or onto the dangerous equipment by a guardrail system or by equipment guards.

21.3. SUBSTITUTION WITH OTHER METHODS

Scaffolds are a common means of providing a safe work platform for working at height, however, certain guidelines still have to be followed to make working on scaffolds safe. See APM Section 43 for scaffolding requirements.

Employees working from elevated work platforms (aerial lifts, scissor lifts, etc.) must wear a PFAS attached to a designated anchorage point on the platform when provided (according to the manufacturer's instructions). Employees should consider using SRLs rather than lanyards.

When exiting an elevated work platform employees shall maintain continuous fall protection.

21.4. ENGINEERED CONTROLS

21.4.1. Guardrail System

Guardrail systems shall be provided as the primary fall prevention system for walking/working surfaces and leading edge work, unless the use of a guardrail system is infeasible. Whenever personnel are working without, through, or outside of guardrails and the potential exists to fall 4 feet or more, fall protection systems shall be used.

If guardrail systems are used:

- Top rails shall be 42 inches plus or minus 3 inches above the walking/working level and support 200 pounds in all directions.
- Midrails or mesh panels and a toe boards shall be securely fixed and designed to withstand, without failure, a force of at least 150 pounds applied in any downward or outward direction at any point along the midrail or structural member.
- Guardrail systems must block access to the fall hazard except at ladders and stairs (a swing gate shall be placed across a ladder opening unless the opening is barricaded or offset).
- Guardrail systems shall be designed and surfaced so as to prevent injury to an employee from punctures or lacerations, and to prevent clothing from being snagged.
- If wire rope is used for top rails, it shall be flagged at no more than 6-foot intervals with high-visibility material. Wire rope tails shall be taped to prevent snags and injury.
- Toprails and midrails made from wire rope shall be at least one-quarter inch in diameter or thickness to prevent injuries to employees.
- Guardrails **shall not be used** as anchor points for fall arrest equipment unless they are approved by a structural engineer or designed by the manufacturer for that specific purpose.

21.4.2. Floor Holes and Floor Openings

Employees on walking/working surfaces shall be protected from falling through holes or skylights more than 4 feet above lower levels by personal fall arrest systems, covers, or guardrail systems erected around holes.

21.4.3. Grating, Floor Plate, and Guardrail Removal

Before grating, floor plate, or guardrail can be removed that would expose personnel to falls greater than 4 feet, a Grating/Floor Plate/Guardrail Removal Checklist and Permit (AAA9020.835) shall be completed by the supervisor and the required approvals obtained. A copy of the checklist and permit must be placed in the general area where the grating/floor plate/guardrail is removed, with the original filed in the permit office.

A Grating/Floor Plate/Guardrail Removal Checklist and Permit (AAA9020.835) is not required for routine activities such as removal of small sections of grating on wellhead cellars to pump out with vacuum trucks. If the grating removed is not large enough for a person to fall through, the requirements for floor holes and openings apply, and does not require a Grating/Floor Plate/Guardrail Removal Checklist and Permit.

The requirements of this permit must be addressed during the pre-job briefing held with all involved employees before work commences.

- Supervisors shall ensure that removal of grating, floor plate, or guardrail is necessary to perform the task. Once it is established that removal is necessary, supervisors shall review the work to minimize the amount of grating, floor plate, and/or guardrail to be removed.
- Supervisors, together with Site Safety, must review the actual work location to confirm that removal of the grating, floor plate, or guardrail is the only way to perform the task safely.
- No opening must ever be left unguarded! Post a watch if necessary.
- When working in the area of removed grating or floor plate, ensure adequate lighting is provided to illuminate the opening.
- Warn and inform other personnel in the area of the removed grating or floor plate.
- All grating or floor plate shall either be reinstalled at the completion of the work task or at the end of the shift, or a floor hole cover installed.

21.5. ADMINISTRATIVE CONTROLS

21.5.1. Warning Lines

A warning line system may be used as a means of fall protection to alert employees when they are approaching an unprotected edge of a roof, floor, or other work surface. Warning line systems shall be erected under the direction of a Competent Person and in accordance with 29 CFR 1926.502.

- The warning line should be 34-39 inches above the work surface.
- The warning line should be rope, wire, or a chain.

- The warning line should be flagged at least every 6 feet with high-visibility material and have warning signs that are visible to workers.
- Stanchions that support the warning line should be able to withstand a force of at least 16 pounds, applied horizontally in the direction of the unprotected edge, without tipping over.

21.5.2. Safety Monitoring Systems

Safety monitoring systems shall be used to establish a controlled access zone to limit access to authorized employees as follows:

- Mark and barricade the control access zone with a warning line.
- Do not allow the warning line to be strung near the unprotected edge except at an access point such as a ladder.

Assigned safety monitors:

- Shall be located close enough to the employees to watch the work and provide verbal warnings to them about a fall hazard or an unsafe act.
- Shall be distinguishable from other employees by wearing vests, other clothing, or different-colored hardhats.
- Can monitor 8 employees or less.
- Have no other assignment except to observe the employees and their activity.

21.5.3. Training

A Competent Person shall train personnel who might be exposed to fall hazards. Training for M&O personnel shall be documented according to APM Section 3, Safety Orientation and Training. Training shall include (at least) the following topics:

- General requirements of this section
- Recognition of fall hazards
- Nature of fall hazards
- Use and operations of guardrail systems, PFAS, warning-line systems, safety monitoring systems, controlled access zones, and other systems that are reasonably expected to be used on site.
- Proper anchoring and attachment techniques
- Limitations on the use of mechanical equipment during work on low-sloped roofs
- Correct procedures for handling, inspecting, using, disassembling, storing, erecting and maintaining fall protection systems.
- Rescue considerations
- The role of each employee in fall protection plans and safety monitoring when these systems are used.

21.5.4. Re-Training

Circumstances where retraining is required include, but are not limited to, the following:

- If inadequacies in an affected employee's knowledge or use of fall protection systems or equipment indicate that the employee has not retained the required understanding or skill, the employer shall retrain the employee on the requirements stated in the this procedure.
- If changes in the workplace or equipment render previous training obsolete or require additional training.

21.6. PERSONAL FALL ARREST SYSTEMS (PFAS)

21.6.1. General

PFAS shall be designed to prevent the worker from reaching an unprotected edge, thereby preventing a fall from occurring. The system shall consist of an anchorage, connectors, and a harness.

Where engineered barriers and/or administrative controls are not feasible, PFAS is required, but not limited to the following circumstances:

- In elevated locations 4 feet in height or more where there is no other means of fall protection (guardrails, warning lines, etc.), or while working outside of approved work platforms or guardrail systems.
- On stages, floats, and any other type of suspended scaffolding
- On scaffolds with incomplete decking or guardrails
- When removing/replacing floor planks, hole covers, or grating from the last panel of a temporary floor.
- In areas exposed to fall hazards onto protruding, unprotected objects or reinforcing steel or above hazardous equipment from any height.
- Employees working from elevated work platforms (aerial lifts, scissor lifts, etc.) must wear a PFAS (Personal Fall Arrest System) attached to a designated anchorage point on the platform when provided (according to the manufacturer's instructions). Employees should consider using SRLs rather than a lanyard.
- In crane-suspended work platforms.
- Around floor openings, roofs, ceiling, and other surfaces where there is a fall-through hazard

The requirements for the use of PFAS in this section do not apply to the following:

- Use of portable ladders for access to landings (distance cannot exceed 24 feet).
- Accessing and servicing trucks, trailers, or other support equipment.

PFAS components must be used only for the employee's protection and not for hoisting materials unless approved by the manufacturer for that purpose. Conversely, equipment and components used for hoisting materials cannot be used for fall protection.

PFAS equipment exposed to impact loading shall be removed from service and inspected by a Competent Person and in accordance with the manufacturer's instructions prior to re-use.

If employees are exposed to a fall hazard when working near a floor or wall opening to handle materials, they must wear a PFAS rigged in a fall restraint configuration.

21.6.2. Safety Harness and Shock-Absorbing Lanyards

Employees required to wear PFAS equipment shall wear no less than a Class III full-body harness with a deceleration device (such as a shock-absorbing lanyard or inertia reel) attached to a suitable attachment point. **The use of a Class I body belt is not permitted on any SPR site.**

Safety harness and lanyard assemblies must be capable of withstanding a tensile loading of 5,000 pounds force without cracking, breaking, or taking a permanent deformation.

The attachment point of a body harness must always be in the center of the wearer's back between the shoulder blades.

Lanyards used in personal fall arrest systems must meet the following requirements:

- The maximum length of a lanyard shall be 6 feet and must have double locking snaphooks to prevent accidental disengagement.
- The length of the lanyard shall be appropriate for the application.
- Lanyards shall be the shock-absorbing type and shall be approved for use with the other fall protection devices (harness) and for the application for which it is being used.
- Snap hooks must be of a double-locking design to prevent accidental disengagement. When not in use, the lanyard must be secured and attached to the harness to prevent tripping or snagging. Personnel shall never attach fall arrest equipment snaphooks together.
- The lanyard must not be dragged and must be protected from sharp, hot, or corrosive surfaces.
- The lanyard must not be hooked back into itself unless designed for that purpose.
- Knots must not be tied in a lanyard. This will reduce the strength of the lanyard.
- Lanyards used in PFAS must be designed and used to limit a person's fall to no more than 6 feet.
- The lanyard must be attached to a suitable anchorage at all times while the person is in an exposed position.

NOTE
When using dual shock absorbing lanyards with independent shock absorbers on each lanyard, both lanyards shall not be attached at the same time except while accomplishing 100% tie off while moving from one location to another.

21.6.3. Retractable Lifeline

A retractable lifeline is a fall-arresting device used in conjunction with other components of a fall-arrest system. A retractable lifeline shall be used by only 1 person at a time.

A properly inspected and maintained retractable lifeline, when correctly installed and used within the fall-arrest system, must stop and limit maximum deceleration distance an employee travels to 3.5 feet. Retractable lifelines shall be considered for use when working in areas such as roofs and scaffolds, tanks, towers, vessels, and manholes. Also, retractable lifelines shall be considered when climbing such equipment as vertical fixed ladders, workover rigs, and telescoping derricks.

Before using a retractable lifeline, the supervisor and/or the user shall ensure the following:

- The user has been trained to use a retractable lifeline correctly
- The retractable lifeline is being used in conjunction with a complete fall-arrest system
- The equipment is under a regular maintenance program
- The equipment has passed a pre-use inspection

Other considerations include:

- Attach self-retracting devices using shackles or carabiner.
- Equipment must be hung up or placed loosely in a clean, dry area when storing.

21.6.4. Horizontal and Vertical Lifeline

When using horizontal lifelines, they must be installed and used under the supervision of a Qualified Person.

- Horizontal lifelines shall maintain a safety factor of at least 2.
- Only 1 employee shall be allowed on a vertical lifeline at a time, unless used for emergency rescue operations.

Horizontal and vertical lifelines must be installed and used according to manufacturer's specifications. The following guidelines shall also be followed:

- Softeners must be used where lifelines contact sharp edges such as beam flanges.
- Temporary lifelines must be removed at the completion of a job.
- A vertical lifeline shall be used by only one employee at a time.
- Anchor points, connectors, and other system components must be capable of safely supporting one employee falling a maximum distance of 6 feet.

21.6.5. Permanent Industrial Fall Arrest System / Rope Grab

An engineer-designed permanent system attached to suitable anchor points— in accordance with applicable OSHA/ANSI standards — can be used (such as steel cable static lines, steel cable ladder climbing systems, and rigid rail ladder-climbing systems).
The rope grab must be used with a rope that meets or exceeds the following:

- Rope grab size must match rope size.
- Minimum diameter of 5/8 inch rope.
- Made of polypropylene, nylon, or polyester.
- Minimum tensile strength of 5,000 pounds.

When rope grabs are used with wire rope, it must be a complete system. (Rope grab must be designed for a specific type and size of wire rope.)

21.7. POSITIONING DEVICE SYSTEMS

Positioning device systems shall be allowed if they conform to the following requirements:

- Positioning devices are rigged so that an employee cannot free fall more than 2 feet.
- Positioning devices are secured to an anchorage capable of supporting at least twice the potential impact load of an employee's fall or 3,000 pounds, whichever is greater.
- Connectors are drop-forged, pressed or formed steel, or made of equivalent materials.
- Connectors have a corrosion-resistant finish, and all surfaces and edges are smooth to prevent damage to interfacing parts of the system.
- Connecting assemblies have a minimum tensile strength of 5,000 pounds.
- D-rings and snaphooks are proof-tested to a minimum tensile load of 3,600 pounds without cracking, breaking, or permanently deforming.
- Snaphooks are of a locking type designed and used to prevent disengagement of the snaphook by the contact of the snaphook keeper by the connected member.
- Positioning device systems shall be inspected before each use for wear, damage, and other deterioration and defective components must be removed from service.
- Positioning devices shall not be used for lifting or hoisting either personnel or materials.

21.8. ANCHORAGES

When designing individual anchorage points for fall protection devices, the weight factor for employees shall be based on 310 pounds, including tools.

Anchor points for personal fall arrest systems, including lanyards/harnesses and vertical lifelines must:

- Be able to safely support 1 person falling 4 feet.
- Be installed in a manner that prevents accidental disengagement from support structures.
- Be inspected by a Competent Person on a periodic basis.
- Be placed where attachment and detachment can be done without causing loss of balance.
- Be placed above shoulder height to reduce fall distance.
- Be free of sharp edges to avoid cutting the lanyard.
- Anchorages for fall arrest shall be designed to withstand a tensile force of 5,000 pounds per employee.
- Anchorages shall be approved by a Competent Person to meet the strength requirements, or a recognized typical structural member shall be used.
- The anchorage for a personal fall-restraint system shall support at least 3,000 pounds or be designed and installed by a qualified person and have a safety factor of at least two.

- Do not make the anchorage part of the work surface; locate it to start arresting the fall before 4 feet and to prevent falling or swinging into other structural members or equipment.

21.9. PROTECTION FROM FALLING OBJECTS

Employees working below another work area must inform the employees above of their presence. Tools and equipment shall be raised or lowered to the upper work area by crane or be raised and lowered by hand using a rope (minimum 0.64 inches diameter) with the tools and equipment securely tied. Lifting areas shall be barricaded to prevent unintentional access beneath the suspended load.

Employees shall be protected from objects falling from overhead work by wearing ANSI-approved hard hats and using one of the following measures:

- Barricade the area where objects could fall and prohibit employees from entering the barricaded area.
- Distance potential fall objects from the edge of the higher level.
- Install toeboards, screens, or guardrail systems to prevent small or unstable materials from falling from higher levels to the lower work surface.
- Erect a canopy structure over the hazard area that is capable of withstanding the force of any material that might fall.
- Keep tools and equipment secured or in buckets/pouches.
- Employees shall not climb a ladder while another employee is above or below on the same ladder.

21.10. EQUIPMENT INSPECTION AND TESTING

21.10.1. Pre-Use Inspection

Users shall visually inspect fall protection equipment before each use. Users shall verify that a periodic inspection has been performed and documented in accordance with the Competent Person inspection requirements below. Equipment found to have missed a required, periodic inspection is tagged “Danger – Do Not Operate” tag (see APM Section 41) and returned for inspection and tagging in accordance with the Competent Person inspection requirements listed below.

If any of the following potential defects are identified during the visual pre-use inspection, users shall tag out of service and remove from service immediately.

- The hole in the D-ring is not round or the D-ring has been twisted.
- A buckle is stretched so the belt tongue does not reach the buckle.
- Threads are coming loose in any part of the webbing or lanyard (stitching around the connectors, such as buckles or D-rings, show wear or damage).
- The snap hook keeper does not close against the hook.
- Snap hooks are not double-locking (a double-locking snap hook requires the user to push a button or pull on a latch or trigger before the gate can be opened or the lock operated).

- Harness or lanyard webbing is significantly stained or stiff compared to the rest of the harness.
- Harness or lanyard webbing shows evidence of burns or extreme heat.
- The manufacturer's label is missing.
- Equipment shows signs of being stretched. For example, holes are elongated in the webbing used to adjust length of straps that go around the thigh.
- Any part of the system shows evidence of having been cut off.
- Connectors have sharp edges or nicks that could damage other parts of the system.
- The cable in a self-retracting lifeline does not retract smoothly or the braking system does not activate when the line is pulled quickly.
- The retracting lifeline shows evidence of damage (such as cuts, twists, or worn or broken strands).
- The self-retracting lifeline makes unusual noises, such as grinding or rubbing sounds, or feels as if there is grit inside the system.

21.10.2. Inspections by Competent Persons

Periodic and annual inspections of fall protection equipment shall be performed by a Competent Person in accordance with this section and manufacturer's requirements. Competent Person inspections shall be documented on the Fall Protection Equipment Inspection Report (AAA9020.834), or subcontractor's approved equivalent. Annual inspections shall be documented on the manufacturer supplied tag as applicable, and periodic inspections shall be color-coded (see schedule below).

NOTE
The annual inspection shall be documented on the manufacturer-supplied tag/label (if provided) and color coding shall be affixed to reflect compliance with the periodic inspection schedule.

The Competent Person shall ensure that the following fall protection equipment components, at minimum, are inspected:

☐ Stitching	☐ Acid and burn damage
☐ D Rings	☐ Metal rivets
☐ Deterioration (such as excessive wear or damage)	☐ Hook safety latch
☐ Frayed or broken fabric/leather	☐ Body pad (if applicable)
☐ Lanyard	☐ General condition
☐ Buckles (include tongue)	☐ Certification or data tag
☐ Splices	☐ Other (as required by manufacturer)
Note: None of the items listed above shall be altered in any way. During inspections, look for additional holes punched in tongue, excessive tongue cut off, and parts of D Ring or belts altered or removed.	

The method of affixing the color coding to the equipment shall be determined by the Competent Person. The color coding shall be affixed to personal fall arrest systems and parts according to the following schedule:

January to March	Red
April to June	Green
July to September	Blue
October to December	Yellow

Equipment or component(s) found defective or altered must be removed from service and destroyed or identified in such a manner as to prohibit their use in employee safeguarding.

21.11. RESPONSIBILITIES

New Orleans Safety

- Develop fall protection safety requirements and training.

Site Safety

- Assess fall protection equipment and systems.
- Investigate all fall incidents.
- Upon request, assist in designing and selecting fall protection systems.

Site Director

- Designate qualified individuals to write fall protection plans.
- Designate competent individuals to implement fall protection plans.
- Designate a competent individual to train site employees on fall protection.
- Maintain list of qualified and competent personnel for fall protection.
- Approve all fall protection plans and any changes to the plans.
- Provide adequate resources to establish and implement an effective fall protection program in accordance with this procedure.

Operations

- Ensure that fall protection requirements are stated in the Safe Work Permit when issued, including any additional controls as needed.

Engineering

- Ensure that all guardrail systems comply with design requirements under CFR 29 1910.502(b)(1-15).
- Ensure that anchorage points are capable of supporting at least 5,000 pounds.

Maintenance

- Inspect and maintain facility fall protection systems.
- Ensure that the SPR sites are equipped with adequate fall protection equipment that meets the requirements of this procedure.

Site Personnel

- Submit ideas for improving the fall protection procedure through the Job planning and JHA systems and safety suggestion system.
- Understand all aspects of the fall protection program.
- Ensure fall protection equipment is inspected before use and, if unsafe, taken out of service.

Supervisors

- Ensure employees are trained in recognizing and controlling fall hazards.
- Understand and interpret all aspects of fall protection procedure.
- Ensure that a means of rescue is available for employees using fall protection.

Contractors and Subcontractors

- In accordance with this procedure, ensure fall protection with continuous attachment is used by employees who will be in work areas not protected by guardrails where a danger exists of employees falling from a distance of 4 feet or greater (distance based on elevation where the person is standing or sitting).
- Ensure that a means of rescue is available for subcontractor employees using fall protection.

22. GENERAL HOUSEKEEPING

PURPOSE

This section is designed to establish the requirements and responsibilities for routine housekeeping to ensure that work areas are maintained in a clean and acceptable manner.

SCOPE

This section includes the following major sections:

- General Requirements
- Inspections
- Responsibilities

APPLICATION

This section applies to work activities and employees under the control of the M&O and its subcontractors.

22.1. GENERAL REQUIREMENTS

The M&O strives to provide a safe and healthy environment for its employees. Good housekeeping is a major factor in minimizing occupational injuries and illnesses. The guidelines outlined in this document represent basic acceptable housekeeping practices for the company. All employees are encouraged to follow the procedures outlined in this document and to contribute to a safe, clean, and orderly environment.

Doing so can prevent unnecessary injuries, illness, or fatalities that may be caused by deficiencies in the workplace. Additional information about this subject can be located in OSHA Standards 29 CFR 1910.22 and 1926.25.

- All personnel will work towards maintaining their respective workplaces in a clean and orderly manner.
- Housekeeping encompasses all activities related to the cleanliness of company facilities, materials, and equipment, as well as the elimination of nonessential materials and hazardous conditions.
- The following general housekeeping practices must be applied to all areas within the company facilities and all areas where employees perform maintenance, construction, or other activities.
    - Garbage, scrap, debris, and other trash materials are to be properly disposed of in designated containers and removed on frequent and regular intervals.
    - Material and equipment will be stored only in appropriate storage locations.
    - Floors should be maintained clean and as dry as reasonably practicable. Liquid spills are to be cleaned up immediately whenever possible.
    - Equipment is to be kept clean and in good working condition.

- Individual work areas are to be kept clean to insure that work activities may proceed in an orderly and efficient manner.
- Tools, supplies, parts, and equipment will not be used in a manner that would be hazardous or would adversely affect the work quality. Control should be used to ensure that the work area is maintained in an acceptable manner.
- Trenches, pits, or sumps are to be covered or barricaded at all times.
- Welding splatter and slag shall be contained with the use of high temperature protective screens or shields. Welding splatter or slag should be cleaned up before leaving the work site for an extended period of time. The entire work site must be cleaned at the end of each work shift.
- Compressed air shall not exceed 30 psi when used for cleaning purposes. Eye protection is required during these cleaning operations. The use of compressed air for cleaning an employee's body or clothing is prohibited.
- Shelved items must be placed in an orderly manner and arranged so that the items cannot easily fall while nearby items are being retrieved. Shelving must be sturdy and stable enough to hold the desired amount of weight. Never place an item on a shelf that cannot support it.
- Items will not be placed in front of shelves and thus require employees to climb or reach over items in order to retrieve items on shelves.
- Items stored shall remain 18" below the plane of the sprinkler heads, or 24" below the ceiling in areas without automatic sprinkler systems.
- Every floor, working place, and passageway shall be kept free from protruding nails, splinters, loose boards, and unnecessary holes and openings.
- Support equipment shall be kept clean and excess materials removed.

22.2. INSPECTIONS

- Work areas will be inspected for deficiencies in cleanliness and good physical appearance.
- Inspections should be performed at a frequency that will ensure the desired level of cleanliness and appearance are maintained.
- Supervisors should monitor these areas to insure that housekeeping is acceptable.
- In shared storage areas, shops, or offices, supervisors of the various employees should work closely together to ensure that housekeeping is maintained in an acceptable manner.
- During inspections, any safety-related deficiencies that constitute hazardous conditions shall be given priority attention.
- Hazardous conditions shall be reported immediately to the supervisor.

22.3. RESPONSIBILITIES

S&H Director

- Ensure the requirements of this standard practice remain current with applicable regulatory directives.

ES&H Manager, Site Safety Specialists and Representatives

- Oversee site personnel to ensure the housekeeping procedures are followed.
- Perform inspections as needed.

Supervisors

- Ensure that elements of this policy are being followed by conducting inspections, reviews, spot-checks, and other follow-up actions.
- Plan for the necessary man-hours to ensure good housekeeping standards are maintained.
- Conduct or arrange for inspections in their area of responsibility.
- Ensure that each work area under their supervision is maintained at an acceptable level of appearance and cleanliness and is returned to this state after work is performed.
- Initiate corrective action for deficient items noted during inspections.

Employees

- Follow the requirements of this housekeeping procedure.

23. HAZARD COMMUNICATION PROGRAM

PURPOSE

This section establishes the requirements and responsibilities of the M&O under 29CFR1910.1200, "Hazard Communication," for identifying pertinent information about chemical, physical, and biological hazards and communicating that information to employees.

SCOPE

This section includes the following major sections:

- Introduction
- Written Hazard Communication Program
- Hazard Determination
- Labeling
- Safety Data Sheets
- Employee Information and Training
- Hazards of Non-routine Tasks
- Trade Secrets
- Carcinogen Control
- Responsibilities

APPLICATION

This section applies to work activities and employees under the control of the M&O and its subcontractors.

23.1. INTRODUCTION

This section establishes the requirements and responsibilities of the M&O under 29CFR1910.1200, "Hazard Communication." Its purpose is to ensure that the hazards of all chemicals used on site are evaluated, and that information concerning the hazards is transmitted to employees. Employers are required by law to provide information to employees about the hazardous chemicals known to be present in the workplace under normal conditions of use or in a foreseeable emergency. This information is to be communicated through labeling and other forms of warning, Safety Data Sheets (SDSs), information distributed to employees, and training.

NOTE

This section applies to all M&O employees and subcontractor personnel working at an SPR facility under direct M&O supervision. All contractors working on the SPR facilities are required to submit SDSs to M&O Environmental for review for any chemical they bring on site that is not on the Qualified Products List (QPL). SDSs **must** be submitted, reviewed, and approved for use prior to bringing the chemical on site.

23.2. WRITTEN HAZARD COMMUNICATION PROGRAM

This section is a written program established to provide information on container labeling, obtaining and using SDSs, and the employee information and training program. In addition, the "Hazard Communication Program" requires that documentation be maintained for the following:

- A chemical inventory listing chemicals known to be present using an identity that is referenced on the appropriate SDS in each work area.
- The procedures used and hazards involved with non-routine tasks, such as confined space entry or pigging operations.
- The hazards associated with chemicals in unlabeled pipes.
- How the M&O informs subcontractors of:
  - Any precautionary measures needed and taken to protect their employees during the workplace's normal operating conditions and in foreseeable emergencies,
  - The labeling system used in the workplace, and
  - The location of the SDS for the chemicals used by the M&O that employees may be exposed to while working.
- The "Hazard Communication Program" is made available to the M&O employees or their designated representatives and DOE.

23.3. HAZARD DETERMINATION

The M&O will evaluate the chemicals in their workplace to determine if the chemicals are hazardous. Each chemical is evaluated for its potential to cause adverse health effects, physical hazards, or both.

When evaluating chemicals, the M&O consults the latest edition of the following references to establish whether a chemical is hazardous or not:

- "Toxic and Hazardous Substances," 29CFR1910, subpart Z.,
- “Guidance for Hazardous Determination,” 29 CFR 1910.1200
- "Threshold Limit Values for Chemical Substances and Physical Agents and Biological Exposure Indices," ACGIH.

When evaluating chemicals, the M&O consults the latest edition of the following sources to establish if a chemical is a carcinogen or potential carcinogen:

- National Toxicology Program (NTP), Annual Report on Carcinogens,
- International Agency for Research on Cancer (IARC) monographs on the evaluation of Carcinogenic Risks to Humans,
- 29CFR1910, Subpart Z, Toxic and Hazardous Substances.

If a mixture has been evaluated as a whole (new chemical), the results are used to determine if the mixture is hazardous as a whole.

If a mixture has not been evaluated as a whole, it is assumed to present the same hazards as components comprising one percent or greater of the mixture's weight or volume. (For example, if carcinogenic components comprise 1% percent or greater of the mixture's weight or volume, the mixture is assumed to present a carcinogenic hazard.)

Employers are not required to evaluate chemicals or mixtures unless they choose not to rely on the evaluation by the chemical manufacturer or importer. The M&O relies on the evaluations of the chemical manufacturer or importer in establishing its Hazard Communication Program.

23.4. LABELING

The M&O is responsible for ensuring that each container of chemicals used in the workplace is labeled in the GHS format by 2015 and after in compliance with the OSHA requirement. This format will include: with the product identifier, signal word(s), hazard statement, pictogram (with red border), precautionary statement, first aid statements, and the name and the address of the chemical manufacturer, importer, or other responsible party.

Vendors/suppliers of purchased materials must ensure that appropriate content and warning labels are attached to containers in order for the contracted purchase to be deemed payable. Note: The shipment may be returned unless this requirement is met.

M&O Property ensures that the labels or other forms of warning are legible and prominently displayed on the incoming containers of chemicals and ensures that labeling updates are provided to user departments.

- Proper container labeling in the workplace is audited by site management, employees, and the Site Safety Specialist on an informal, day-to-day basis and during formal assessments.

Each employee who transfers materials from labeled containers to unlabeled containers is responsible for properly labeling the unmarked container in the GHS format as to its contents and associated hazard when a hazard exists.

Labeling is not required on portable containers into which chemicals are transferred from labeled containers and that are intended only for the immediate use (that is, during the same shift) by the same employee performing the transfer.

23.5. SAFETY DATA SHEETS

The M&O will have a SDS for each chemical on site. The SDS will contain at least the following information:

- The identity used on the label.
- The chemical and common names of all ingredients that have been determined to be health or physical hazards and comprise one percent or greater of the composition, except if carcinogens. (Note: Carcinogens will be listed if the concentrations are 0.1 percent or greater.)
- The physical and chemical characteristics of the chemical, such as vapor pressure and flash point.

- The health hazards of the chemical, including signs and symptoms of exposure, and any medical conditions that are generally recognized as being aggravated by exposure to the chemical.
- The primary routes of entry to the human body (inhalation or absorption, for example).
- The OSHA permissible exposure limit, ACGIH Threshold Limit Value, and any other exposure limit used or recommended by the chemical manufacturer, importer, or employer preparing the SDS, where that information is available.
- Whether the chemical is listed as a carcinogen or potential carcinogen.
- Any generally applicable precautions for safe handling and use that are known to the chemical manufacturer, importer, or employer preparing the SDS, including appropriate hygiene practices, protective measures during repair and maintenance of contaminated equipment, and procedures for cleanup of spills and leaks.
- Any generally applicable control measures that are known to the chemical manufacturer, importer, or employer preparing the SDS , such as appropriate engineering controls, work practices, or personal protective equipment.
- Emergency and first aid procedures or instructions.
- The date of preparation of the SDS or the latest change to it.
- The name, address, and telephone number of the chemical manufacturer, importer, employer, or other responsible party preparing or distributing the SDS, who can provide additional information on the chemical and appropriate emergency procedures, if necessary.

The M&O shall ensure that:

- Copies of the SDS for each chemical in the workplace are accessible to employees during each work shift.
- A list is kept of all chemicals for which there must be an SDS.
- Copies of the SDSs are made available, upon request, to the Assistant Secretary of Labor for Occupational Safety and Health, U.S. Department of Labor, and the Director of NIOSH, U.S. Department of Health and Human Services, or their designees.

NOTE
Appropriate SDSs must be maintained for all chemicals on site. For example, if one bottle of the chemical is on the shelf for which the SDS is on file and a second bottle is purchased and there has been a change on the SDS, copies of both SDSs must be on file until the first bottle is emptied and discarded.

23.6. EMPLOYEE INFORMATION AND TRAINING

23.6.1. Initial Training and Information

The M&O provides all employees with information and training on the chemicals in their work area at the time of their initial assignment. There is an available training course that satisfies this requirement. This information includes the following data:

- The existence of 29CFR1910.1200 and its requirements.

- Any operations in their work area where chemicals are present or used.
- The location and availability of the "Hazard Communication Program," including the required list of chemicals and their corresponding SDSs.

Employee training shall include (minimally) the following information:

- Methods and observations, such as monitoring conducted by the M&O, continuous monitoring devices, visual appearance, or odor of chemicals when being released that can be used to detect the presence or release of a hazardous chemical in the work area.
- Physical and health hazards of chemicals in the work area.
- Measures employees can take to protect themselves from hazards, including appropriate PPE and specific procedures that the M&O has implemented to protect employees from exposure to chemicals.
- Details of the "Hazard Communication Program," including an explanation of how to read and interpret information on the labels and SDSs, and how employees can obtain and use the available hazard information.

23.6.2. Employee Information and Training on a New Hazard

The M&O shall provide employees with training whenever a new hazard is introduced into their work area.

- The employee will also be trained on his duties as outlined in this section through attendance of Basic Orienation Plus.
- Additional training may be included in the weekly supervisor's safety meeting.

23.7. HAZARDS OF NON-ROUTINE TASKS

Non-routine tasks are generally performed by subcontractor employees. The subcontractor's responsibilities under 29CFR1910.1200 are covered by a contract clause an approved hazard communication plan.

Hazards associated with non-routine tasks performed by the M&O employees are incorporated in the written procedures for the task (examples: confined space entry and pigging operations).

23.8. TRADE SECRETS

29CFR1910.1200 provides limited trade secret disclosure to health professionals who are providing medical or other occupational health services to exposed employees.

The chemical manufacturer, importer, or employer must immediately provide the identity of a hazardous chemical to a treating physician or nurse when the information is needed to determine emergency or first aid treatment. (Note: After the emergency is abated, the requester must complete a written statement of need and a confidentiality agreement.)

In non-emergency situations, the chemical manufacturer, importer, or employer is required to disclose the withheld specific chemical identity to health professionals who need the information for the following purposes:

- To assess the hazards of the chemicals to which employees will be exposed,
- To conduct sampling of the workplace atmosphere to determine employee exposure levels,
- To conduct pre-assignment or periodic medical surveillance of exposed employees,
- To provide medical treatment to exposed employees,
- To select or assess appropriate personal protective equipment for exposed employees,
- To design or assess engineering controls or other protective measures for exposed employees, and
- To conduct studies to determine the health effects of exposure.

Requests for withheld information must be in writing and must describe with reasonable detail one or more of the needs outlined above. It must also provide a description of the procedures to be used to maintain confidentiality of the disclosed information and state that trade secret information will not be used for any purpose other than the health needs asserted.

23.9. CARCINOGEN CONTROL

This following applies to all activities conducted at the SPR where use of a carcinogen creates potential for exposure:

- The NO Safety and Health department will identify carcinogenic materials associated with specific job activities. Whenever possible non-carcinogenic material will be substituted.
- Based on workplace observations, monitoring with instruments, and review of SDSs, employee exposure monitoring will be conducted to quantify employee exposures to carcinogenic materials. The monitoring results will dictate specific control measures that will be taken to reduce employee exposures to as low as reasonably achievable.
- Implementation plans for detectable carcinogen exposures include:
  - Eliminate use of the material.
  - Replace the material with a less toxic material.
  - Develop specific operating procedures that will address:
    - Additional engineering controls
    - Additional personal protective equipment
    - Employee education
    - Medical monitoring
    - Setup of regulated areas.

23.10. RESPONSIBILITES

Site Property/New Orleans Warehouse

- Verify that an SDS is received with the initial shipment of all chemicals. If an SDS is not received, initially contact the supplier by telephone, and if the SDS is not immediately faxed or mailed, then initiate a Report of Discrepancy (ROD), in accordance with the procedure in the Property Management Manual, citing the missing SDS. Keep documentation of the attempts to find the SDS. The New Orleans Safety or Environmental departments or Site

Safety Specialist may provide assistance if efforts to obtain the SDS through the ROD action fail. Material will not be issued for use without an accompanying SDS.

- Obtain an SDS from an SDS database for all chemicals procured through GSA, if the SDS is not received with the shipment directly from GSA or from a GSA federal supply service contractor.
- Send a copy of each SDS, including updates, to the user department, the site technical data center, and the New Orleans Safety and Health department. Verify the chemical is on the Qualified Products List (QPL), which is available on the ES&H website. Do not issue the product until it is listed on the QPL.
- Upon receiving each shipment of chemicals, verify that a label is affixed to each container with information about its identity, hazard warnings, and the name and address of the manufacturer or responsible party. The shipment of chemicals shall not occur unless a proper label is affixed to each container. Provide updated labeling information to the user department when received.
- Inventory of all chemicals held in storage within the Property department according to ASI 5400.15 (Environmental Instruction Manual).
- Develop an SDS work station handbook for Property that has the current Chemical Inventory Form, and the corresponding current SDSs placed in the handbook in a retrievable manner. Quarterly, remove from the handbook SDSs for chemicals that are no longer in the current chemical inventory. Employees must be aware that this section of the APM is in SharePoint/Technical Data Library and will be made available upon request.
- Provide hazard communication information/training to Property employees prior to assigning them tasks involving chemicals.
- Review the SDS for any chemical received at the monthly supervisor's safety meeting.
- Ensure SDSs for chemicals no longer on site are sent to RIDS.

Operations

- Inventory all chemicals issued to or stored within the Operations department according to ASI 5400.15, Environmental Instruction Manual.
- Develop an SDS work station handbook for Operations that has the current Chemical Inventory Form, and the corresponding current SDS s placed in the handbook in a retrievable manner. Quarterly, remove from the handbook SDS s for chemicals that are no longer in the current chemical inventory. Employees must be aware that this section is in SharePoint/Technical Data Library and will be made available upon request.
- Provide ready access to the SDS Work Station Handbook for all Operations employees during all shifts.
- Provide new or transfer employees with hazard communication information/training prior to assignment to tasks involving chemicals until formal training is provided.
- Ensure that Operations employees attend formal hazard communication training, follow safe work practices, use the proper personal protective equipment during operations involving chemicals, and are aware of the procedures to follow in case of an emergency involving a hazardous chemical.
- Verify that the labels on all containers of chemicals are legible and prominently displayed.

- Ensure that SDSs for chemicals no longer on site are sent to RIDS.
- Ensure that before starting the work, all Operations subcontractors are provided with a safety orientation on the hazards to which their employees may be exposed at the site, the M&O labeling system, and the location where SDSs for chemicals used by the M&O are available.
- Review the SDS for any new chemicals received at the monthly supervisor's safety meeting.

Maintenance

- Inventory all chemicals issued to or stored in Maintenance according to ASI 5400.15, Environmental Instruction Manual.
- Develop an SDS work station for Maintenance that has the current Chemical Inventory Form and the corresponding current SDS s placed in a handbook in a retrievable manner. Quarterly, remove from the handbook SDSs for chemicals that are no longer in the current chemical inventory. Employees must be aware that this section of the APM is in Sharepoint/Technical Data Library and will be made available upon request.
- Provide ready access to the SDS Handbook for all Maintenance employees during all shifts.
- Provide new or transfer employees with hazard communication information training prior to assigning tasks involving chemicals until formal training has been provided.
- Ensure that Maintenance employees attend formal hazard communication training, follow safe work practices, use the proper personal protective equipment during operations involving chemicals, and are aware of the procedures to follow in case of an emergency involving a hazardous chemical.
- Verify that the labels on all containers of chemicals used for maintenance are legible and prominently displayed.
- Ensure that all Maintenance subcontractors, before starting work, are provided with a safety orientation on the hazards to which their employees may be exposed at the site, the M&O labeling system, and the location where SDSs for chemicals used are available.
- Review the SDS for any new chemicals received at the supervisor's monthly safety meeting.
- Ensure that SDSs for chemicals no longer on site are sent to RIDS.

Subcontract Manager’s Technical Representative (SMTR)

- Ensure that all M&O subcontractors are provided with a safety orientation on the hazards to which their employees may be exposed at the site, the M&O labeling system, and the location where SDSs for chemicals used by M&O are available before starting the work.
- Ensure that the contract submittal described in the subcontract is obtained for all subcontractors.
- Ensure that subcontractors furnish a chemical inventory and that corresponding SDS s for all chemicals to be used are maintained in an SDS handbook and updated as changes in chemicals and contracts require. This book shall be readily accessible and centrally located for Emergency Response Team (ERT) responses.
- Ensure that all subcontractors submit a list of chemicals to be used on site to M&O Environmental to verify listing on the Qualified Products List (QPL).

Site Laboratories/Site ES&H

- Inventory all chemicals stored within the lab according to ASI 5400.15, Environmental Instruction Manual.
- Develop an SDS work station handbook for the laboratory that has the current chemical inventory form, and that the corresponding current SDSs are placed in the handbook in a retrievable manner. Quarterly, remove SDSs for chemicals that are no longer in the current chemical inventory from the handbook. Employees working in the laboratory must be aware that this section of the APM is in Sharepoint/Technical Data Library and will be made available upon request.
- Verify that the labels on all containers of chemicals within the lab are legible and prominently displayed.
- Provide new or transfer employees with hazard communication information/training prior to assignment to tasks involving chemicals until formal training is provided.
- Ensure that personnel attend formal hazard communication training.
- Review at the monthly supervisor's safety meeting the SDS for any new chemical received.
- Ensure that SDSs for chemicals no longer on site are sent to RIDS.

Graphics Department

- Inventory all chemicals stored in the Graphics department according to ASI 5400.15, Environmental Instruction Manual.
- Develop an SDS work station for Graphics that has the current Chemical Inventory Form and the corresponding current SDS s placed in a handbook in a retrievable manner. Quarterly, remove SDSs for chemicals that are no longer in the current chemical inventory from the handbook. Employees must be aware that this section of the APM is in Sharepoint/Technical Data Library and will be made available upon request.
- Verify that the labels on the containers of chemicals within Graphics department are legible and prominently displayed.
- Provide new or transfer employees with hazard communication information/training prior to assignment to tasks involving chemicals until formal training is provided.
- Ensure Graphics personnel attend formal hazard communication training.
- Review at the quarterly supervisor's safety meeting the SDS for any new chemicals received.
- Ensure that SDSs for chemicals no longer site are sent to RIDS.

All Departments (Note Contractual Information)

- Ensure that all M&O subcontracts include the following information:
  - This subcontract is subject to the provisions of 29CFR1910.1200 and/or 29CFR1926.59, as applicable. Compliance with these requirements is mandatory and any lower-tier subcontracts shall also include the requirement for compliance to these regulations.
  - Each subcontractor is required to provide an inventory and the corresponding SDSs of all chemicals that are used or stored on SPR property to the SMTR. No chemical is allowed on site unless it is on the Qualified Products List (QPL). The SMTR is responsible for

maintaining the SDSs in a handbook accessible in a central location for Emergency Response Team (ERT) response.

  - Each subcontractor must ensure that any lower-tier subcontracts entered into also include this requirement. The initial inventory and corresponding SDSs shall be submitted before the materials are brought on site. An update is submitted by the 15th of each month.

- Ensure that all purchase requests and petty cash or credit card purchases for chemicals include a requirement that the chemical manufacturer, distributor, or importer provide the following items:
  - An SDS for the chemical.
  - A label affixed to each chemical container with information about the identity of the chemicals, the appropriate hazard warnings, and the name and address of the chemical manufacturer, importer, or other responsible party.

New Orleans Safety and Health

- Maintain a hazard communication training package that meets the requirements of 29CFR1910.1200.
- Review departmental SDS handbooks and M&O and subcontractor work and storage areas to ensure compliance with the requirements of 29CFR1910.1200 and 29CFR1926.54 during annual Organizational Audits.
- Conduct employee exposure monitoring to quantify employee exposures to carcinogens and other hazardous chemicals.
- Review new chemicals that are not on the Qualified Product List (QPL) to ensure that products do not contain unacceptable hazardous ingredients.
- Review the hazard communication training package, when determined by the SME, to ensure it is up to date with requirements of 29CFR1910.1200.

Site Safety Specialist or Associate

- Provide hazard communication training to personnel.
- Perform and document random audits of departmental SDS Handbooks and subcontractor work and storage areas to ensure compliance with the requirements of 29CFR1910.1200 and 29CFR1926.54. Random audits will also include all subcontractors.

Employees

- Use chemicals only as according to the precautions listed on the SDS and as instructed by site supervision and New Orleans Safety & Health.
- Review the hazard communication program and applicable SDSs in the SDS Handbook before using non-routine chemicals.
- Request any additional information or training needed on a chemical from your supervisor or safety administrator.
- Inform the supervisor when a new chemical or hazard is introduced to the job site.
- Read and comply with the provisions of the M&O Hazard Communication Program.

- Label any unmarked container with its contents and associated hazards when transferring from a labeled to unlabeled container if it will be used by another employee or during another shift.
- Before procuring chemicals for site use, ensure that the specific chemical is on the Qualified Products List (QPL) or contact site Environmental or NO Environmental and request approval.

Site Director

- Ensure that there is a master SDS file for all chemicals on site for emergency use.

Site Cavern Engineer

- Provide a safety orientation on the hazards workers may be exposed to before starting the work. Include information on the M&O labeling system and the location where SDSs for chemicals are available.
- Ensure that the contract submittals described in this section are obtained for all subcontractors.
- Ensure that subcontractors furnish a chemical inventory and corresponding SDSs for all chemicals to be used. These shall be maintained in an SDS handbook and updated as changes in chemicals and contracts require. This book shall be readily accessible and centrally located for Emergency Response Team (ERT) responses.
- Ensure that contractor chemical inventory data is submitted to the site inventory focal point using the SPR computerized chemical inventory database.

Contractor/Subcontractor

- Provide an SDS for any chemical that will be used in the course of work that is not on the Qualified Products List (QPL), to NO Environmental and Safety & Health for review and approval. **Do not bring any chemical on a SPR site that is not on the QPL**.
- Have SDSs in the workplace for all chemicals being used on the job.
- Have an approved Hazard Communication Program.
- Ensure that all chemicals being used are approved for use and properly labeled.

24. HAZARD MANAGEMENT

PURPOSE

This section establishes the procedures for managing reported hazards to protect workers, the public, the mission and property from injury and damage on the jobsite.

SCOPE

This section includes the following major sections:

- Introduction
- Tracking Hazards
- Hazard Management Principles
- Procedures
- Hazard Tracking Systems
- Hazard Evaluation and Control
- Responsibilities
- Figures: Hazard Management

APPLICATION

This section applies to work activities and employees under the control of the M&O and its subcontractors.

24.1. INTRODUCTION

The purpose of the Hazard Management system on the SPR is to protect SPR personnel, the public, the mission, and SPR property from harm. To achieve this, hazards must be recognized and controlled to the extent possible. The SPR uses the guiding principles and core functions of Integrated Safety Management (ISM) to accomplish this purpose.

Safety management systems in place are consistent with the requirements of DOE's ISM process, OSHA's Process Safety Management (PSM) and the VPP process. The hazard management system also coordinates with the annual budget, which provides funding for hazard mitigation, and the work order tracking/priority system.

This section provides instructions on how to identify, report, evaluate, prioritize, track, control (mitigate or eliminate), and close hazards. The hazard management process exists for the purpose of recognizing and controlling hazards so that work is done safely. The hazard management system also provides the information and mechanisms necessary to allow employees to recognize and control hazards; it also delineates who has the authority and the responsibility to perform hazard management activities.

24.2. TRACKING HAZARDS

The hazard management process provides senior management with an accurate picture of the everyday risk of running the SPR. Two systems are used to transmit this information to management: the Safety Councils and the work order system. They are also used to document abatement plans and interim corrective actions taken to immediately control the hazards.

- The Safety Council minutes record identified hazards that require corrective action(s) that cannot be completed with the accomplishment of a work order. Examples of such actions include writing an Engineering Change Proposal (ECP), obtaining funding, or developing procedures or design.
- The minutes record closed as well as open hazards. Closed hazards are those for which the corrective actions have been completed and verified. This provides a cradle to grave record of hazard management.
- The work order system is used to track those hazards that can be controlled adequately by completion of a work order (only), that is, by making a repair or replacing the equipment in kind.
- Behavioral hazards are recorded during observations and the Site Steering Committee enters the information in the RINCON® database.
- Any hazards identified as “findings” during yearly Organizational Assessments (OAs), are tracked in the ATS.
- Potential hazards found during design review of future systems are tracked in the design review comment system maintained by Engineering. The purpose of these reviews is to identify and eliminate potential hazards before construction.
- Process Engineering uses the PrimaTech System to track hazards identified during the Process Hazard Analyses (PHAs) required by OSHA’s PSM regulation. PrimaTech is maintained by Operational Systems and status is reported to the sites on a monthly basis.
- Occupational hazards identified by a subcontractor shall be reported to the Site Safety Council by the SMTR.
- Hazards identified in the Tripartite Safety Council are tracked to completion in the DOE Action Tracking System (DATS). Actionees and completion dates are assigned by the DOE Project Manager.

24.3. HAZARD MANAGEMENT PRINCIPLES

The DOE ISM policy mandates certain basic principles of hazard management and control.

- First, hazards can be identified and controlled and line management is responsible and accountable for their control.
- The work to be done shall be analyzed and any inherent hazards recognized and controlled.
- The worker must be trained to do the work assigned and must have a clear understanding of his role and responsibilities.
- The work should be authorized at an appropriate level of authority and performed in accordance with approved procedures within the defined safety envelope.
- Procedures should be compliant with applicable codes, regulations, and other appropriate (necessary and sufficient) requirements.
- Necessary resources must be provided.
- Workers must be involved in providing feedback and continuous improvement and shall be empowered to do so.

24.3.1. Reporting

- Anyone on the SPR can identify and report a hazard.
- Any SPR employee can stop work if it is necessary to prevent an unsafe act or situation.
- Any worker has the authority to refuse to do a task that he or she is uncertain that they can perform safety.
- Hazards can be reported to the supervisor, the site safety specialist, the safety monitor, the behavioral safety observer, the New Orleans S&H department, the Fluor Hotline (1-800-223-1544 or www.fluorhotline.com), the SMTR, the Tripartite Safety Council, or to DOE.

24.3.2. Hazard Elimination and Control

Hazards can be eliminated or controlled in a variety of ways. In ranked order with the most desirable being first, some of the methods used are:

- Engineering out the hazard.
- Providing interlocked warning and “stop work” devices.
- Separating the hazard from the worker by time and/or space.
- Providing safe working procedures.
- Posting a warning.
- Providing personal protective equipment (PPE) and training.

Hazard controls must be tailored to the work being performed.

- In most cases a combination of the listed methods is used to control a hazard.
- Training personnel to properly operate and maintain equipment further mitigates the risk.
- Reinforcing safe behavior provides another level of control.

24.3.3. Risk Reduction

Risk reduction is a combination of reducing potential causes and mitigating the consequences of a mishap. Although reducing the frequency of task performance is also used as a control, it only limits the frequency of exposure without changing the possible consequences. In some cases, frequency reduction may be the only way to control a hazard. Also, frequency and severity may change depending upon the nature or environment of the process being conducted.

24.3.4. Integration of Hazard Management

Although line management has the primary responsibility for implementing all safety programs, several directorates assist them:

- Technical Support Services, including ES&H
- Maintenance and Engineering
- Data Systems
- Human Capital
- Finance

Specific roles, responsibilities, authority, and accountability are described in the following section.

24.4. PROCEDURES

24.4.1. Hazard Identification, Communication, and Reporting

- The M&O identifies and reports hazards for the purposes of immediate (interim) control, communication to personnel and management, and final (permanent) control.
- M&O employees are required to report defective equipment, unsafe conditions, and/or procedural problems to their supervisor.
  - Employees are encouraged to submit the report in writing, but oral reports are taken.
  - This active participation by the workers partially fulfills the PSM standard requirements for employee involvement and the ISM requirement for "feedback and improvement." Identified hazards can be reported anonymously to the New Orleans S&H staff through the Fluor Hotline (1-800-223-1544 or www.fluorhotline.com).
  - Employees may also report ergonomic hazards to Industrial Hygiene (504-734-4061).

24.4.2. Line Control Program

- Line safety monitors inspect working conditions and identify hazards. These hazards are reported to their supervisor.
- Line supervisors inspect their work areas once a week and identify hazards.
- The supervisor or safety monitor reports any hazard beyond his or her authority to correct to the Site Safety Management Council (SSMC).
- The SSMC takes corrective action for hazards within their authority and initiates actions by others if necessary.

24.4.3. PSM Process Hazard Analysis (PHA)

Hazards may also be identified during a PHA.

- PHAs may be done using a variety of techniques such as;
  - "What if analysis"
  - Checklists
  - HAZOPs
- PHAs are required for new operating processes and for significant equipment or process changes.
- Process Engineering reports these hazards in the monthly PHA Report and are tracks them in the PrimaTech, Inc., the PHA Works Program.
- Actions identified as necessary by a PHA that are intended to correct operability problems are not tracked as hazards.

24.4.4. Design Review

- Potential hazards may be identified during any stage of design review, from the conceptual package to the scope of work.

- These potential hazards do not physically exist and are tracked by Engineering Design using the Design Review tracking system.
- Every effort is made to identify and correct hazards as early in the design process as possible. This allows the hazard to be eliminated before construction and is less expensive than retrofitting.

24.4.5. Scope of Work Review

- Occupational safety hazards identified during the preliminary review of a Scope of Work (SOW) are identified in a written report to the subcontractor, a Preliminary Hazards Review (PHR). PHRs are prepared by the person entering the Purchase Requisition with assistance as needed from Safety and Health. See APM Section 44.
- The subcontractor has the responsibility to implement adequate hazard controls. The subcontractor documents a contract-specific Safety and Health Plan as a contractual submittal. It must be approved by M&O S&H.
- ISM principles and functions flow down to the M&O subcontractors and their sub-tier contractors via their contract language.
- All contractors and subcontractors performing work on an SPR site are directed to comply with all SPR safety and health requirements.
- All subcontractors are required to comply with APM requirements where applicable to the work they are performing.

24.4.6. Other Considerations

- Hazards may be identified at the Tripartite Safety Council and are tracked in DATS.
- Hazards may be identified by external assessors, such as the Fossil Energy ES&H staff, the EH Office of Oversight, or OSHA during VPP assessments.
- All hazards are tracked to closure regardless of the identifier.
- Hazards are frequently recognized during accident investigations and recommended corrective actions mandated.
- Recommended Corrective Actions are tracked using a graded approach. Recommendations from the formal accident investigation reports are entered into either the work order system or ATS/DATS according to the criteria explained above.

24.4.7. Communicating Hazards

- M&O management shall communicate information concerning identified hazards to any worker who could be affected by them. M&O departments, assessors, or other hazard identifiers are responsible also for providing senior management, both DOE and the M&O, with sufficient information about each identified hazard to evaluate the risk and to judge the adequacy of hazard controls.
- For purposes of this section, hazard communication is used in the broad sense of providing information to workers and management about the hazards. It is not limited to the specific requirements of OSHA 1910.1200, “Hazard Communication,” which are addressed in another section.

- All of the hazard reports previously discussed are used to transmit or communicate information about hazards. However, hazard information is communicated in several other ways, usually based upon the method of identification and the interim controls.
  - A PHR-identified hazard may be briefed to workers by a HAZOP team.
  - A supervisor can use identified hazards as the subject of monthly safety meetings.
  - Formal risk assessment reports may be developed to support ES&H-driven engineering changes.
  - Senior management is briefed often on identified hazards and how the M&O is controlling them during Site and Executive Safety Council meetings, Project and Program reviews, and special briefings.
  - Special computer- based training, Crosstalks, Lessons Learned and e-mails may also be used to reach the entire workforce.

24.4.8. General Hazard Tracking

The M&O tracks hazards to ensure that hazards get management visibility, are properly prioritized, that required hazard control action occurs, and that the hazard is closed after verification of the corrective actions.

In the ATS, work order, and PHA tracking systems, the formats used to input the information are designed to support and encourage hazard analysis and assessment. When properly completed, the hazard entries provide sufficient information so that someone knowledgeable about the SPR would be able to understand the at-risk condition, the potential severity of the consequences, the probable frequency of an accident/incident occurring given the controls in place, and the interim and permanent (recommended) hazard controls.

24.5. HAZARD TRACKING SYSTEMS

Hazard tracking systems provide documented hazard information and data to be used to:

- Make management decisions
- Prioritize actions
- Establish goals
- Identify performance trends
- Provide early identification of potential problems
- Communicate lessons learned
- Document needed design, funding, engineering changes, etc.

24.5.1. Work Order System

The M&O tracks hazards that can be corrected by completing a work order in the work order system. ES&H, Fire Protection, Emergency, and Security Management work orders are tracked this way and are given top priority.

The following steps will be followed by Site Safety Specialist and Fire Protection/Emergency Management Specialist.

- Review ES&H and Fire Protection/Emergency Management work orders requiring 30 days or more to close to identify those intended to correct, or prevent, a hazard. Ensure that the correct priority (1A, 2A or 3A) is applied to the work order. A section of the work order is provided for risk assessment information. New Orleans S&H will assist, if requested.
- Evaluate the present risk level (initial, present, injury, and residual) and enter it in the appropriate area in the work order. A section of the work order is provided for risk assessment information. If it is an ES&H work order "No Risk" cannot be used when evaluating work order. If there is no risk, then it is not an ES&H work order.
- Develop an interim corrective action to mitigate the hazard until the work can be completed and enter it in the work order.
- Attend the site's weekly planning meeting to ensure that ES&H and Fire Protection/ Emergency Management work orders are addressed according to priority and hazard.

NOTE
Special closure verification is not required for work order hazards. The equipment has either been repaired or replaced in kind, with no configuration change.

24.5.2. Assessment Tracking System

Hazards identified during an OA, an accident/incident or near miss investigation are tracked in the ATS system. ATS entries serve as documented action plans to resolve identified hazards as required by OSHA.

24.5.2.1. Assessment Tracking System Item Initiation

A hazard identified during an OA is entered into ATS by Contractor and Quality Assurance.

Anyone may identify and report a hazard to their supervisor, the site safety specialist, their safety monitor or NO S&H. If the identified hazard cannot be corrected using a work order, it will be entered into the SSMC minutes.

- Audit/assessment (other than OAs) safety and health findings requiring more than a work order to correct may be entered in ATS by NO S&H.
- In New Orleans:
  - Standard work orders are used to fix or maintain warehouse equipment and facilities using M&O personnel,
  - A commercial property oversight company manages the other buildings and is responsible for resolving any identified physical hazards within those facilities,
  - The New Orleans Site Safety Management Council forwards safety monitors' reports to M&O Facilities Management,
  - M&O Facilities Management is responsible for reporting hazards to the management company,
  - The facility at the Stennis warehouse is also included in this process, and
  - Other New Orleans work orders are tracked by the Help Desk system.

CAUTION
Hazards to be corrected via the work order system shall require immediate, interim hazard control/mitigation.

24.5.2.2. Status Updates

Site directors shall review open hazards every month during Site Safety Management Council (SSMC) meetings, publishing or discussing:

- safety monitor reports
- ES&H work order list
- HAZOP recommendations
- Open ATS items
- Hazards reported by any other means

This review will be documented in SSMC minutes.

Site directors will ensure ATS and the work order system are used to track the progress of actions that affect their site.

24.6. HAZARD EVALUATION AND CONTROL

The SPR Risk Assessment Coding Matrix is used to evaluate and express the risk of identified hazards and their control mechanisms. Figure 24-1 is a sample of the SPR Risk Coding Matrix. The matrix is based on SPR life cycles and the credible hazards of SPR operations. The SPR Project Manager shall approve any changes to the Risk Coding Matrix. The matrix will have a revision date.

The matrix is used in conjunction with the work order system for determining appropriate priorities. The matrix is cross-referenced to the work order priority matrix, so it is easy for a user to determine the appropriate priority when developing a work order. The Risk Coding Matrix is also used during the PHAs/HAZOPs required by PSM. Severity and frequency definitions are printed on the back of the matrix.

24.6.1. Requirements

The SPR Risk Coding Matrix will be used to evaluate the severity/frequency of all identified hazards. Risk assessments may be done or verified by any ES&H, Systems Safety, or Fire Protection/ Emergency Management professional. NO ES&H resolves disputes over risk assessments.

24.6.2. Risk Assessment Terms

Hazard severity expresses an assessment of the consequences of the credible mishaps that could result from a hazard.

Severity codes recognize the following consequences:

- Negative impacts on SPR personnel or public health and safety
- Harm to indigenous wildlife and bio systems

- Investment costs
- Impact on the SPR mission or security
- Noncompliance with approved standards

Categories of work-related illness include:

- Toxic exposure
- Ergonomically induced physical conditions
- Other industrial hygiene-type exposures to stressors

Severity code abbreviations are ranked I, II, III, and IV, with I being the most severe.

Hazard frequency is an expression of the likelihood that an identified hazard will result in a mishap.

- The frequency of negative effects of a hazard are;
- "Highly Likely" if it is very probable that the incident will occur within the first year the hazard is identified or
- "Likely" if the accident would occur in the next 10 years, and so on.
- These frequencies are consistent with the priority system used by Operations and Maintenance for work orders.
- Frequency abbreviations are: H(ighly likely), L(ikely), P(ossible), and U(nlikely).

HAZARD FREQUENCY CATEGORY DEFINITIONS	
CATEGORY	**RISK DEFINITIONS**
Highly Likely (H)	A hazard whose potential impact is very probable (100%) within the next year, or one occurrence in a year.
Likely (L)	A hazard whose potential impact is probable (10% - 100%) within the next year, or one whose impact has at least one chance of occurring within the next 10 years.
Possible (P)	A hazard whose potential impact is possible (1% -10%), or has one chance of occurrence in 100 years.[1]
Unlikely (U)	A hazard whose potential impact is likely to occur less than once in 100 years (<1%).
Notes	[1]This category can be compared to the 100-year flood exposures used in design.

The risk of a hazard is the combination of the severity and frequency assessments. Risk categories are labeled as high, medium, low, and very low.

- Example: a hazard with a severity of IV and a frequency of P (IV/P) would be a low risk hazard.
- Severity categories are expressed in uppercase Roman numerals from I to IV
- Probabilities are expressed in alpha characters: H, L, P, and U.
- The relationship between the two is shown in Figure 24-1, the SPR Risk Coding Matrix.

Each severity category in the risk matrix includes consequences to personnel, the public, SPR investment loss, the environment, compliance, security and the SPR mission.

- The hazard is placed in the highest category for which it meets one or more criteria.
- Example: a potential fatality is “catastrophic” even if all other consequences are negligible. Severity categories are defined in Table 24-2.

Occurrence Frequency is assessed in terms of hazard probability, or the likelihood that an identified hazard will result in a mishap, based on an assessment of such factors as location, task performed, environment, and frequency of the exposure to the risk.

- The SPR risk matrix is based upon the number of expected occurrences in a given number of years.
- Risk impacts are assessed on an average yearly rate based on a normal equipment or scenario life cycle.

24.6.3. Risk Coding Matrix

The SPR Risk Coding Matrix (see Figure 24-1) is a graphic presentation of the definitions when integrated to a single risk code. Colors indicate hazard control priorities of high, medium, low, and very low for each risk category, as indicated in the simple chart below.

Red	High Risk Hazards
Yellow	Medium Risk Hazards
Green	Low Risk Hazards
Blue	Very Low Risk Hazards

New Orleans S&H is the system owner of the matrix and revises it as needed or as directed. Revision dates are assigned and printed on the matrix. Users of the laminated copies of the matrix are required to verify that they are using the most recent edition (AAA9050.854 SPR Risk Coding Matrix). The SPRPMO project manager approves all changes to the matrix.

24.6.4. Risk Assessment

As owner of the Hazard Management procedures, New Orleans S&H provides oversight for assessments done by other organizations and makes the final assessment for disputed hazards. Immediate interim action shall be taken to control the risk of hazards identified by any audit, assessment, or similar process, such as locking out or tagging out equipment or barricading an area.

24.6.4.1. Work Orders

Work order risk assessments are translated to a work order priority, as found in the work order System Procedures.

They are then worked in the order assigned by the Work Order Priority System Matrix.

- 1A - High ESS&H work orders (based on risk assessment)
- 2A - Medium ESS&H work orders
- 3A - Low Risk ESS&H work orders

The Risk Matrix shown in Figure 24-1 is cross-referenced to the work order priority system.

NOTE
It is useful to remember when developing the hazard description that the hazard is the **condition** that triggers the accident and the resulting consequences. Example: If the hazard was the failure to provide guardrails, one associated mishap would be that an employee could slip and fall from the walking/working surface with the potential consequence being a broken arm. The number of times an employee is exposed to the hazard (daily, monthly, etc.) and whether there are hazard controls in place determines the frequency of the potential consequence.

24.6.4.2. Status Information in SSMC minutes

The Status Information is a running summary of the history of the hazard.

A typical Status Information block would include entries such as:

- Work order number, initiation date, and prioritization information (date entered, initials of the person who provided or entered the information)
- The work order has been delayed awaiting parts (date, initials)
- The work order has been put into consolidated engineering project number with an estimated completion date, or ECD. (date, initials)
- Changes in risks (date, initials)

24.6.5. Management Involvement (Commitment and Attention)

As stated earlier, the M&O believes that all accidents are preventable and that management's highest commitment is to the safety and health of the workforce and to reducing/eliminating accidents.

When a hazard is recognized, effective means of hazard control shall be identified and put in place in a timely fashion. Interim corrective action(s) to control the hazard shall be taken immediately if final resolution will be delayed.

24.7. RESPONSIBILITIES

M&O Project Manager

- Be ultimately responsible for controlling all recognized hazards involved with M&O operations.
- Make ES&H commitment a performance measure for M&O employees at all levels.
- Serve as the final authority on risk assessment and interpretation of ES&H requirements within the M&O.
- Appoint the New Orleans site manager (for safety).

Assistant Project Managers

- Ensure all necessary action is taken to enter hazards identified by their directorate in the appropriate tracking system.
- Be responsible for ensuring that hazards assigned to actionees within a directorate are actively worked on a timely basis.
- Inform their employees of the hazards to which they may be exposed and ensure that they use appropriate hazard controls.
- The ES&H director will ensure adequate support for risk assessment is provided to other directorates in the areas of safety and health, and answer questions pertaining to risk assessment and ES&H requirements interpretation that cannot be resolved by Safety and Health, Environmental, or Fire Protection.

Directors, Senior Managers, and Supervisors

- Ensure that hazards identified by their department are reported in accordance with this procedure.
- Ensure that hazards assigned to actionees within their department are actively worked according to assigned priority and that accurate status for these hazards is reported in the tracking system. Note: Managers will usually be the “owner” assigned for hazards whose corrective actions are their department’s responsibility.

Site Directors

- Be the “owner” of all hazards whose recommended corrective actions can be completed by the site.
- Be knowledgeable about hazards associated with operating the site.
- Be responsible for ensuring corrective actions are completed and hazard controls maintained.
- Ensure that interim corrective actions are taken for those hazards for which permanent solutions require time to implement.
- Ensure that the nature and controls of identified hazards are communicated to workers

Site ES&H Manager

- Be responsible for the professional safety and health support provided to site line management.
- Ensure that environmental work orders are reviewed for risk assessment.
- Upon request, perform risk assessments for hazards entered by others for the consequence area of environmental damage and/or non-compliance.

Site Safety

- Provide the primary technical support for risk assessment and monitor and assess site hazards.
- Work cooperatively with SMTRs to provide adequate oversight for subcontractor safety performance and to assess the risk of any hazards identified and enter them in the appropriate tracking system.
- Report “at risk” construction management conditions to the SMTR for resolution.

- Enter hazard management information in the work order and SSMC minutes, as applicable, and verify risk assessments.
- Oversee interim hazard controls (corrective actions).
- Review all open ES&H category work orders weekly to validate that they are ES&H-driven, to assess their priority, and to determine the risk level for entry in the work order system.
- Ensure during weekly site planning meetings that ES&H work orders that need to be addressed because of risk are addressed.

Supervisors

- Identify hazards during their weekly assessment of their work area.
- Provide information to assist in assessing risk, if requested
- Ensure that hazards reported to them are forwarded to the SSMC for action.

Employees

- Report hazards and supply information for risk assessments.

Site Engineer

- Provide technical expertise to identify feasible and cost-effective solutions to hardware, ergonomic, process, and similar hazards.
- Prepare required change control documents for corrective actions that require a configuration change and make engineering evaluations of permanent hazard control action.
- Provide information and expertise for risk assessments.

Site Fire Protection/ Emergency Management

- Enter hazard management information in the work order system, as applicable, and verify risk assessments.
- Oversee interim hazard controls (corrective actions).
- Review all fire protection/emergency management category work orders to validate that they are fire protection/emergency management-driven, to assess their priority, and to determine the risk level for entry in the work order system.
- Ensure during weekly site planning meetings that fire protection/emergency management work orders that need to be addressed because of risk are addressed.

Site Support Services

- Report hazards identified by the employees that they supervise.

Site Steering Committee

- Report any hazards to the SSMC.

Engineering Design

- Provide estimates for proposed corrective actions, cost/benefit analyses, ECPs, PHA recommendations validation,
- Provide expert information in areas such as structural requirements, and other safety-related design tasks as required.

- Operate the design review process and be responsible for tracking design comments about safety to comment resolution.

Subcontract Manager's Technical Representatives

- Provide direct safety oversight of construction subcontractors and some major service subcontracts under their direction to ensure that subcontractor employees are implementing appropriate hazard controls.
- Review, understand, and enforce the subcontractor's Site Specific Safety Plan, which must equal or exceed the requirements in the APM.
- With assistance from site safety or contract safety specialist, be responsible for recognizing hazards and directing their correction and for evaluating the safety performance of a subcontractor they have supervised.
- Report hazards identified to them to the SSMC.

Process Engineering

- Identify hazards, assess risk, develop corrective actions, do cost/benefit determinations, research process and offsite exposure hazards.
- Provide primary support to the sites for identification and resolution of hazards associated with firearms and explosives.
- Coordinate and conduct the PSM-required PHAs/HAZOPS and track PHA hazards internally until the hazards have been validated, a definitive action plan developed, and an actionee and owner assigned, and eventually closed. PHA recommendations are tracked in the PrimaTech system. Provide monthly updates for HAZOP recommendations to their owners.

Data Systems

- Be responsible for baseline change control as required by PSM and DOE orders.
- As part of the Change Management (CM) Technical Review Board (TRB) process, ensure proposed configuration changes are reviewed for safety impact; whether they can introduce a hazard or increase a risk exposure; or, if the change is intended to correct a hazard, whether that hazard has been assessed and is being tracked. This group is also responsible for the configuration of equipment and programs used by the site operating system, the Distributed Control System (DCS).
- Software Engineering personnel are not responsible for identifying or controlling hazards related to office computers, such as PCs, nor do they deal with issues such as office ergonomics.
- (Software Engineering) Processes configuration changes that require software modifications to correct hazards resulting from software and/or DCS equipment.

Occupational Safety and Health Safety Analysts and Industrial Hygienists

- Take primary responsibility for providing corporate-level staff support to the line organization for hazard management.
- Develop M&O S&H hazard management policies and procedures and related training.
- Provide M&O compliance interpretation for safety and health issues and be responsible for resolving conflicts in this area.

- When conducting oversight of M&O subcontractors' work identified hazards through the SMTR.
- During yearly independent assessments and OSHA VPP audits, provide oversight to all areas of hazard management at the sites.
- Assess identified hazards using the SPR Risk Coding Matrix and provide that information for tracking.
- Perform additional, informal S&H site reviews if requested by a site to aid in identifying and controlling hazards.
- Identify hazards and recommend corrective actions.
- Be trained in risk assessment, evaluate hazards and provide code citations and interpretations.
- Provide hazard management support for the NO facility.
- Ensure that NO S&H is represented on the electronic Technical Review Board.

Environmental

- Identify and/or assess hazards with the potential for environmental damage.
- Upon request, perform risk assessments for hazards entered by others for the consequence area of environmental damage and/or non-compliance.

Security and Emergency Management, and Fire Protection

- Identify and evaluate risks associated with security, fire and/or explosions and be trained in risk assessment methodology.
- Establish the risk criteria used for fire-related property damage and security severity measurement and report Fire Protection and Security hazards. Upon request, perform risk assessment for hazards entered by others for the consequence area of property loss due to fire.
- Recommend hazard controls or corrective actions. Fire Protection personnel are technical experts in Life Safety and other areas predominantly associated with fire protection and provide code citations for the National Fire Protection Association (NFPA) standards. Resolve any fire protection NFPA code interpretation conflicts.
- Perform a monthly inspection of the New Orleans facilities. The New Orleans site safety specialist uses the resulting report for SSMC input.
- Notify S&H when NFPA standards change.

Finance

- Coordinate budget to reflect appropriate priorities for projects needed to correct identified hazards.

Procurement

- Purchase goods and services necessary to support the hazard management process.
- Coordinate subcontractor submittals as required by the subcontract for approval.

Operations and Maintenance, New Orleans

- Own the work order system and be responsible for its control and maintenance.
- Be responsible for ensuring operating and maintenance procedures (preventive, predictive, and corrective) are accurate and written in a way that provides hazard management. This includes such areas as required PPE, training requirements, and cautions and warnings.

General Counsel

- Provide legal information to M&O senior management in the area of legal compliance and risk.

Performance Improvement

- Provide support and resources for continuous improvement of the Hazard Management Program.
- Administer the Lessons Learned program.

24.8. FIGURES

Figure 24-1. Sample SPR Risk Coding Matrix (Front)

SPR RISK CODING MATRIX

SEVERITY	FREQUENCY			
	Highly Likely	Likely	Possible	Unlikely
Catastrophic	(1A) IH	(1A) IL	(1A) IP	(3A) IU
Critical	(1A) IIH	(1A) IIL	(2A) IIP	(3A) IIU
Marginal	(2A) IIIH	(2A) IIIL	(2A) IIIP	* IIIU
Negligible	(3A) IVH	(3A) IVL	* IVP	* IVU

HIGH RISK HAZARDS
MEDIUM RISK HAZARDS
LOW RISK HAZARDS
VERY LOW RISK HAZARDS

** IIIU, IVP and IVU are considered "very low" and risk can be accepted without further action.*

Corresponding Work Order priorities shown in parentheses.

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Sample

Figure 24-1. Sample SPR Risk Coding Matrix (Back)

SPR RISK CODING MATRIX (December 2007)

SEVERITY CATEGORIES

Each severity category in the risk assessment matrix includes the consequences to personnel, the public, SPR investment loss, the environment, compliance, security and the SPR mission. The hazard is placed in the highest category for which it meets one or more criteria. For example, a potential fatality is "catastrophic" even if all other consequences are negligible.

Catastrophic: I

Personnel:	Death or fatal work-related illness.
Public:	Death or severe personal injury or illness of one or more members of the public.
Environment:	A spill of oil in excess of 2380 bbls[1], or brine, or other hazardous substance which has the potential for injury[2] to sensitive fish and wildlife habitats (7-10), sensitive biologics, or human-use activities.[3] Potential for more than 100 tons per year of VOC emissions, 2,200 lbs. of hazardous waste generation, 3.7 MM lbs. of solid waste generation, or other severe impact relative to an environmental aspect.
Investment Loss:	Single occurrence loss of greater than $2.5 million or an annual loss of $500,000 or more.[4]
Compliance:	Major noncompliance with federal, state or local laws; enforcement actions; or compliance agreements significant to ES&H and involving significant potential fines or penalties.
Mission:	Equipment damage or theft that results in site downtime[5] of more than 15 days.
Security:	A complete loss of the Central Alarm Station or the Radio Communications System.

Critical: II

Personnel:	Permanent disability, severe work-related illness or injury, or five or more lost workday cases from one occurrence.
Public:	Any personal injury or illness to members of the public.
Environment:	A 238 to 2380 bbls spill of oil, brine or other hazardous substance which has the potential for injury to sensitive fish and wildlife habitats, sensitive biologics or human-use activities. Potential for 25 to 100 tons per year of VOC emissions, 220 to 2,200 lbs. of hazardous waste. 1MM to 3.7 MM lbs. of solid waste, or other substantial impact relative to an environmental aspect.[7]
Investment Loss:	A single occurrence loss of $100,000 to $2.5 million or annual loss of $50,000 to $500,000.
Compliance:	Major noncompliance with Executive Orders; DOE Orders, or Secretary of Energy Directives (Notice or Guidance Memoranda) significant to ES&H or Security but not involving significant potential fines and penalties.
Mission:	Equipment damage or theft that results in downtime of greater than 10 days but no more than 15 days.
Security:	A complete loss of the Intrusion Detection System, Camera Monitoring System, Barrier Systems, or the Protective Force Fleet.

Marginal: III

Personnel:	Lost time injury or illness not resulting in disability or loss of quality of life.
Public:	Any significant impact to members of the public not included in Severity Categories I and II, such as a major quality of life loss or perceived illness.
Environment:	A reportable spill of less than 238 bbls of oil, brine or other hazardous substance which has the potential for localized injury to sensitive fish and wildlife habitats, sensitive biologics or human-use activities. Potential for 10 to 24 tons per year VOC emissions, or other moderate impact relative to an environmental aspect.[7]
Investment Loss:	A single occurrence loss of $10,000 to $100,000 or an annual loss of $5,000 to $50,000.
Compliance:	A marginal noncompliance with Federal, State or Local laws; Enforcement Actions; Compliance Agreements; Executive Orders; DOE Orders; Secretary of Energy Directives significant to ES&H or Security; or exceedence of CESQG hazardous waste limits of 220 lbs per site per month.
Mission:	Equipment damage or theft that results in downtime of one to 10 days.
Security:	A loss of individual components of the Individual Alarm Points, Cameras, Radios, Patrol Vehicles, Access Card System, or X-Ray and Metal Detection.

Negligible: IV

Personnel:	Injury that results in no lost time and is treatable by first aid at the facility.
Public:	Little or no impact to members of the public.
Environment:	A non reportable spill of oil, brine or other hazardous substance which has low potential for injury to sensitive fish and wildlife habitats, sensitive biologics or human-use activities. Potential for no more than 5 tons per year of VOC emissions, zero hazardous waste generated, zero solid waste generated, or other minor impact relative to an environmental aspect.[7]
Investment Loss:	A single occurrence loss of less than $10,000 or an annual loss of less than $5,000.
Compliance:	Significant deviation from good management practices with no potential civil or criminal penalties.
Mission:	Equipment damage or theft that results in less than one day of downtime.
Security:	A loss of an individual component of a security system that does not result in a loss of detection or response capability.

FREQUENCY CATEGORIES

Occurrence frequency is assessed in terms of hazard probability or the likelihood that an identified hazard will result in a mishap, based on an assessment of such factors as location, task performed, environment and exposure to the risk. Risk exposure may be assessed in terms of cycles, hours of operation or years. The SPR Risk Coding Matrix is based upon the number of expected occurrences in a given number of years. Risk impacts are assessed on an average yearly rate based on a normal equipment or scenario life cycle.

Highly Likely (H)

A hazard whose potential impact is very probable (100%) within the next year or one occurrence in a year.

Likely (L)

A hazard whose potential impact is probable (10-100%) within the next year or one whose impact has at least one chance of occurring within the next 10 years.

Possible (P)

A hazard whose potential impact is probable (1-10%) but has one chance of occurrence in a hundred years.[6]

Unlikely (U)

A hazard whose potential impact is likely to occur less than once in a 100 years (<1%).

Risk Coding Matrix

The SPR Risk Coding Matrix shown is a graphic presentation of the definition when integrated to a single risk code. Colors indicate hazard control priorities of high, medium, low and very low for each risk category.

FOOTNOTES:

1. Oil spill sizes are those defined for coastal (region) in the National Spill Contingency Plan.
2. (Environmental) injury as defined 40 CFR 112.20 Part 112, July 1, 1994 and environmental receptors as defined in 40 CFR Part 68.
3. "Sensitive environments", as defined in 40 CFR Part 300, March 29, 1994, expanded human use to include groundwater use and 40 CFR Part 68.
4. Investment loss and dollar amounts are consistent with DOE accident investigation categories. Investment loss includes the sum of the dollar value of property damage or loss, equipment damage or loss, noncompliance fines and penalties, and spill clean-up costs. Includes public property damage per 40 CFR Part 68.
5. Site "downtime" is defined as the number of days that a site is unable to draw down crude oil.
6. This category can be compared to the 100-year flood exposures used in design.
7. See the ISO 14001 Environmental Management Plan (ASI5400.55) for a list of environmental aspects and impacts.

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25. HEARING CONSERVATION PROGRAM

PURPOSE

This section identifies the requirements to anticipate, identify, evaluate, and control noise hazards; to achieve regulatory compliance; and to prevent hearing loss caused by occupational noise.

SCOPE

This section includes the following major sections:

- Introduction
- Hazards Associated With Excessive Noise
- Components of the Hearing Conservation Program
- Workplace Noise Exposure Evaluations
- Audiometric Testing
- Requirements for Hearing Protective Devices
- Employee Training And Fitting
- Other Program Requirements
- Responsibilities

APPLICATION

This section applies to work activities and employees under the control of the M&O and its subcontractors.

25.1. INTRODUCTION

The Hearing Conservation Program is intended to prevent employee hearing impairment and to protect employees from hazardous noise levels. It identifies what constitutes hazardous noise levels and establishes requirements and responsibilities for implementing feasible engineering controls and administrative procedures to prevent and control high noise levels. This includes such measures as noise exposure monitoring, audiometric testing, protective equipment, training, and recordkeeping.

NOTE

A Hearing Conservation Program shall be implemented and administered whenever employee noise exposure will equal or exceed an 8-hour time-weighted average (TWA) of 85 decibels or above, measured on the A-scale weighting (dBA) at SLOW response.

For the Protective Force, in accordance with DOE O 473.3, *Protection Program Operations*, any employee involved in regular firearms training must be entered into the M&O Contractor's Hearing Conservation Program.

25.2. HAZARDS ASSOCIATED WITH EXCESSIVE NOISE

25.2.1. General

- Exposure to excessive noise can cause temporary or permanent hearing loss.

- The ear can sustain permanent damage through long-term exposure to loud noise or brief exposure to loud noise bursts.
- Exposure to noise levels greater than 120 dB will likely result in discomfort or pain and cause permanent hearing loss.

25.2.2. Workplace Noise

Exposure to high levels of workplace noise can affect the ability to hear high-frequency sounds. This means speech or other sounds may become unclear or distorted when there are background noises or many people talking.

- Noise can contribute to accidents by masking warning signals, and excessive noise exposure can reduce job performance by causing fatigue or sleeplessness.
- Workers exposed to excessively high noise levels may also experience continual ringing in their ears, called "tinnitus," for which there is currently no cure.
- When information indicates that any employee's exposure may equal or exceed an 8-hour time-weighted average (TWA) of 85 dBA, the employee shall be admitted into the hearing conservation program.

25.3. COMPONENTS OF THE HEARING CONSERVATION PROGRAM

Components of the Hearing Conservation Program include the following:

- Workplace noise exposure evaluations,
- Audiometric testing,
- Provision of hearing protective devices,
- Employee training and fitting,
- Notification of affected employees,
- Posting warnings,
- Recordkeeping,
- Provision of information to governmental agencies, and
- Program audits.

Whenever technically and economically feasible, all newly acquired equipment will be designed so operating noise does not exceed 80 dBA when the equipment is operated normally.

Whenever employee noise exposure can be expected to exceed the 8-hour TWA of 85 dBA or above, control measures shall be initiated in the following order of precedence:

- Engineering controls,
- Administrative controls,
- Personal protective equipment (PPE).

25.4. WORKPLACE NOISE EXPOSURE EVALUATIONS

25.4.1. Establishing Noise Exposure

When reasonable information indicates that any employee may be exposed to an 8-hour TWA of 85 dBA or above, exposure measurements will be obtained for all employees who may be exposed to that level of noise.

The New Orleans IH Group, with assistance from Site Safety at each site, will design a sampling strategy to identify all employees who will be required to participate in the Hearing Conservation Program and to enable the proper selection of hearing protective devices.

At the site, Site Safety will identify noise sources exceeding 85 dBA by using a handheld sound level meter. These areas will be posted as outlined in the Other Program Requirements section.

NOTE
In the event of drawdown, employees that will be exposed to an 8-hour TWA of 85 dBA and above will be added to the program.

25.4.2. Monitoring Employees

Noise dosimeters or sound level meters will conform to the following requirements:

- Noise dosimeters will meet the Class 2A-90/80-5 requirements of the American National Standards Institute (ANSI) specification for personal noise dosimeters, S1.25-1978.
- Sound level meters will meet the Type 2 requirements of the ANSI specification for sound level meters, S1.4-1983.
- Dosimeters and sound level meters used to monitor employee noise exposure will be calibrated using the manufacturer's calibration instruction before and after each day's use.

Monitoring will be repeated whenever a change in production, process, equipment, or controls increases or decreases noise exposures.

- Equipment age and use may contribute to an increase in noise levels.
- Replacement or modification of equipment may affect noise levels.
- Whenever such an increase is observed, the person observing the increase will request through their supervisor that sound level readings be taken of the equipment.

NOTE
Whenever possible, ensure that replacement equipment does not raise noise levels.

All continuous, intermittent and impulse sound levels from 80 to 130 dBA shall be integrated into the noise measurements.

Affected employees or their representatives may observe measurements of employee noise exposure monitoring.

25.5. AUDIOMETRIC TESTING

25.5.1. Mandatory Audiometric Testing Program

A mandatory audiometric testing program will be established and maintained for all employees whose exposures equal an 8-hour TWA of 85 dBA or above. Audiometric tests will be performed by a company-contracted medical provider at the frequencies noted below.

- A baseline audiogram, against which subsequent audiograms can be compared, will be established for each employee before or within 180 days after the employee's first exposure to noise that equals an 8-hour TWA of 85 dBA or above.
    - Baseline audiometric testing will be preceded by at least 14 hours without exposure to loud noise. This may be accomplished by the use of hearing protective devices. Individuals wearing hearing aids will be advised to avoid exposure to any loud noise and not to wear their hearing aids for the stated time.
    - Employees will be notified of the need to avoid high levels of non-occupational noise exposure during the 14-hour period immediately preceding the baseline audiometric examination.
- A new audiogram for each employee exposed to an 8-hour TWA of 85 dBA or above will be obtained annually (at 12-month intervals) after the baseline audiogram requirements. If the physician or audiologist requests more frequent audiograms, they will be conducted per medical requirements.

25.5.2. Evaluation of Audiometric Testing

Each employee in the program will be provided with an annual audiogram, which will be compared to that employee's baseline audiogram by the company-contracted medical physician or audiologist to determine if a standard threshold shift has occurred.

- If the annual audiogram indicates an employee has suffered a standard threshold shift (STS), a retest shall be obtained within 30 days and the results of the retest considered as the annual audiogram.
- If a comparison of the annual audiogram to the baseline audiogram indicates a standard threshold shift caused by workplace noise exposure, the following steps will be taken:
    - Employees not using hearing protective devices will be fitted with hearing protective devices, trained in their use and care, and required to use them.
    - Employees already using hearing protective devices will be refitted and retrained in the use of hearing protective devices and provided with hearing protective devices offering greater attenuation, if necessary.
    - Employees will be informed in writing within 21 days of the determination of the existence of a standard threshold shift.
    - Employees will be referred, at no cost to the employee, for a clinical audiological evaluation or an ontological examination, as appropriate, if additional testing is necessary or if it is suspected that ear pathology is caused or aggravated by the wearing of hearing protective devices.

NOTE
Employees will be informed of the need for an otological examination if ear pathology, which is unrelated to the use of hearing protective devices, is suspected.

- If an employee's hearing test evaluation reveals that the employee has experienced a work-related STS in hearing in one or both ears, and the employee's total hearing level is 25 decibels (dB) or more above audiometric zero (averaged at 2000, 3000, and 4000 Hz) in the same ear(s) as the STS, the case must be recorded on the OSHA 300 Log.

25.5.3. Notification of Affected Employees

Employees monitored for exposure to noise will be notified according to Section 26, Industrial Hygiene Program.

The Medical Services provider will provide each employee with the following information:

- Results of the preplacement and annual audiometric tests; and
- Test results indicating a hearing level decrease or improvement since the previous audiometric test.

Upon request, Human Capital will provide employee exposure measurement records, audiometric test records, and audiometric test room records to employees presently or previously employed, and to representatives designated by the employee.

25.6. REQUIREMENTS FOR HEARING PROTECTIVE DEVICES

25.6.1. Selection Criteria

Hearing protective devices will be made available, at no cost, to each employee who is exposed to 85 dBA or greater. The following criteria will be used to determine if an employee requires hearing protection and to select the appropriate device.

- Employees will be required to wear hearing protective devices whenever they are exposed to either of the following working conditions:
  - Noise levels 85 dBA or above, or
  - Impulse or impact noise.
- Hearing protective devices are to be issued to each employee with an identified need and to those employees requesting protective devices. For sanitary reasons, employees will not share the same hearing protective device.
- If hearing protective devices are not disposable, they shall be maintained in functional, sanitary, and reliable condition.
- The use of hearing protective devices will be compatible with other personal protective equipment requirements, such as eye protection, respirators, or welding hoods.
- Hearing protective devices will reduce employee exposure to a TWA of 85 dBA or below. Double protection may be necessary in some cases to provide sufficient protection.
- Ear plugs or earmuffs will be worn where exposure is equal to TWA 85 dBA or greater or if employee is going to be exposed to noise levels of 85dBA or above for a short period.
- Both approved earmuffs and earplugs will be worn where exposure is equal to or greater than 100 dBA on an 8-hour daily average.

- Both approved earmuffs and earplugs will be worn for exposures that equal or exceed 110 dBA over time periods of 15 minutes or more regardless of the daily TWA.
- Both approved earmuffs and earplugs will be worn for impact/impulse exposures that exceed an instantaneous level of 140 dBA peaks
- Employees will select their hearing protective devices from at least two different types (such as earplugs or earmuffs).
- Employees who have difficulty wearing any of the available required hearing protective devices will be evaluated and alternative hearing protection will be provided.
- The adequacy of hearing protective device attenuation will be reevaluated whenever an employee's exposure increases and the hearing protective device he or she is presently wearing may not provide adequate protection. More effective hearing protective devices will be provided when necessary.
- Hearing protective device attenuation for the specific noise environments in which the device will be used will be evaluated.

25.7. EMPLOYEE TRAINING AND FITTING

All employees, contractors, and unescorted guests view the, “Active Force of Protection” educational video which describes the general protective measures for working on the SPR, including measures for hearing protection. All site O&M personnel shall be included in the M&O Hearing Conservation Program upon hiring.

A description of the current training program will be electronically maintained by both New Orleans S&H and PD.

The training program will be repeated annually for each employee included in the Hearing Conservation Program.

Information provided in the training program will be updated to include changes in protective equipment and work processes when they occur.

Each employee will receive training on the following:

- The effects of noise on hearing,
- The purpose, advantages, disadvantages, and effectiveness of various types of hearing protective devices,
- The selection, care, fitting, and use of hearing protective devices,
- The purpose of audiometric testing and an explanation of the test procedures, and
- The right of access to records as described in “Notification of Affected Employees” earlier in this section.

If a comparison of the annual audiogram to the baseline audiogram indicates a standard threshold shift, the incident will be evaluated and the proper actions will be determined.

25.8. OTHER PROGRAM REQUIREMENTS

25.8.1. Posting Warnings

Placards, as specified in OSHA standard 29 CFR 1910.145 (c) and (d), will be posted at entrances to or on the periphery of all defined work areas or at operations involving high noise to warn employees that the area or operation is a high-noise area and to indicate that hearing protective devices are required when applicable.

Areas or operations where noise reaches or exceeds the following levels require posted warnings:

- 85 dBA or greater,
- A level of 110 dBA or 140 dB peak.

25.8.2. Recordkeeping

The industrial hygienist will maintain accurate records of all employees' exposure measurements.

Human Capital Medical Services will permanently retain a record of each employee's audiogram.

Records will include the following information:

- Name and job classification of the employee,
- Date of the audiogram,
- The examiner's name, and
- Date of the last acoustic or exhaustive calibration of the audiometer, although this record and background sound pressure levels in audiometric test rooms are normally kept by the facility conducting the audiometric testing.

25.8.3. Program Audits

New Orleans Safety and Health will conduct audits of the Hearing Conservation Program annually and will ensure that, for all high-noise level areas and operations, the following criteria are met.

- Employees are wearing required hearing protection.
- Placards, conforming to the requirements identified in “Posting Warnings” above, are posted to warn employees of high-noise levels.
- Feasible engineering controls have been implemented to reduce or eliminate hazardous noises.
- Employees have received audiometric testing, training, fitting, and hearing protection devices.

25.9. RESPONSIBILITIES

Site Director

- Ensure that areas and operations identified as requiring hearing protection display posted warnings and that personnel are provided hearing protection upon entering those areas.

- Obtain assistance from Site Safety, Industrial Hygienist, or Engineering in the identification of feasible engineering controls to reduce employee exposure to high-noise levels.
- Initiate actions in coordination with New Orleans Safety and Health to eliminate, isolate, or otherwise control high-level noise sources.
- Ensure the maintenance of the designated minimum stock quantity for hearing protection.

Supervisors of High Noise-Exposed Employees

- Notify New Orleans Human Capital Medical Services whenever employees who have not been identified for inclusion in the Hearing Conservation Program are exposed to high noise levels.
- Notify site safety whenever changes in processes or equipment have increased or decreased noise exposures.
- Ensure that all employees wear approved hearing protective devices when working in an area or on an operation identified in the Audiometric Testing section as requiring hearing protection.
- Ensure that no unprotected employee is exposed to a noise level of 85 dBA or above.
- For sanitary reasons, ensure that employees do not share hearing protection devices other than earmuffs.
- Ensure that all identified employees in the program are provided with initial and annual training that at minimum covers the following items:
  - The effects of noise on hearing,
  - The purpose of hearing protectors, and
  - The attenuation, advantages, disadvantages, comfort, sanitation, and maintenance of various types of hearing protective devices.
- Provide instructions on selection, care, fitting, and use of hearing protective devices.
- Identify to employees the location of areas and operations that have been determined as having noise levels of 85 dBA or above.
- Inform employees of the specific locations where approved hearing protective devices can be obtained.
- Inform employees about updated information related to changes in hearing protective devices and work processes, if applicable.
- Encourage employees' input about how to reduce high noise levels.
- Inform employees of their right to access records.

Employees in the Hearing Conservation Program

- Receive the following tests and training:
  - Audiometric testing, including initial baseline audiogram and an annual audiogram, as directed by HC Medical Services or Protective Force designated physician (whichever applicable), and
  - Initial and annual hearing conservation training.

- Use hearing protective devices to avoid workplace noise exposure for 14 hours before baseline audiometric evaluations.
- Avoid high levels of non-occupational noise exposure during the 14 hours immediately preceding the baseline audiometric evaluation.
- Wear hearing protective devices when required and apply the hearing conservation principles presented during training as they pertain to the work assignment.
- Advise supervisor of concerns about changes in noise levels in work area.
- Report to supervisor any difficulty experienced in wearing hearing protective devices.

Employees Exposed to noise levels at 85 dBA and Above

- Attend required training.
- Wear hearing protective devices when exposed to 85 dBA and above, and apply the hearing conservation principles presented during training as they pertain to the work assignment.
- Advise supervisor of concerns about changes in noise levels in work area.
- Report any difficulty experienced in wearing hearing protective devices to the supervisor.

Site Safety

- Analyze all site areas and new processes generating noise, and provide technical input concerning noise level restrictions for purchase specifications for new equipment.
- Identify all employees with a noise exposure of an 8-hour TWA of 85 dBA or above for inclusion in the hearing conservation program.
- Initiate noise-level evaluations and provide requirements and recommendations for control measures.
- Provide / forward noise-level monitoring results to the New Orleans Industrial Hygienist, and notify the site ES&H manager of results.
- Identify areas and operations that require placards posted that warn employees of high-noise levels to site management.
- Ensure that appropriate hearing protective devices designed to reduce exposures of 85dBA and above are worn by employees.
- Evaluate hearing protective device attenuation in accordance with 29 CFR 1910.95, Appendix B.
- Monitor the Hearing Conservation Program.
- Provide technical guidance and evaluate use of hearing protection.
- Ensure that control measures determined by the evaluation of employees with a standard threshold shift are implemented.
- Request technical support from New Orleans Occupational Safety and Health when needed.

Human Capital (Medical Services) and Site Support Services for M&O personnel

- Ensure that identified employees in the Hearing Conservation Program receive audiometric testing according to 29 CFR 1910.95 (h) (audiometric test requirements).

- Coordinate with the site support specialist at each site to ensure that employees are scheduled for required audiometric testing at the required frequency.
- (Whoever schedules the hearing test) Ensure employees are advised to avoid high levels of non-occupational noise exposure (such as loud stereo or hobby power saw) during the 14-hour period immediately preceding the baseline audiometric evaluation.
- (Whoever schedules the hearing test) Ensure employees are advised to use approved hearing protective devices if they cannot avoid workplace or non-occupational exposure to high noise levels during the 14-hour period immediately preceding the baseline audiometric evaluation.
- Send written notification to each employee who experiences a work-related standard threshold shift (STS). Notification of a work-related STS will also be concurrently be sent to the employee's supervisor and NOLA IH so a consultation to determine possible causes of work-related STS and courses of action to mitigate could occur. If retraining is recommended, then this would be scheduled with PD.
- Retain a permanent record of each employee's audiogram as described in the "Recordkeeping" section.

New Orleans Safety and Health

- Identify, with the assistance from Site Safety, all employees whose noise exposure may equal an 8-hour TWA of 85 dBA or above for inclusion in the Hearing Conservation Program.
- Conduct personal noise monitoring.
- Assist with area noise level evaluations and provide requirements and recommendations for control measures upon request.
- Provide noise level monitoring results to management.
- Assist with identifying areas and operations that require placards posted that warn employees of high noise levels.
- Assist site management, as requested, to eliminate, isolate, or otherwise control high-level noise sources.
- Compile and provide information identified in "Program Audits" section if requested by applicable state and federal agencies.
- Update this Hearing Conservation Program section as necessary.
- Assist with ensuring that hearing protective devices reduce employee exposures to an 8-hour TWA of below 85 dBA. See 29 CFR 1910.95, Appendix B.
- Evaluate hearing protective device attenuation in accordance with 29 CFR 1910.95, Appendix B.
- Work with Performance Development to develop, maintain, and provide training (along with assistance from Site Safety).
- Analyze new process-generated noise and provide technical input concerning noise-level restrictions for purchase specifications for new equipment.

- Upon receiving the notification from Human Capital of any employee who experiences a work-related standard threshold shift (STS), determine possible causes of the STS and courses of action to mitigate.

Operations and Maintenance

- Coordinate any proposed changes in operations, processes, or equipment that may impact employee noise exposures or the Hearing Conservation Program with Site Safety.
- Specify noise level restrictions in purchase specifications for new equipment according to the requirements identified in the section on the Hearing Conservation Program.

Engineering

- When preparing specifications for new or replacement equipment, include measures to reduce noise levels whenever possible

26. INDUSTRIAL HYGIENE PROGRAM

PURPOSE

The Industrial Hygiene (IH) Program is established to safeguard employee health and well-being by ensuring that exposures to harmful chemical, physical and biological agents, and ergonomic stressors are within established limits.

SCOPE

This section includes the following major sections:

- Introduction
- Industrial Hygiene Personnel Qualifications
- Industrial Hygiene Support Requirements
- Exposure Assessments
- Baseline Monitoring Plan
- Notifications
- Control Measure Implementation
- Periodic Review Of Proactive Monitoring Strategy
- Instrument Calibration
- Industrial Hygiene Responsibilities

APPLICATION

This section applies to all work activities and employees on the SPR.

DEFINITIONS

On Staff – Available to participate from an identified stage of a project or task. For some projects, like asbestos removal and disposal, the Industrial Hygienist must participate from the inception of the project to its completion. For others, the Industrial Hygienist may begin their involvement at the work planning stage. On staff does not mean “present at the work site.” That is covered in the requirements below.

Action Level — A concentration typically one half the published, allowable limit (such as Occupational Safety and Health Administration [OSHA] permissible exposure limit [PEL] or the American Conference of Governmental Industrial Hygienists, Inc. [ACGIH®] threshold limit value® [TLV]) that triggers certain provisions defined by the applicable regulation that must be implemented to further reduce exposures such as applying additional exposure controls, employee training, or medical monitoring.

Area IH Sample —A sample collected in a work area for the purpose of assessing the air quality in the area where employees are working or will need to work.

Carcinogen —A chemical classified by the International Agency for Research on Cancer (IARC) as Group 1 or 2A. A product will be assumed to present a carcinogenic hazard if it contains a carcinogen in concentrations of 0.1 percent or greater (by weight or volume, as applicable).

Permissible Exposure Limit (PEL) — A maximum amount or concentration of a chemical that an employee may be exposed to under U.S. OSHA standards.

Personal IH Sample — A sample collected in an employee's breathing zone, in front of and within 12 inches of an employee's nose, for the purpose of assessing the air quality that an employee is breathing.

Threshold Limit Value® (TLV®) — TLV®s are guidelines (not regulatory requirements) prepared by the ACGIH®. A TLV® reflects the level of exposure that the typical employee can experience without an unreasonable risk of disease or injury.

26.1. INTRODUCTION

Industrial Hygiene is the branch of science devoted to the control of environmental factors or stressors arising in or from the workplace.

The Industrial Hygiene Program is designed to preserve employee health and well-being proactively by integrating health hazard anticipation, recognition, and control into line management and employee activities. This is most often accomplished by performing qualitative and quantitative exposure assessments, which evaluate and provide control measures for physical, chemical, biological, and ergonomic stressors found at the SPR sites.

26.2. INDUSTRIAL HYGIENE PERSONNEL QUALIFICATIONS

An appropriate level of IH oversight must be determined for IH-related activities across the SPR. The following paragraphs identify and describe the accepted IH personnel qualifications for different levels of oversight, depending on the activity / task / work to be completed.

Certified Industrial Hygienist

- Certified by the American Board of Industrial Hygiene after meeting the education, experience, and examination requirements.

Senior Industrial Hygienist

- A graduate of an accredited 4-year college with a master's degree in Public Health/Industrial Hygiene or other related field (such as Occupational Safety & Health, Chemistry, Environmental Health, Toxicology, etc.) plus two years' experience, within the last 5 years, in a full-time Industrial Hygiene position in the disciplines(s) to be encountered in the job activities or,
- A graduate of an accredited 4-year college with a bachelor's degree in Industrial Hygiene or Science (such as Chemistry, Physics, Biology, etc.) plus 3 years experience in a full time Industrial Hygiene position, within the last 5 years, in the discipline(s) to be encountered in the job activities.

Industrial Hygienist

- A graduate of an accredited 4-year college with a bachelor's degree in an Industrial Hygiene or a related Science (such as Chemistry, Physics, Biology) plus 1 year experience in a full time Industrial Hygiene position, within the last 3 years, in the discipline(s) to be encountered in the job activities or,
- A person who has successfully completed a course in the Fundamentals of Industrial Hygiene accredited by the American Industrial Hygiene Association (AIHA) or the OSHA Guide to Industrial Hygiene (OSHA 521) within the past 5 years and has 2 years of field

experience within the last 5 years in the discipline(s) to be encountered within the job activities.

Industrial Hygiene Technician

- A person who has successfully completed a course in the *Fundamentals of Industrial Hygiene* accredited by the American Industrial Hygiene Association (AIHA) or the OSHA Guide to Industrial Hygiene (OSHA 521) within the past three years and has one year of field experience within the last year in the discipline(s) to be encountered in the job activities.

26.3. INDUSTRIAL HYGIENE SUPPORT REQUIREMENTS

The level of Industrial Hygiene support required for a given project or task is determined by using the matrix below.

26.3.1. Industrial Hygienist Qualification Requirements

An IH shall be involved, to some degree, for all tasks that are anticipated to involve a chemical exposure or exposure to other IH stressors and shall participate in the review and acceptance of any new chemical to be introduced to the site.

Matrix for Determination of Industrial Hygiene Staffing Requirement				
Level of Hygiene Support	High Risk Hazards	Medium Risk Hazards	Low Risk Hazards	Very Low Risk Hazards
Certified Industrial Hygienist (CIH)	X	✓	✓	✓
Senior Industrial Hygienist		X	✓	✓
Industrial Hygienist			X	✓
Industrial Hygiene Technician				X
X Required ✓ Acceptable				

High Risk Hazards (RED)

- A CIH is required on staff for any job involving asbestos abatement or work around asbestos from the design initiation phase. EPA Certified Project Designer could be substituted for the design phase (only). A CIH is required to develop the sampling protocol, ventilation system design, and clearance protocol.

Medium Risk Hazards (BLUE)

- A Senior Industrial Hygienist is required on staff for Personal Protective Equipment assessment involving respiratory protection (choice of respirator, cartridge, etc.)
- A Senior Industrial Hygienist is required on staff for ventilation system design for jobs such as storage tank cleaning.

Low Risk Hazards (YELLOW)

- An Industrial Hygienist is required for sampling protocol design for construction tasks with the potential for exposure and other (non-construction) tasks having potential for exposure.
- An Industrial Hygienist is required on staff for IH exposure mitigation/elimination planning and oversight.
- An Industrial Hygienist is required on site for high potential exposure tasks such as crude oil tank cleaning, asbestos abatement, etc.
- An Industrial Hygienist is required for review and approval of chemicals not listed on the Qualified Product List (QPL). Must be an M&O hygienist.
- An Industrial Hygienist is required for determination or approval of the level of risk identified for the project, job, or task.

Very Low Risk Hazards (GREEN)

- An Industrial Hygiene Technician is required on site for IH exposure assessments and sampling projects.
- An Industrial Hygiene Technician is required on site for IH exposure mitigation/elimination plan implementation.

26.4. EXPOSURE ASSESSMENTS

There are two types of IH Exposure Assessments: qualitative and quantitative. A CIH or an IH with CIH oversight will develop the assessments. These assessments can be summarized and provided to field personnel as part of their hazard awareness training and to assist them in conducting a pre-job safety analysis.

26.4.1 Qualitative Assessments

The qualitative assessment process follows these basic steps:

- List significant work tasks including work task frequency, duration, and conditions
- Identify potential chemicals involved for each task.
- Conduct interviews and field observations about each work task as needed.
- Group work tasks into similar exposure groups (SEGs).
- Use the M&O risk matrix to identify high risk vs. low risk task activities.
- Conduct an annual review of site work tasks to verify accuracy.
- Revalidate on a periodic or as needed basis. Revalidation will include:
  - A review of past monitoring data from the specific work site/task as well similar data from other locations.
  - Verification that activities and chemical lists are accurate.
  - Interviews of a representative number of personnel to ensure conditions have not changed from the past evaluation.

Any changes found during revalidation of M&O qualitative assessments will be made to the Occupational Exposure Inventory (OEI) and utilized as part of planning for the next monitoring cycle.

The OEI can be found at this location:

https://myspr.spr.doe.gov/SH/Shared%20Documents/Occupational%20Exposure%20Inventory(OIE)/Occupational%20Exposure%20Inventory-2014.pdf

New product test monitoring (bulk and personal air) may be performed on a representative basis for determining the acceptability of the product. This would be the last step in the Qualified Products List (QPL) approval by Industrial Hygiene.

26.4.2 Quantitative Assessments

Quantitative assessments for the M&O are used to verify the OEI ratings and ensure personnel are adequately protected from potentially hazardous exposures. Monitoring will consist of both planned annual monitoring as well as unplanned monitoring for non-typical activities that may come up during the year, changes in conditions, or if there is a much higher frequency of those activities. The currently contracted IH Laboratory's sampling methodology should be used as a reference for quantitative assessments. In addition, the OSHA Technical Manual and NIOSH Sampling Guide can be used as references. Sub-contractors shall use the elements listed below and additional information provided by OSHA and NIOSH to develop and document their quantitative assessment program.

The M&O monitoring protocols follow

- An annual monitoring plan will be developed by NOLA IH and approved by the CIH overseeing the program. Full shift, task specific, and STEL monitoring can be done.
- Work will not be staged in order to accomplish sampling. This becomes an issue for tasks that are performed infrequently. NOLA IH will coordinate with the site to sample when the task is actually performed.
- The Annual plan will be based on previous exposure monitoring results and CIH recommendations. Exposures will be evaluated using the current OSHA PELs or TLV®s issued by ACGIH® (whichever is the most protective of employee health and safety).
- Personnel conducting monitoring will be trained in proper sampling procedures for the monitoring they will be doing and approved by the CIH providing program oversight.
- An AIHA accredited (IHLAP) lab will be utilized for lab analysis.

Control measures will be recommended based on monitoring results using the 95% confidence level.

26.5. BASELINE MONITORING PLAN

A Baseline Monitoring Plan has been implemented that includes all SPR sites. Tasks involving exposure(s) to chemical, physical, or biological agents were assessed. Exposure results were compared to applicable Occupational Exposure Limits (OELs) and the tasks were classified as "A," "B," or "C," based on this comparison and the risk they pose. These rankings can be found in the last column of the OEI (see hyperlink above in 26.4.1). Generally, the closer the exposure result is to an OEL, the more often the task is monitored.

- “A” ranked tasks require the most frequent monitoring.
- “B” ranked tasks require less frequent monitoring.
- “C” ranked tasks require monitoring when the process changes.

While the goal is to perform the A rank monitoring annually, the final decision for the monitoring schedule will be determined by the IH manager.

Infrequently performed tasks, for which monitoring opportunities are limited or absent, are “A” ranked until monitoring data can be obtained and evaluated. One of the objectives of the IH program is to reduce the number of “A” ranked exposures through the implementation of exposure control measures.

26.5.1 Occupational Exposure Inventory

The OEI organizes all tasks with potential health hazard(s) according to SEGs. Tasks are ranked based on their relative overall risk by the Industrial Hygiene staff. Factors considered are:

- frequency of the task performed,
- severity of outcome resulting from exposure,
- controls that are in place, and
- Measured exposure results collected during actual performance of the task.

This information shall be used to adjust the task rankings as data is collected. If repeated monitoring indicates a lesser impact than originally evaluated, the potential hazard may be reduced to a lower level. If monitoring indicates a greater than anticipated impact, it may be raised.

NOTE
At this time, no chemical exposures have been identified that require baseline monitoring to be performed for DOE or their support services contractor personnel working in an office environment in New Orleans.

The OEI:

- Provides an organized method for communicating summarized results to Site Safety, line managers, supervisors/foremen, and employees,
- Allows quantitative exposure assessments to be prioritized based on relative overall risk.

26.6. NOTIFICATIONS

26.6.1 Personal Employee Notifications

Affected employees will be notified of the sample results within two weeks of obtaining the laboratory results or sooner if an OSHA-required time limit exists.

This employee notification shall explain the results of the monitoring and shall provide the following:

- A description of the location sampled,

- A description of the tasks performed,
- The results of sampling and whether results are above any limited levels,
- A description/discussion of conditions that may have influenced the results,
- The PPE required to prevent over exposure, and
- Recommendations that may help reduce exposures and increase employee safety and health.

Employee Notifications shall be uploaded into site specific folders in SharePoint and links to these folders will be emailed to Site Safety. Site Safety will print the notification, explain the results to employee(s) and have them sign the notification form to indicate that they understand the results. Site Safety will then upload a copy of the signed form into the designated folder and store hard copies.

26.6.2 Similar Exposure Group (SEG)

When a SEG (employees performing the same tasks in the same way with the same exposures) is monitored, the Industrial Hygienist will provide a summary statement to Site Safety (using the same method used when delivering individual employee notifications). This summary statement will contain the same information as that in the employee notification form but without any names.

Results of SEG monitoring shall be reviewed with all affected employees by Site Safety or an Industrial Hygienist. A copy of the SEG summary statement shall then be posted in an area frequently used by that SEG (such as the I&E shop for the electrical employees and the Control Room for Operators, etc.) for a period of at least 30 days. After removing SEG notification paperwork from the posting area, it shall be maintained by Site Safety along with the Personal Exposure Notification forms.

If employees have questions or concerns about notifications, they should speak with Site Safety or contact the New Orleans IH staff by phone.

26.7. CONTROL MEASURE IMPLEMENTATION

When an adverse exposure is identified or when applicable requirements cannot be met, control measures will be defined and implemented. The type of control measure(s) chosen is based on the exposure. Where feasible, engineering control measures, process changes, or material elimination through substitution will be used. Administrative controls and PPE will supplement Engineering controls. Preventive control measures such as training and education are also used. Site Safety or an Industrial Hygienist will advise site management and supervision of the correct control measures. Site management and supervision will ensure that the appropriate control measures have been implemented.

26.8. PERIODIC REVIEW OF PROACTIVE MONITORING STRATEGY

The identification, evaluation, and control of occupational health hazards must be given continuous attention. Health hazards that have been identified and listed on the OEI should be periodically reviewed. Potential health hazards that have not been identified on the OEI should be communicated to the New Orleans IH staff to be included. The New Orleans IH staff will update the OEI as necessary.

26.9. INSTRUMENT CALIBRATION

The NOLA IH Group will calibrate and maintain IH equipment stored in New Orleans according to AAA9020.676 Industrial Hygiene Equipment and Instrumentation Calibration Instructions.

Site IH equipment shall be maintained according site calibration protocols.

Contractor/subcontractor(s) IH equipment shall be calibrated and maintained according to manufacturer's specifications.

The manufacturer determines when calibration of instruments is required. The manufacturer also determines when supplies required for instrument calibration expire. However, if an instrument is damaged or its function is compromised, it will be sent to the manufacturer for recalibration before returned to service. Once calibration certificates are received (if provided), they shall be filed in such a way as to be easily accessible.

Equipment that is out of calibration and requires calibration shall be marked with a "**Danger - Do Not Use**" tag.

26.9.1. General Rules Regarding Instrument Calibration

The following are basic instrument calibration rules:

- Follow the manufacturer's guidelines for proper calibration. The type and concentration of calibration gas, sample tubing, flow regulators, and calibration adapters are key links in the calibration chain. Use equipment provided by the original manufacturer to ensure proper calibration. Some instrumentation will require calibration by the manufacturer.
- A functional (bump) test or full calibration of direct reading portable gas monitors shall be made before each day's use or in accordance with the unit's operation manual using the appropriate gas(es) for the unit. Any instrument which fails a functional (bump) test must be adjusted by means of full calibration by the vendor as specified by the manufacturer.
- Never use calibration gas for calibration after its expiration date.
- The supplier must provide a traceable certificate of analysis for every calibration gas cylinder.
- Workers that calibrate instruments must be trained on the proper methods of calibration.
- The site will be responsible for replacing needed calibration supplies for instruments housed at the site and the IH Manager will be responsible for those kept in New Orleans.
- Always perform calibration on an instrument prior to use if it has been repaired, damaged, changed, or mishandled. Recalibration will be performed if there are any questions regarding the accuracy of the results.
- If equipment returns from manufacturer (or authorized service center) marked "out of tolerance upon receipt," the procedure specified in document AAA9020.676 (IH Equipment and Instrument Calibration Instructions) shall be followed.

26.10. INDUSTRIAL HYGIENE RESPONSIBILITIES

New Orleans Industrial Hygiene Group

- The New Orleans Industrial Hygienists shall conduct exposure assessments estimating the magnitude of potential exposure by reviewing various site information (such as chemical inventories, OSHA 300 logs, work task characteristics, and proposed new material purchases and processes), and examine inspections results and any industrial hygiene walkthrough surveys when conducted. Assessments will involve input from line managers, supervisors, safety monitors, and employees involved with the task or job being assessed.
- Perform Industrial Hygiene-related assessments during Organizational Assessments (OAs).
- Recommend control measures to reduce the health risks associated with identified hazards.
- Provide technical assistance for exposure assessments of identified hazardous conditions at the sites.
- Conduct quantitative exposure assessments and develop and administer a routine monitoring plan.
- Train Site Safety in the use of IH instrumentation and protocols.
- Maintain records of evaluation studies, monitoring results, disposition of recognized hazardous conditions and exposure records.
- Assist Performance Development (PD) in developing training for Industrial Hygiene-related courses on subjects such as health hazard awareness, conducting qualitative exposure assessments, respiratory protection, hearing protection, and hazard communication.
- Review M&O subcontractor submittals for written health and safety programs for adequacy and operate in an oversight capacity to ensure health and safety program requirements are met.
- Audit all New Orleans IH instrument calibration quarterly to determine its stability and/or operating condition. Instruments out of calibration shall be marked with a tag stating “Danger - Do Not Use”.
- NO IH will train Safety and Health personnel on the operation of any instrument before they attempt to calibrate it.
- Provide information to the Executive Safety Council and Human Capital on matters relating to employee health.
- Review and approve (or not) new chemicals for inclusion on the Qualified Products List (QPL). Products may be disapproved, approved, or approved for limited use (use to be specified).
- Review and comment on IH-related/involved Purchase Requisitions (PRs).

Line Supervisor/ Foreman

- Assist in identifying health hazards by anticipating and recognizing conditions that could be hazardous to an employee's health or well-being, and notify Site Safety, as necessary.
- Ensure employees are aware of and understand the types of health hazards they may encounter on the SPR.

- Ensure recommended hazard control measures and procedures are followed.

Safety Monitors

- Assist Site Safety in conducting routine qualitative assessment of identified health hazards if properly trained by the IH staff.

Site Safety

- Identify and report potential new exposures to the Industrial Hygienists.
- Assist in qualitative exposure assessments, routine inspections for health hazards, and quantitative monitoring if they have been trained to do so.
- Provide technical assistance and coordination for all site quantitative exposure assessments conducted by the New Orleans IH staff.
- Recommend health hazard controls (such as preventive measures training and education), engineering controls, administrative controls, and/or PPE for the reduction of health risks associated with identified health hazards.
- Ensure employees and supervisors are aware of and understand the types of health hazards they may encounter on the SPR.
- Request assistance from New Orleans IH for health hazards that require further evaluation and/or mitigation.

Employees

- Be familiar with methods used to control hazards associated with tasks they perform.
- Use all prescribed PPE and follow recommended control procedures.
- Notify their supervisor immediately about potential exposures to harmful agents, work conditions or practices that may cause illness or injury.

Custodian of Industrial Hygiene Equipment at Sites

- Maintain instruments in operating condition and properly calibrated.
- Prior to use, always perform calibration when an instrument has been repaired, damaged, changed, or mishandled. Recalibration will be performed if there are questions regarding accuracy of the results.
- Check expiration dates for equipment and supplies used in association with calibrated instruments. Order replacement supplies when needed.

Users of Industrial Hygiene Equipment

- Be trained on operating the instrument before attempting to calibrate it, and follow approved procedures for setup without deviation.
- When using the instrument, ensure that the equipment is operating within the manufacturer's specifications.

Procurement

- Control the purchase and distribution of potentially hazardous materials/equipment.

SMTR/Construction Management

- Ensure that appropriate language is contained in subcontracts so that subcontractors and their lower-tier contractors are notified of applicable IH hazards and requirements pertaining to their work scope.
- Ensure that subcontractors and their lower-tier contractors perform activities in accordance with contract specifications, pre-task safety planning requirements, and other applicable regulatory requirements.

Engineering

- Use established, approved engineering practice/procedures (through design) to minimize exposures to hazardous materials.

Performance Development

- Make available or develop and present appropriate training on IH topics, as determined by the SME.

27. JOB HAZARD ANALYSIS

PURPOSE

This section establishes the processes to systematically identify, evaluate, control, and communicate known and potential workplace safety and health hazards to employees before work activities begin.

SCOPE

This section includes the following major sections:

- Introduction
- General
- Work Plan Process
- Responsibilities
- Figures

APPLICATION

This section applies to work activities and employees under the control of the M&O and its subcontractors.

27.1. INTRODUCTION

The goal of job work planning and the process of preparing the Job Hazard Analysis (JHA) is to initiate thought about the hazards associated with each job activity that makes up all of the work and how each job activity can be performed safely. Careful planning of each job assures that all work is performed efficiently and safely. Work planning ensures the scope of the work is understood, appropriate materials are available, all hazards have been identified, mitigating efforts established, and all affected employees understand what is expected of them. A JHA is a critical part of work planning.

The JHA is **NOT** a procedure or stand-alone document. Activities that present or are identified as a potential hazard, along with associated controls shall be included in the JHA.

NOTE

The Security contractor may use the following forms in lieu of the Pre-Job Briefing and Worker Qualification Form (PJBF) and JHA Form as long as all of the required information is documented:

- QP-ESH-11;
- Guard Mount Briefing Form;
- Safety Risk Evaluation (with comprehensive safety briefing); and the
- Non-routine Tasks Risk Assessment Form.

Life Critical focuses on the operations that have the greatest potential for serious injury or fatality. Life Critical operations that require a written JHA are:

- Working at Height (APM Section 21): Activities include working at heights greater than 4 feet, including working on roofs, grating, floorplate, and guardrail removal.

- Motorized Heavy Equipment (APM Sections 32, 51, 52, & 53): Activities that include the use of heavy motorized/mobile support equipment, including aerial lifts and elevating work platforms.
- Material Handling (APM Section 31): Operations involving loading and unloading materials onto vehicles using mobile support equipment and powered industrial trucks.
- Confined Space Entry (APM Section 10): Operations that include working in or around confined spaces regardless of classification.
- Cranes and Rigging (APM Section 13): Operations that involve the use of cranes and/or rigging.
- Trenching and Excavations (APM Section 19): Operations that trenching and excavations performed at SPR work locations.
- Electrical Work (APM Section 15): Operations that involve electrical work on equipment rated at 50 volts and above.
- Hazardous Energy Control (APM Section 29) / Line Breaking (APM Section 12): Operations involving lockout tagout and/or line breaking activities.

Life Critical activities are only the baseline of hazardous activities to consider. At any stage, employees may identify further activities that require the application of risk identification, assessment, and management processes.

All work activities shall be subject to work planning to determine the need for a job hazard analysis. Depending on the complexity of each job and the hazards involved, the JHA process may be a verbal discussion, or it may be more formal with a written JHA and pre-job briefing.

- If hazards are identified during pre-job planning that require mitigation to safely perform the task and are not classified as a core competency as listed in section 27.2.1, a written JHA is required.
- If a permitted activity is for a SWP only with no special conditions (Hot Work, Safe Clearance, Excavation, Confined Space, or Special Conditions) a verbal JHA may be used.
- If a verbal JHA is done, the hazards shall be summarized on the PJBF.
- Employees and supervisors are to use the Job Hazard Analysis Process (Figure 27-1.) and professional judgment in determining the need for a written JHA.
- The advice of ES&H personnel should be sought if assistance is needed.

27.1.1. Hierarchy of Controls

During the work planning and JHA process, employees and supervisors shall identify the potential hazards and are responsible for identifying solutions to those hazards. The preferred hierarchy for developing solutions/controls is provided below.

- Elimination - Eliminating toxic substances, hazardous equipment, or processes that are not necessary for a system of work.
- Substitution - Where hazardous materials/chemicals have been identified as a hazard, the preferred option is to replace the material with a less hazardous one.
- Engineering - The removal of potential hazards by reengineering the job is a preferred option. This includes design modification, guards, permanently fixed physical barriers, interlocked

physical barriers, physical barriers, presence-sensing systems, enclosures, ventilation, automation, and isolation.

- Administrative Controls - The application of administrative controls to hazards may include such actions as limiting the time of exposure, rotating employees, and training/re-training of employees.
- PPE - The provision of PPE does not eliminate the hazard, but only shields the individual from it. Such action may have to be coupled with training in the correct use of the equipment.

27.2. GENERAL

27.2.1. Core Competencies

Commonly performed tasks that could be expected to be performed routinely in everyday work and those tasks that are identified as “core competencies” in the Technical Job Qualifications Master Qualifications Catalog located in SAP may not require JHAs.

Those who perform routine, redundant, or uncomplicated tasks over a period of time are considered competent to perform those tasks without conducting a written hazard analysis.

- As an example, this would apply to personnel such as electricians, plumbers, machine operators, property storekeepers, etc. whose competency has been identified by the issuance of such license or are conducting routine tasks within their skill level.
- Examples are driving vehicles, office work, unloading packages, use of hand or small power tools, non-permitted weekly Preventive Maintenance (PMs), and operational rounds.
- Life Critical Operations listed in section 27.1 cannot be considered to be a core competency.

27.2.2. Vendors/Subcontractors

A written JHA is not required for vendors or subcontractors who perform a routine service such as making deliveries, cleaning Port-a-Johns, filling vending machines, servicing copy machines, etc. The subcontractor shall coordinate with the SMTR to determine the need to develop a JHA. It is expected that these personnel are working within their core competency and fully understand any hazard associated with the work they are performing.

For subcontractors, the requirements of this process will be made part of the subcontract for the task or service to be performed.

Should anyone observe activities that appear unsafe, work should be stopped or paused until actions clarified or concerns are mitigated.

27.3. WORK PLAN PROCESS

27.3.1. Introduction

The work plan process consists of seven elements:

- Lessons Learned Portal review
- Job site walk down
- JHA

- Pre-job briefing
- Performance of the work
- Post-job review
- JHA record retention

27.3.2. Operating Experience/Lessons Learned Program

Operating Experience/Lessons Learned Program (AAA7003.5) covers use of the Lessons Learned Program and how this tool is available to all SPR personnel, if needed, during the development of JHAs.

All SPR personnel receive email notifications when a lesson learned is entered into the database.

27.3.3. Job Site Walk Down

In those instances where the job site can be safely accessed, an inspection of the job site shall be conducted.

This inspection shall be conducted prior to developing the JHA in order to assure all job site hazards and work control issues are identified and addressed in the JHA.

27.3.4. Job Hazard Analysis Process

NOTE
This section may require referencing of the Job Hazard Analysis Process illustrated in Figure 27-1 of this section.

The Supervisor/Person-in-Charge (PIC) and affected employees develop the JHA if required per the Job Hazard Analysis Process (illustrated in Figure 27-1).

- ES&H personnel are available at all sites and in New Orleans to assist in the development of a JHA. The Job Hazard Analysis Form, OSF12-0001 or the Job Hazard Analytics™ software is available for use.
- The responsible Supervisor/PIC and at least one affected employee (Hazard Review Team) will sign the JHA form, verifying that it adequately identifies all hazards and their respective mitigating actions.

NOTE
A written JHA is not required if the work activity is performed under a standard operating procedure which identifies all associated hazards, and the respective mitigation actions for each. In all cases, job planning and a pre-job briefing are required.

- The preparation of the written JHA will include or involve the following aspects:
  - Detailed scope of work, including how the person/team intends to complete the work.
  - Check the Lessons Learned Database for any lessons related to the type of work that is to be performed.

- Walk down or inspection of the work area and equipment while planning the work.
- Identification of materials and/or chemicals to be used.
- Identification of the equipment to be used and review of the associated manufacturer's operating manual(s).
- Identification of work requirements, controls, procedures, instructions, and personal protective equipment necessary to perform the work safely (including permits); and
- Involvement of the workers in the preparation of the work plan.

- The level of detail in the JHA should be relative to the complexity of the work and the hazards.
  - All warnings, dangers, and limitations referenced in the manufacturer's operating manual that are related to the task shall be incorporated into the JHA.
  - The Supervisor/PIC will then approve the JHA.
- "Generic" JHAs are those that would be routinely used for a specific activity and may be kept for use as a template.
  - They shall be reviewed by the employees, updated and approved as necessary to ensure affected personnel are aware of all hazards of the work and the job site.
  - In all cases, a pre-job safety briefing is required and documented on the PJBF.
- Emergency repair activities may be required during off -shift hours.
  - If a JHA needs to be written, this can be done in the field by the Supervisor/PIC and the affected employee(s).
  - The Supervisor/PIC and the affected employee(s) will approve and sign the JHA.
  - Under no circumstances, shall an emergency serve as a reason for ignoring established safe work practices.

NOTE
The M&O contractor is in the process of transitioning from a hard-copy written JHA to an automated JHA system. Until December 1, 2016, either format will be acceptable. After December 1, the automated JHA will be required.

27.3.5. Pre-Job Briefing

The Supervisor/PIC and employees performing the job shall discuss the work plan to ensure everyone is aware of how the job will proceed, and what the JHA entails.

Examples of what should be discussed during the pre-job briefing include:

- Summarizing steps and materials: This includes steps where the success depends solely on the individual work, and where serious injury or significant loss of property could result from not following the prescribed safe work procedures.
- Anticipating what can go wrong or where errors can occur: This includes distractions, confusing procedures, inexperience, and assumptions. Examining what errors have occurred with the activity in the past may be helpful.

- Foreseeing consequences: What is the worst that could happen? Work plans should incorporate defenses to prevent the incident.
- How has the task gone in the past? Work plans should incorporate defenses to prevent a repeat incident. Review operating experience/Lessons Learned (if available).
- Review of Equipment: A review of the hazards associated with the equipment to be used to perform the task and how those hazards will be controlled or eliminated.
- Review of Personal Protective Equipment (PPE) necessary for the job, engineering controls, and equipment controls.

Review of the written JHA will be documented by the Supervisor/PIC signing the PJBF (OSF12-0002). Only then can the Supervisor/PIC allow the work to begin.

27.3.6. Performance of Work

The JHA and the PJBF shall be posted in the work area with the SWP (if applicable) or shall be readily available to those performing the work if a safe work permit is not required. A PJBF is required for each task and shall be updated for each day.

Work activity shall cease immediately if there is a change in the work scope, work conditions change, new hazards are identified, or the controls prove inadequate or ineffective.

Scope Change: A new JHA shall be submitted if the original scope of the task has changed. Note: if the task involves the use of a SWP, see APM Section 35 for the process of communicating changes.

Addition of Hazards/Controls: Hazards and controls not identified on the original JHA may be added to the approved JHA using pen and ink as long as the scope of the task remains unchanged. The Supervisor/PIC and affected employee(s) shall initial and date the JHA to ensure changes were communicated. Note: if the task involves the use of a SWP, see APM Section 35 for the process of communicating changes.

27.3.7. Post-Job Review

At the end of shift or at task completion, the Supervisor/PIC will perform a verbal post-job review with the affected employees. If any safety concerns/problems occurred during the assignment, they will be discussed and possible solutions will be proposed to assure better planning and a safer work experience the next time the job is performed.

- Additionally, any lessons learned during the job or activity will be reviewed and entered into the Lessons Learned database.

27.3.8. JHA Record Retention

The JHA and PJBF will be filed with the SWP; if a SWP is not required the JHA and PJBF will be filed with the documentation that authorizes the work such as:

- Work Order/Notification
- Preventative Maintenance (PM)
- MRC
- Contract

- Operations Requirement Card (ORC)

These documents will be maintained according to the Records Inventory and Disposition Schedule (RIDS) that is applicable.

The RIDS for the JHA will assume the RIDS schedule for the document with which it is filed.

27.4. RESPONSIBILITIES

Supervisor/PIC

- Conduct a pre-job walk down to analyze the hazards and determine if a JHA is required.
- Ensure JHAs are developed as required before work begins.
- Approve written JHAs completed by employees in their group.
- Conduct a pre-job briefing with employees before work begins.
- Ensure affected employees are briefed on or review JHAs applicable to the work they will perform, and document the review of the JHA on the PJBF; Supervisors should seek advice from their Safety Representative, SMTR, Site Safety, or ES&H Manager as appropriate.
- Ensure employees are knowledgeable and participate in the process of developing a JHA.
- Ensure employees are trained/qualified to perform the task(s) and safely use tools/equipment in the completion of the job.
- Ensure worker qualification is documented on the PJBF.
- Monitors work area conditions and work activities to ensure compliance with JHA hazard control requirements.
- Monitors work area conditions and work activities to ensure the effectiveness of hazard control measures.
- Coordinates in-field (pen and ink) changes, as needed.

SMTR

- Provide technical expertise in support of JHA development for work involving subcontractors.
- Ensure that subcontractors using support equipment include all warnings, dangers, and limitations referenced in the manufacturer's operating manuals that are related to the task are incorporated into the JHA.

Safety/IH

- Provide technical expertise in job planning and preparing written JHAs upon request.
- Ensure appropriate JHA requirements are being met during field inspection of work locations and SWPs.
- Provide support to supervision in monitoring workplace conditions and activities on a regular basis to ensure compliance with hazard control requirements.
- Assist with preparation of Lessons Learned as needed.

Employees

- Ensure required JHAs are developed, reviewed and complied with.

- Participate on the Hazard Review Team by identifying job tasks, providing relevant background/experience information, recognizing hazards, and suggesting hazard controls.

Contractor/Subcontractor

- Ensure JHAs are developed prior to performing work when applicable.
- Ensure that all warnings, dangers, and limitations of support equipment referenced in the manufacturer's operating manuals that are related to the task are incorporated into the JHA.
- Ensure affected employees are briefed on or review JHAs applicable to the work they will perform, and document the review of the JHA on the PJBF; Supervisors should seek advice from their Safety Representative, SMTR, Site Safety, or ES&H Manager as appropriate.
- Approve written JHAs completed by employees in their group.
- Conduct a pre-job walk down to analyze the hazards and determine if a JHA is required.
- Conduct a pre-job briefing with employees before work begins.
- Ensure employees are knowledgeable and participate in the process of developing a JHA.
- Ensure employees are trained/qualified to perform the task and safely use the tools/equipment in the completion of the job.
- Assure the work is performed in accordance with the JHA.

27.5. FIGURES:

Figure 27-1. Planning for Safety: Job Hazard Analysis Process

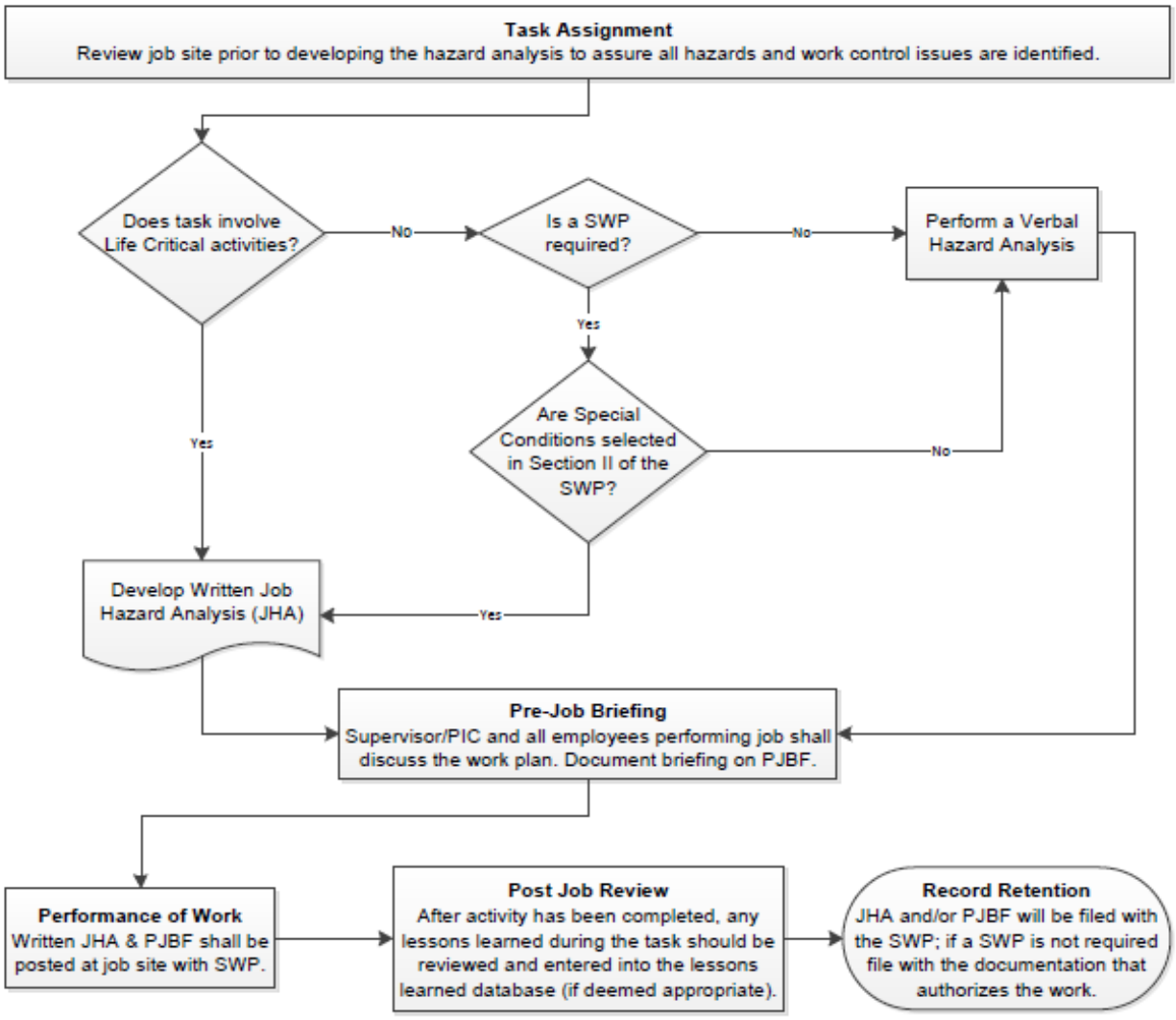


Figure 27-2. Planning for Safety: Job Hazard Analysis Process-Part 2	
Note: All tasks which require heavy equipment operation or a safe work permit to mitigate identified hazards require the development of a job hazard analysis. Task performed which require a work authorization may or may not require a JHA based on the risk level s in this appendix. **The low risk general hazards and high risk hazards identified are to be used as a guide in developing JHAs, but are not all-inclusive.**	
Low-Risk General Hazard (If your task has **TWO** general hazards, write a Work Plan/Hazard Analysis/Procedure)	High-Risk Hazards (If your task has **ONE** high- level hazard, write a Work Plan/Hazard Analysis/Procedure)
Chemicals, Hazardous or Toxic Substances	
Use of chemicals/materials which, under a normally controlled work environment, do not pose a significant safety or health hazard. [Refer to the Material Safety Data Sheet (MSDS)]. Contact ES&H department for guidance in determine the hazard level of chemicals. **Note**: Ensure chemical or substance is approved for use on the SPR by referring to the approved products list on the DM SharePoint site.	Use of chemicals/materials which may pose a significant safety or health hazard. (Refer to the MSDS). Contact ES&H department for guidance in determine the hazard level of chemicals. **Note**: Ensure chemical or substance is approved for use on the SPR by referring to the Qualified Products List (QPL) on the DM SharePoint site.
Confined Space Work	
N/A	All work to be performed in a confined space regardless of, whether it has been reclassified requires development of a JHA.
Crane , Hoist & Forklift Use	
Routine operations of cranes, hoist equipment or forklifts by qualified operators who possess the core competencies identified in their job description or PBT&Q manual.	Operation of lifting equipment when a specific lift plan is required. Lift plan is required when the load requires exceptional care in handling because of size, shape, weight, close tolerance installation, high susceptibility to damage, or other unusual factors as prescribed by the DOE Hoisting and Lifting manual.
Electrical Work	
Tasks during which workers are likely to be exposed to voltages (less than 50 volts), currents, or stored electrical energy of sufficient magnitude and duration to startle the employee	Tasks near or on exposed electrical conductors, circuits, or equipment greater than 50 volts and that have the potential to be energized or where there is potential exposure to electrical shock or a potential for arcing, flash burns, electrical burns, or arc blast.
Environmental	
Tasks that have the potential to generate waste with a chemical that has a flash point below 140 degrees F, a pH below 2, a pH greater than 12.5, or which contains any toxic substance (see MSDS).	Tasks that have the potential to release hazmat on site. Tasks that have potential for release of reportable quantities of crude oil or brine. Any task that has potential for regulated waste.
Excavation and Digging	
N/A	Tasks that require excavation or trenching, including breaking the surface of the ground requires an excavation safe work permit and a JHA. **NOTE**: All excavations must be overseen by an excavation competent person.
Fall Exposure	
Any task from a ladder or platform less than 4 feet from the ground or floor.	Tasks which have fall potential greater than 4 feet requires the use of fall protection devices shall have a JHA. Any use of scaffolding, to perform the task, including erection of the scaffolding. **NOTE**: Any erection or dismantling of scaffolding must be overseen by scaffolding competent person. Tasks requiring work from a scissor lift, articulating boom lift or man lift requires development of JHA.

"First time use" of New or Unfamiliar Equipment	
Potential hazard with any first time use of mechanical or electrical equipment if a minor injury could occur. Tasks that have potential ergonomic impact. Ergonomic issues are described as those which require “repetitive motion”. Tasks presenting unfamiliar minor hazards to employees	First time work with new equipment where a significant injury or property damage potential exists.
Classified Areas (Class 1 Div. 1 or 2)	
Note: National Electric Code (NEC) codes are used to classify areas which pose a risk of fire or explosion by electrical arcing, spark or heat. Routine tasks in this area do not require issuance of a safe work permit.	All tasks with the potential for producing an ignition source in classified areas require issuance of a safe work permit and development of JHA.
Hand Tools	
Tasks using commercially available hand tools including those with guards and/or safety devices when no safe work permit is required.	All tasks with commercially available hand tools when a safe work permit is required. Non-routine work requiring the use of commercially available hand tools where the worker is exposed to the unguarded cutting surface.
Hydraulic and Pneumatic Systems	
Tasks which involve connecting hoses or lines to pressurized oil, water, brine or air systems. Tasks which require monitoring pressures on caverns or process systems during fluid movements or stand by operations. Tasks which involve pressure washing operations. Tasks associated with fire water system operations.	Any task where a sudden uncontrolled release of pressure (hydraulic or pneumatic) could result in injury.
Machining and Grinding	
Tasks which require machining or grinding in a shop environment by qualified personnel who meet core competency criteria. Any work that generates sparks in an area with flammable liquids or combustible materials.	Any tasks which require machining or grinding hazardous materials.
Noise Hazard	
Eight hours of work in an environment where you must raise your voice (but not shout) to be heard from a distance of 3 feet. Communication is difficult due to noise.	Two hours of work or more per day in an un-posted environment where it is necessary to shout in order to be heard from a distance of 3 feet. Work that exceeds a posted noise hazard limitation. (Typically 8 hrs. @ 85 dBA).
Other Work Environments	
Nuisance dust from general cleaning, sweeping, or windy conditions.	Any tasks with potential exposure to hazardous materials or products including crude oil. Tasks performed when restrictions in the heat stress program are activated. Any task in an area where a radioactive source is present and a SWP is required.
Repetitive Motion or Ergonomically Challenging Tasks	
Lifting unusually-shaped or heavy (less than 50lbs, greater than 50lbs requires assistance) objects. A workstation assessment should be considered with repetitive motion tasks. Work conducted from awkward positions, stooping, twisting, stretching, etc.	N/A

Respiratory Hazards	
	Work that requires respirator protection due to a potential overexposure.
Stored Energy	
N/A	Any task on equipment with mechanical stored energy hazards. Any task on equipment where there is potential for unexpected release of energy (hydraulic, pneumatic, thermal, electrical potential, etc.) where Lock Out Tag Out (LOTO) and issuance of a SWP is required.
Welding, Flame Cutting, Brazing, Open Flame Work	
Welding work in an area where passers-by can see the arc.	Any tasks which require a hot work permit in areas where combustible or flammable materials exist require a JHA.

28. LADDER SAFETY PROGRAM

PURPOSE

The Ladder Safety Program establishes minimum requirements and procedures for the safety of personnel who use ladders, providing the requirements for design, fabrication, construction, load testing, use of ladders, and employee training.

SCOPE

This section includes the following major sections:

- General Requirements
- Selection and Use
- Inspections and Maintenance
- Training

APPLICATION

This section applies to work activities and employees under the control of the M&O and its subcontractors. The program applies to all ladders used on the SPR and includes requirements for installation, safety devices, and proper use of ladders.

DEFINITIONS

Competent Person - One who is capable of identifying existing and predictable hazards in the surroundings or working conditions which are unsanitary, hazardous, or dangerous to employees, and who has authorization to take prompt corrective measures to eliminate them.

Type I Ladder - Portable ladder that can support at least 250 pounds of weight.

Type IA Ladder - Portable ladder that can support at least 300 pounds of weight

28.1. GENERAL REQUIREMENTS

Managers and supervisors shall ensure ladders meet the following requirements:

- Designed and constructed to meet American National Standards Institute (ANSI) standards for ladders:
  - ANSI A14.1, Portable Wood – Safety Requirements
  - ANSI A14.2, Portable Metal – Safety Requirements
  - ANSI A14.4, Safety Requirements for Job-Made Ladders
  - ANSI A14.5, Portable Reinforced Plastic – Safety Requirements

NOTE
An ANSI approved ladder has a label stating that it meets the standard.

- Rated for either heavy duty or extra heavy-duty use (Type I or Type IA).

NOTE

- ANSI Type IA ladders are recommended; however, a minimum rating of ANSI Type I is required. Ladders rated less than ANSI Type I must not be used.
- Special ANSI rated ladders are necessary when access/use is required by employees whose total weight (body weight, plus weight of tools/equipment being carried on the employee) exceeds 300 pounds. Type IA ladders are rated up to 300 pounds.
- The use of job-made ladders is discouraged. However, if there is a practical need for a job-made ladder, follow the ANSI A14.4 standard.

- Have rungs and steps that are:
  - Slip resistant by design or coated with a skid-resistant material
  - Fixed to prevent turning or rolling when stepped on
  - Uniformly spaced as follows:
    - For portable ladders — 10 to 12 inches
    - For step stools — 8 to 12 inches
- Have safety feet equipped with nonslip bases to help prevent slipping.
- Have components with smooth surfaces to prevent punctures and lacerations and to prevent snagging clothing.
- Wooden ladders must have a preservative treatment.
- Have metal spreaders or locking devices on stepladders to hold the ladder in an open position during use.
- Are handled with care and not subjected to unnecessary abuse or misuse.

Managers and supervisors shall ensure that ladders are inspected each quarter by a Competent Person, in accordance with Ladder Inspection Requirements listed in this section.

Ladders found to have defects must be withdrawn from service for repair or destruction, or tagged out of service in accordance with Ladder Inspection Requirements listed in this section.

Trestle ladders, support planks, and scaffold boards are not designed for climbing and no one should be allowed to do so. When using trestle ladders for scaffold board supports, a separate ladder must be used to access the scaffold deck.

Designation of Competent and Qualified Persons must be documented in accordance with APM Section 2.

28.2. SELECTION AND USE

Managers and supervisors shall ensure that employees know how to select ladders in accordance with the following:

- The ladder is the right height for elevated work.
- The ladder has no limitations that would interfere with performance of the work.
- The ladder is specifically designed for the task.

NOTE
If the ladder has attachments, such as braces to span windows or planks used for work platforms, the attachments must be designed for the particular type of ladder and purchased and used as 1 unit.

Employees shall observe the following in the handling and using ladders:

- Ensure location or ownership markings are placed in a manner that avoids compromising the structural strength of the ladder.
- Use fall protection when working from a ladder 4 feet or more above the work surface when appropriate (refer to APM Section 21, Fall Protection). (Does not apply when using a ladder [less than 24 feet in height] for access only.)

NOTE
Document fall protection details in a pre-job planning document if the employee has to use personal fall arrest systems while using a ladder (refer to APM Section 21).

- Handle ladders with care and do not subject them to abuse or misuse.
- Do not use metal ladders around electrical services or welding.
- Attach a 0.5-inch diameter (minimum) rope to the top rung of stepladders or to the third rung from the top of straight and extension ladders to provide a tie-off rope (if feasible) when the ladder is set up (applies to ladders more than 4 feet in height).
- Use ladders only for short-duration jobs with a limited work scope.
- Extend ladders used to access another work surface a minimum of 3 feet past the level you are accessing.
- Position ladders only on stable and level surfaces. Do not place a ladder on items such as boxes or barrels to reach additional height.
- When placed in “working position,” ensure that the rungs, cleats, and steps are parallel to the surface and uniformly spaced.
- Do not use ladders for braces, skids, levers, runways, platforms, scaffolds, or other uses for which they were not intended.
- Do not overreach or use excess force while working at heights on a ladder.
- Place the ladder so the work is at chest level and horizontally positioned so the work is either centered or as near to the side rails as possible.
- Do not work with another employee on the same ladder unless the ladder is specifically designed for 2 people.

- Keep the area around the top and bottom of a ladder clear to prevent tripping or slipping while the ladder is in use.
- When a building or structure has 2 or more points of access between levels, keep at least 1 point of access clear to permit free passage.
- Set up ladders so the weight is evenly distributed between the vertical members. For extension ladders, evenly distribute the weight between the rails.
- Do not tie or fasten ladders together to provide longer sections, unless they are designed for this application.
- Face the ladder when ascending or descending and always keep 3 limbs in firm contact with the ladder. Carry tools or equipment in a work belt or fanny pack, or hoist them to the work area using a rope and bucket.
- Do not "load" the ladder beyond the rated capacity.
- Do not place ladders in a doorway unless the door is blocked open or locked, or the area is barricaded.
- Ensure that shoes, hands, gloves, and the ladder steps are free of grease, mud, or anything that could cause an employee to slip while climbing.
- Do not place ladders against any structure or equipment that is not strong and rigid enough to support the ladder, or that is not sufficiently anchored.

28.2.1. Straight/Extension Ladders

Employees shall observe the following when using straight or extension ladders:

- Place straight or extension ladders so that the horizontal distance from the support is equal to 1/4 of the height from the working surface to the top contact.

Example: Place a 12 foot ladder so that the bottom is 3 feet from the object against which the top is leaning).

- Secure straight ladders by holding or lashing while in use. Nonslip bases are not a substitute for care in positioning, lashing, or holding the ladder.
- Before climbing an extension ladder, ensure locking clips (stops) are securely in place.
- Do not use straight ladders longer than 20 feet.
- Do not use extension ladders longer than 30 feet when fully extended.

28.2.2. Stepladders

Employees shall observe the following when using stepladders:

- Tie off or have someone hold stepladders when working on unstable ground.

NOTE
Observe the limits imposed on self supporting ladders (stepladders and platform ladders) by the manufacturer. Use stepladders on clean, level surfaces. Self supporting ladders are more stable if you lean forward or back than if you lean to the side.

- Use stepladders in the fully open position with the locking devices set.
- Do not use folded stepladders as a straight ladder or to access another work surface.
- Do not step or stand on the top 2 steps or (top) platform.
- Do not use the cross bracing on the rear section of stepladders for climbing unless the ladder is designed for such use (that is, has steps for climbing on both front and rear sections).
- Do not use step and platform ladders that are longer than 12 feet as determined by the front rail.
- Do not over reach, stay within the confines of the ladder.

28.3. INSPECTION AND MAINTENANCE

28.3.1. Employees

Employees shall observe the following when inspecting and maintaining ladders:

- Maintain ladders so that they are in good condition.
- Do not paint wooden ladders except for the platform and top step, which should be painted to indicate that users are not to step there. Clear preservatives may be used so defects are not hidden.
- Store ladders where they are protected from damage with good ventilation and away from excessive heat.
    - Storage racks should have sufficient support points to prevent sagging. Long ladders require support every 4 feet.
    - Do not place materials on stored ladders.
- Inspect ladders before issuing and before each use.
- Ensure that a quarterly inspection has been performed and documented before issuing or using a ladder. Ladders that have not been inspected should be tagged with a Danger – Don't Use It – Unsafe Tag and returned for required inspection and tagging in accordance with this practice.
- Inspect ladders for structural defects such as broken or missing rungs, cleats, or steps; bent, broken, or split side rails; corroded or missing components; worn bolts, rivets, and the holes in the ladder where the bolts or rivets pass through.
- Inspect mechanical features of the ladder to ensure that they are in good working order as follows:
- Clean and lubricate moving parts such as hinge points, pins, or pulleys.

- Make sure that ropes on the ladder are not frayed, worn, or weather-damaged.
- Ensure that feet operate effectively through their full range of motion.
    - Ensure that extension ladder latches or stepladder locking braces are not bent or damaged and operate correctly.
- Immediately remove defective ladders from service and tag or label the ladder as defective. The tag or label should say “DANGER – DO NOT USE.”
- Destroy ladders destined for disposal.
- Repair damaged or broken ladders to design conditions before returning them to service.
    - Repair according to manufacturer’s directions.
- Ladders should be properly supported during transport by motor vehicles. Support points should be made of a material (such as wood or rubber coated and iron pipe) that will minimize chafing and the effects of road shock.

28.3.2. Competent Person

A Competent Person shall perform a general inspection of ladders for visible defects at least once each calendar quarter, and following any occurrence that could affect the safe use. Ladders with no visible defect must have a color-coded tag (or equivalent) prominently affixed in accordance with the requirements listed below.

28.3.3. Ladder Inspection Requirements

A Competent Person must visually inspect all ladders quarterly.

The Competent Person shall ensure that the following items, at a minimum, are inspected (as applicable):

- Ladder is ANSI Type I or Type IA certified.
- Ladder possesses proper hardware (braces, rivets, spreaders, nuts, bolts, and feet).
- There are no cracks in wood, metal, or fiberglass.
- There is no evidence of rot.
- Wood ladders have adequate (such as linseed oil) preservation treatment.
- There are no splinters.
- Condition of steps is adequate.
- Hardware or metal rungs (interior/exterior) are not corroded.
- There are no dents or bends.
- Condition of extension ropes and pulleys is adequate.
- Safety feet are adequate.
- Labels should be legible.
- Tie off ropes of the correct length/size are attached to straight, extension, and stepladders.

Inspections shall be documented by the following color coding and tagging.

- Color codes shall be used to indicate current status of quarterly inspections as follows:

January to March	Red
April to June	Green
July to September	Blue
October to December	Yellow

- Inspection tags or labels shall be used to document quarterly inspections and contain the following information, at a minimum:
  - Equipment/component description or ID number
  - Inspector
  - Date of inspection

NOTE
In lieu of color coded inspection tags, colors may be applied with colored tie wraps, paint (except on wooden ladders), or tape. However, an inspection tag containing the above information will still be required.

- Inspections shall be documented on Ladder Inspection Register (AAA9020.850).

Ladders found defective during quarterly inspections must be removed from service and destroyed or repaired in accordance with manufacturer's instructions.

- Ladders shall be inspected by a competent person for visible defects on a periodic basis and after any occurrence that could affect safe use.
- Inspection shall be done when the ladder is first checked out and prior to each use by a trained employee using the ladder.

NOTE
Subcontractors may use their own ladder control procedures, if they provide hazard protection equal to or better than this one. SMTRs shall verify that subcontractors have an approved ladder safety program in place prior to use of ladders.

28.4. TRAINING

All personnel that use ladders shall be provided training initially, and whenever the program changes, to recognize hazards related to ladders and stairways and in the procedures to be followed to minimize these hazards.

Employees shall be trained by a Competent Person in the following areas, as applicable:

- The nature of fall hazards in the work area
- The proper construction, use, placement, care, and handling of ladders

- The maximum intended load-carrying capacities of ladders used
- How to inspect a ladder before use.

Retraining shall be provided for each employee as necessary so that the employee maintains the understanding and knowledge acquired through compliance with items listed above.

M&O personnel receive ladder safety training in Basic Orientation Plus; however, hands-on training shall be documented on the applicable Support Equipment Training Plan (SETP).

Subcontractor personnel performing work on the SPR receive ladder safety training in Basic Orientation Plus also, but shall provide proof of training to the SMTR prior to performing any work requiring ladder use.

29. LOCKOUT/TAGOUT PROGRAM

PURPOSE

This section establishes requirements for the lockout/tagout of energy-isolating devices, and it will be used to ensure that personnel and machinery/equipment are isolated from all potentially hazardous energy. The described program complies with 29 CFR 1910.147 and 1910.333.

SCOPE

This section includes the following major sections:

- General Requirements
- Procedures for the Control of Hazardous Energy
- Equipment Specific Energy Control Procedures (ESECP)
- Responsibilities
- Figures: LOTO

APPLICATION

This section applies to work activities and employees under the control of the M&O and its subcontractors.

29.1. GENERAL REQUIREMENTS

Prior to starting work, operations involving hazardous energy control (lockout/tagout) shall be assessed using a JHA. A JHA is required for this and other Life Critical operations to ensure that all hazards associated with the work are identified, the likelihood and severity are understood, and control measures are defined that will effectively reduce the risk.

Personnel shall identify and control all hazardous energy sources and stored hazardous energy before commencing work on a system/equipment. Work on energized systems/equipment is prohibited except in circumstance where such work must be performed “live” e.g. testing/troubleshooting (See APM Section 15).

29.1.1. Precautions and Limitations

Personnel will not be permitted to operate systems, components, and equipment that have been locked/tagged out.

- Entry will not be allowed into locked/tagged out vessels without a confined space entry permit.
- Testing will be conducted in accordance with the “Testing Phase” section of this chapter.

"**Danger - Do Not Operate**" tags will not be attached to any operating systems, components, or energized site equipment.

All affected and authorized personnel will receive an appropriate level of training and retraining.

Lockout/tagout devices will be singularly identified, will be the only devices used for controlling energy, and will not be used for other purposes.

Information on all forms and caution and danger tags will be printed legibly, signed, and dated.

All lockout/tagout functions will be promptly and accurately documented in the Lockout/Tagout Log, OSF92-0059. This includes employee locks, department locks, group locks, and tagouts.

When a change is planned in equipment safe clearance boundaries, all authorized and affected individuals will be notified of the change by the on-duty shift supervisor or designee before the change is made.

Electrical switches or remote equipment actuators will be placed in a safe configuration before deactivating.

Before any work is actually started, all de-energized equipment will be verified as “safe” by an authorized person who is going to do the work.

Outside service and construction personnel engaged in lockout/tagout activities are also covered by this procedure.

Prior to sending employees to perform activities that may require lockout/tagout at remote locations, supervisors shall ensure:

- LOTO equipment is assigned for that location or readily available at remote locations without having to return to the main site.
- That the potential for performing LOTO is addressed on the JHA.
- Personnel are properly prepared to implement LOTO at remote locations prior to departure from the site.

29.1.2. Color Coding

The colors of tags and locks will be standardized as described below.

“**Danger - Do Not Operate**” tags (figure 29-3) will be predominantly red, with letters of a contrasting color, and will contain the following information:

- Purpose
- Equipment name
- Equipment Location Number (ELN)
- Work order number/task number
- Printed Name of person applying the tag
- Signature of person applying the tag
- Date
- Lock/tag number

- Tags used in conjunction with a lock shall have the corresponding lock number written on the tag.
- Tags used without a lock shall be assigned a number that will be recorded on the Lockout/Tagout Log and will be given the same respect as a physical lock.

CAUTION
Use of a tag only should be limited and only in situations where a physical lockout cannot be performed.

"**Caution Tags**"
The use of caution tags will be restricted to those situations in which a component or system is functional, but some precaution or item of information is necessary before operation.

NOTE
In those cases where there is a work-around in place an IRMA should be initiated with and IRMA tag installed.

- Caution tags **WILL NOT**:
  - Be used for personal protection.
  - Be used in place of a more appropriate administrative action.
- Caution tags **WILL:**
  - Be uniquely identifiable and different in appearance from other facility tags (yellow or predominantly yellow, with lettering or symbols in a contrasting color).
  - Have the following:
    - ELN number
    - Effective date
    - Purpose
    - Signature
  - Be logged in the appropriate Caution Tag Log.

NOTE
Each organization shall be responsible and accountable for their caution tags and logs. This includes replacement of faded or missing tags installed by their organization and maintaining their own Caution Tag Log.

- The use of caution tags (figure 29-2) shall be controlled and documented by the organization wishing to install the caution tag.
- Situations requiring special operator or maintenance precautions shall be brought to the attention of the shift supervisor by the supervisor or manager of the organization wishing to install the caution tag.
- The appropriate supervisor or manager will determine the need for each caution tag and authorize its placement.

- Caution tags shall be placed so that they are readily apparent to an individual prior to operation of the tagged device, but not so as to obscure indicators or interfere with switches or other control devices.
- All caution tags shall be reviewed periodically to verify their continued need and applicability by the organization that installed the caution tag.
- Caution tags remaining active for long periods will be brought to the attention of the shift supervisor by the supervisor or manager of the organization that installed the caution tag.
- Caution tags may be used in conjunction with administrative locks.

FIGURE 29-1. COLOR CODES FOR PERSONAL AND GROUP LOCKS	
Operations	blue
Mechanical	yellow
Electrical	red
Instrumentation	orange
Group	as specified by the site
Subcontractors	Use color-coded locks agreed upon with the contractor by the site. Duplication of color codes already applied is prohibited.
***Note**: Color-coded locks will only be used for controlling energy for servicing and maintenance of equipment. These locks will not be used for other purposes*	

29.1.3. Training

The objective of training is to ensure that the purpose, function, and procedures of the Lockout/Tagout Program are understood by all affected personnel. Training will also give authorized personnel the knowledge and skills required for safe application, use, and removal of locks and tags as required by this procedure. The Site Safety Specialist and training coordinator shall ensure that initial and refresher training is conducted by a qualified trainer.

29.1.3.1. Training Requirements

- Each authorized employee will receive training in the recognition of applicable hazardous energy sources, the type and magnitude of the energy available in the workplace, and the methods and means necessary for energy isolation and control.
- Each affected employee will be instructed in the purpose and use of energy control procedures.
- All other employees, including subcontractors, whose work operations are or may be in an area where energy control procedures may be used, will be instructed about the procedure and about the prohibitions relating to attempts to restart or reenergize machines or equipment that are locked out or tagged out.
- Job classification changes- Retraining will be provided for all authorized and affected employees whenever:
    - Changes occur in their job assignments
    - Changes are made to the machines to be operated
    - New hazards are introduced by new or modified equipment or processes

  - Changes are made in energy control procedures
- Retraining will also be required when periodic inspection identifies inadequacies in employees' knowledge of use of the lockout/tagout procedure. This may be classroom or on-the-job training.

29.1.4. Periodic Inspections

Each site shall document an annual inspection and certification of specific energy control procedures by an authorized person not involved with the work being audited. This inspection will include each energy control procedure that is used at least once a year. Specific energy control procedures that are not used at least once a year will be inspected the next time used. The inspection procedure must include the following elements.

- Where lockout and/or tagout is used for energy control, the periodic inspection shall include a review between the inspector and each authorized employee of the employee's responsibilities under the energy control procedure being inspected.
- If deficiencies are noted during the inspection, corrective actions and retraining of employees, as necessary, must be done immediately.
- The Annual Lockout and Tagout Inspection Checklist, located in the forms section of the S&H SharePoint site, will be used to perform periodic inspection. The supervisor or manager will keep a copy on file to show that the periodic inspection has been performed.

29.1.5. Transfer of Responsibility

To ensure continuity of lockout/tagout protection and orderly transfer of the operational lockout/tagout devices, a Lockout/Tagout Log will be used and kept in control room.

29.2. PROCEDURES FOR THE CONTROL OF HAZARDOUS ENERGY

29.2.1. Preparation

The first-line Operations supervisor/foreman and the worker will use the equipment-specific energy control procedures to fill out the Lockout/Tagout Log.

If a specific energy control procedure does not exist, the first line Operations supervisor/foreman and the worker will fill out the Lockout/Tagout Log.

- This log will be used to prepare an ESECP (Equipment Specific Energy Control Procedure) following the "Development and Use of Equipment Specific Energy Control Procedures (ESECP)" below after the task has been completed.
- The Equipment Specific Energy Control Procedure (located in the S&H SharePoint site) shall be used to perform an equipment-specific energy control.

The worker will obtain the lockout/tagout devices that are needed to control all energy to the machine and equipment.

The worker will obtain the required personal protective equipment (PPE) to safely perform the task.

The initiator will prepare a Safe Work Permit (SWP) identifying lockout/tagout requirements and a description of the work to be performed.

The shift supervisor/foreman will review the SWP and lockout/tagout record and authorize the lockout/tagout.

M&O personnel and subcontractors are required to follow these procedures.

29.2.2. Lockout Placement

Common steel locks and multiple lockout adapters used on the SPR may be too heavy to hang on small breakers, and may cause damage to equipment. Personnel shall not use heavy locks or multiple lockout adapters on small breakers. Personnel must alert their supervisor if alternative LOTO devices are necessary.

WARNING
Only a qualified person may energize/deenergize systems of 480 volts or below.
Only qualified electricians may energize/deenergize systems above 480 volts.

- An authorized person will notify all affected employees that servicing or maintenance is required on a machine or equipment and the machine or equipment must be shut down and locked out to perform the servicing or maintenance.
- A multiple lockout adapter will be installed by Operations on each applicable energy-isolating device. Operations' locks/tags will be the first installed. This activity will be documented in block 10 of the Lockout/Tagout Log.
- Authorized personnel will then place their personal safety locks on the same multiple lockout adapter as Operations.
- Prior to start of work on equipment/systems that have been locked/tagged out, the authorized person performing the work or service will verify the equipment/system has been deenergized and affected piping close to the point of work isolated, in accordance with steps 1-4 below.
    1. An electrically powered machine shall be verified to be deenergized with the local start/stop button or switch.
    - Electric wiring can be verified to be deenergized with an alternating voltage sensor or a voltmeter.
    - The equipment with remote starting capability shall be tried from the remote starting position(s), and this shall be documented in the operator's log.
    2. If work will be performed near exposed deenergized conductors, a qualified person, equipped with personal protective equipment, will also use test equipment to test the circuit elements and electrical parts of equipment to which employees will be exposed and will verify that the circuit elements and equipment parts are deenergized.
    - The test will also determine if any energized condition exists as a result of inadvertently induced voltage or unrelated voltage back feed, even though specific parts of the circuit have been deenergized and are presumed to be safe.
    - If the circuit to be tested is over 600 volts, nominal, the test equipment will be checked for proper operation immediately before and immediately after this test.

3. If work will be performed on pipelines/pressure systems, the system pressure will be bled down and an effective means used to prevent repressurization caused by such means as leaking valves. One effective and recommended means is to double block and bleed where configuration and circumstances permit.
4. To verify no stored or potential pressure/energy is present in a pneumatic or fluid system, a bleed valve will be opened closest to the point of work.

- Once steps 1-3 above have been completed, this will be documented in Lockout/Tagout Log blocks 11, 12, and/or 13, and a Safe Work Permit will be issued for implementation.

NOTE
The operations lock is the first on and will not be used for the personal protection of workers. Personnel working on equipment will put their own personal lock on the energy-isolating device. A group lockout device may be applied when it is a group lockout.

29.2.3. Tagout Placement

When a tagout only is used as an energy-isolating device, the tag will be attached at the same location, if possible, that the lockout device would have been placed. Use of a tag only should be limited to situations where a physical lockout is not possible.

Because these tags may convey a false sense of security, special care is required in training personnel in their use and meaning.

- A "**Danger - Do Not Operate**" tag will be installed without a lockout device only if no locking mechanism is provided and therefore it is not physically possible to install a lockout device. Such a tag:
  - shall not be removed by anyone but the person who installed it,
  - is never to be bypassed, ignored, or defeated,
  - is to be afforded the same respect and treatment as a lock,
  - shall be legible, clear, and able to withstand environmental conditions,
  - shall be numbered as a means of identification and recorded on Lockout/Tagout Log,
  - is to be understood by all employees to represent the same level of restraint as would a positive locking device, and
  - is to be discarded when removed.
- Operations will place "**Danger - Do Not Operate**" tags near the energy-isolating device. Tagouts shall be documented in blocks 10, 11, 12, and 13 of the Lockout/Tagout Log. Verifications will be performed in accordance with steps 1-4 in the "Lockout Placement" section above.
- The Safe Work Permit may not be issued until these activities are completed.

WARNING
A tag used without a lock will be supplemented by at least one additional safety measure (control) that provides a level of safety equivalent to that obtained by use of a lock. Examples of additional safety measures include removal of an isolating circuit element, blocking a controlling switch, or opening an extra disconnecting switch.

29.2.4. Group Lockout

When servicing, maintenance or both is performed by a crew, craft, department, or other group, the procedure will afford the employees a level of protection equivalent to that provided by the implementation of a personal lockout/tagout device.

Group lockout/tagout devices will be used in accordance with the following specific requirements:

- Primary responsibility is vested in an authorized employee for a set number of employees working under the protection of a group lockout/tagout device.
- The authorized representative will install a group lock(s) and will document the installation in block 11 of the Lockout/Tagout Log.
- The authorized representative must comply with the “Lockout Placement” section above, steps 1-4.
- The group lockout authorized representative will place group lock key(s) in the lockbox prior to placing his or her personal lock on the group lockbox. This personal lock will be the first on and last off of the lockbox.
- Each authorized employee will affix a personal lockout device to the group lockbox, before he or she begins work, and will remove that device when he or she completes work on the machine or equipment being serviced or maintained.
- When multiple group lockout boxes are used, each shall be identifiable as to the ongoing task.

29.2.5. Control and Distribution of the Lockout/Tagout Log

Once all personal safety locks have been installed, the copies of the Lockout/Tagout Log will be distributed as follows:

- The original will be maintained in the open lockout/tagout file.
- The field copy will be attached to the original of the SWP and issued.
- The third copy will be attached to the copy of the SWP maintained by Operations.
- Exempt lockouts, that do not require an equipment specific energy control plan (lockout plan), will be noted on the lockout/tagout section 1(c).

When the lockout/tagout devices have been removed and the equipment restored to service:

- The shift supervisor collects both copies of the Lockout/ Tagout log.
- The shift supervisor verifies that the Lockout/Tagout Log original is complete and accurate and takes necessary actions to correct deficiencies.
- The shift supervisor places the Lockout/Tagout Log original in a closed file.
- The original will be maintained per the RIDS schedule.
- The remaining copies are discarded.

Separation of Logs

- The open Lockout/Tagout Log files will be separated by system.

- The closed lockout/tagout file originals (copy 1) will be maintained in chronological order by the removal/restoration date.

If the lockout/tagout removal/restoration phase has not been completed in its entirety, all copies will be placed with the original in the open Log file.

The original and field copy can be reissued for use with a new SWP or to complete the job/task.

EXCEPTION
The employer need not document the specific procedure for a particular machine or equipment, **when all eight of the following elements exist**:

1. The machine or equipment has no potential for stored or residual energy or re-accumulation of stored energy after shutdown, which could endanger employees;
2. The machine or equipment has a single energy source which can be readily identified and isolated;
3. The isolation and locking out of that energy source will completely de-energize and deactivate the machine or equipment;
4. The machine or equipment is isolated from that energy source and locked out during servicing or maintenance;
5. A single lockout device will achieve a locked-out condition;
6. The lockout device is under the exclusive control of the authorized employee performing the servicing or maintenance;
7. The servicing or maintenance does not create hazards for other employees; and
8. The employer, in utilizing this exception, has had no accidents involving the unexpected activation or reenergization of the machine or equipment during servicing or maintenance.

29.2.6. Cord and Plug Connected Equipment

Cord and plug connected equipment can be worked on safely only if:

- the plug is under the exclusive control of the employee and physically in the possession of the employee, or
- the plug is in arm's reach and in line of sight of the employee, or
- the employee has affixed a lockout/tagout device on the plug.

29.2.7. Testing Phase

If it becomes necessary to energize equipment for testing or checking:

- The shift supervisor and authorized personnel will determine jointly if it can be energized safely.
- The machine or equipment will be cleared of tools and equipment.
- Unessential employees shall be removed from the area.
- All affected employees shall be notified that testing will be conducted.

- All authorized personnel shall remove locks and tags.
- The operator will remain in the immediate area and notify the control room operator that testing will be conducted.
- All authorized personnel who removed locks shall reinstall their locks immediately after testing is completed, unless the job is completed and closed out.
- An authorized person shall verify the deenergization, if required.

29.2.8. Removal/Restoration Phase

29.2.8.1. Restoration Tripped Breaker

- Any time a circuit has been de-energized by the operation of a protective device (such as a fuse or circuit breaker); the circuit must be checked by a qualified person to determine if it can be reenergized safely.
- Under fault conditions, protective devices such as breakers can be damaged. Without such a check, it is possible for an employee to be injured in case of failure of the protective device.
- The repetitive, manual reclosing of circuit breakers or reenergizing of circuits by replacing fuses is prohibited.
- If it can be determined from the design of the circuit, and the overcurrent devices involved, that the automatic operation of a device was caused by an overload rather than a fault condition, no examination of the circuit or connected equipment is needed before the circuit is reenergized.

29.2.8.2. Restoration Lockout/Tagout

- Prior to releasing a lockout/tagout, the craftsman or group lockout representative will check that the machine or equipment is operationally intact.
- The authorized person or group lockout representative will also check to see that all nonessential items (for example, tools or trash) have been removed from the work area.
- The authorized person will verify removal of all personal safety locks and document the removal on the original copy of the Lockout/Tagout Log.
- After the craftsmen's locks are removed, the shift supervisor will ensure that the machine or equipment is operationally intact. He or she will also ensure that all nonessential items were removed from the work area. The shift supervisor will then authorize removal of Operation's lock and tag and restoration of the equipment/system to service. The shift supervisor will document this in block 18 of the original copy of the Lockout/Tagout Log.
- Operations will remove locks/tags and record removal in block 19 of the Lockout/Tagout Log.
- Operations/Maintenance will place the component in the proper position as indicated in block 20 of the Lockout/Tagout Log. This positioning will be documented in block 21.
- The component(s) position will be independently verified by an authorized person; this will be documented in block 22 of the Lockout/Tagout Log.
- The shift supervisor will ensure that the control room operator's copy of the Lockout/Tagout Log is discarded.

- The authorized person will ensure that all affected employees are notified that the lockout/tagout has been removed.

29.2.9. Exceptions to Normal Removal Procedure

In the event that the person who applied the lock is not available, the shift supervisor will:

- Verify that the authorized employee/subcontractor who applied the lockout/tagout device is not available to remove it.
- Make all reasonable efforts to contact the authorized employee/subcontractor to inform him or her that the lockout/tagout device needs to be removed.
- Obtain concurrence to remove lock(s)/tag(s) from the authorized employee's/subcontractor departmental manager and the site director.
- Ensure the above information is logged in the Operations log.
- Physically remove the lock.
- Request that the department manager notify the authorized employee/subcontractor that his or her lock/tag has been removed before they resume work at the site.
- Perform notifications in accordance with SPRPMO 231.1, "Occurrence Reporting and Processing Systems."

29.2.10. Coordination with Other Procedures/Requirements

Several additional procedures exist that require locking out, tagging, or both. These independent procedures -- for example, fire protection and, Interim Repair/Mitigation Authorization (IRMA), and report of repair -- do not fall under the criteria of this procedure.

- However, they cannot be used for control of hazardous energy.
- Independent procedures do not lessen, detract from, or reduce the effectiveness of this hazardous energy control procedure. The hazardous energy procedure will take precedence over the independent procedures when used for the protection of personnel.

29.3. EQUIPMENT SPECIFIC ENERGY CONTROL PROCEDURES (ESECP)

This section provides instructions for the use, implementation, retention and distribution of equipment specific energy control procedures (ESECP). This document can be found in the forms section of the S&H SharePoint site.

29.3.1. Development and Use of Equipment Specific Energy Control Procedures

29.3.1.1. Procedure Development/Approval

- An ESECP shall be developed for servicing or maintenance, in accordance with OSHA 1910.147, this section of the APM, and chapter 9 (section 1 and 2) of the Conduct of Operations at the Strategic Petroleum Reserve.
- The Operations Manager, Maintenance Manager, and Site Safety Specialist or their designees shall approve each ESECP prior to use.

- Each ESECP shall be field-verified for accuracy and validated with signatures by authorized representatives from Operations, Mechanical, and Instrumentation and Electrical (I&E) prior to use.

29.3.1.2. Procedure Control and Distribution

- Hard copy originals, with approval/validation signatures, of all site ESECPs shall be maintained in the site Technical Data Center (TDC), and stored in SharePoint.
- Each site will develop, maintain, and control a database of the latest revision of all ESECPs.
- The database shall be password protected. The ESECP database shall be available to necessary site personnel in a “Read Only” format.
- The cover sheet of each ESECP located in the protected database will indicate “approval signatures on file in TDC.”
    - In the event a revision is needed, an employee authorized to complete the revision retrieves the electronic copy.
    - At this point, the original and electronic copy of the ESECP will be removed from the file/database and the procedure will not be used until the procedure has been re-approved and validated in accordance with this procedure.

29.3.1.3. Use of Approved ESECP

- A hard copy of the applicable ESECP will be printed from the controlled database.
- The craft supervisor/foreman or SMTR will verify the ESECP is the correct procedure needed for the job to be performed.
- The craft supervisor/foreman/designee, SMTR, or in some cases the shift supervisor or designee, will use the ESECP to complete the Lockout/Tagout Log.
- Operations will be given the Lockout/Tagout Log and applicable procedure at least 24 hours prior to the start of work whenever possible.
- Operations shall prepare equipment in accordance with the applicable procedure and Lockout/Tagout Log on the evening shift prior to the day work is scheduled to begin.
- Craftsmen shall apply personal safety locks prior to start of work, try equipment to verify isolation, and perform the scheduled task.
- After the job is complete and the removal/restoration section of the Lockout/Tagout Form is complete, the copy of the ESECP shall be discarded and not used for other lockouts.

29.4. RESPONSIBILITIES

Site Director or Designee

- Approve the removal of a personal safety lock when the authorized person is unavailable.

Departmental Manager or Designee

- Ensure that authorized personnel are notified prior to starting work of the removal of personal safety locks as described in this section.

First Line Supervisor

- Review with each worker the task to be performed, identifying all hazardous and stored energy sources.
- Review with workers the lockout/tagout and safe electrical procedures required to perform the task.

Maintenance Manager

- Provide final interpretation and determine the applicability of any specific provision of this procedure.

Shift Supervisor/ Foreman

- Ensure that hazardous energy is controlled in accordance with this procedure.
- The oncoming shift supervisor will assume the responsibility for the lockout/tagout system from the off-going shift supervisor at shift change in accordance with current operations turnover procedures.
- Review the Lockout/Tagout Log and ongoing SWPs with all affected site personnel on each shift.

Site Personnel

- Immediately notify the shift supervisor of any observed deviation from or violation of this procedure for immediate corrective action, to ensure the safety of personnel and equipment.

Site Safety Specialist and Associate

- Periodically monitor the Lockout/Tagout Program.
- Assist with training site employees.

Contractors/Subcontractors

- Follow the specified lockout/tagout procedures herein.

29.5. FIGURES: LOCKOUT/TAGOUT PROGRAM

Figure 29-2. Caution Device.

Figure 29-3. Tagout Device.

30. HAND AND PORTABLE POWER TOOLS

PURPOSE

This section identifies the requirements for the selection, use, and maintenance of hand tools and portable, power-operated tools, including those activated by an explosive powder charge.

SCOPE

This section includes the following major sections:

- Introduction
- General Requirements
- Electrically Powered Tools
- Pneumatic Tools
- Hydraulic Power Tools
- Powder-Actuated Tools
- Abrasive Wheels and Tools
- Woodworking Tools
- Jacks – Lever and Hatchet, Screw, and Hydraulic

APPLICATION

This section applies to work activities and employees under the control of the M&O and its subcontractors.

30.1. INTRODUCTION

Recognizing the hazards or potential hazards associated with tools and machinery in the workplace is fundamental to safety and health. There are various distinct "motions" or "actions" associated with machinery and tools and each one presents a different hazard as outlined in this section.

Rotating: An action that results in motion either clockwise or counterclockwise on its axis. Examples include vehicle engine fans, shop fans, pump shafts, the wheel of a vehicle, and a grinding wheel.

Reciprocating: An action which results in an alternating backward and forward motion. Examples include certain saws, articulating pistons, piston-type chucks, etc.

Transverse Motion: An action resulting in a side-to-side motion. Examples include convex polishing machines, windshield wipers, etc. The hazards associated with rotating, reciprocating and transverse motions are found at the point of operation where work is actually being performed, or at the points where power and motion are transmitted or transferred from one part of a mechanical linkage to another.

Cutting: An action which results in the division of an object into parts or segments. The hazards associated with cutting include exposure to the cutting device or mechanism. Selection of proper personal protective clothing and equipment will help protect you from contact with the shavings, chips, and dusts that are a byproduct of cutting.

Bending: An action which results in the introduction of a curve or bow to an object.

Shearing: An action that results in the crossing of cutting edges to separate an object.

Punching: An action for perforating, indenting or for driving out or in an object inserted in a hole, as a bolt or pin. The hazards associated with bending, shearing and punching result when power is applied to a ram to form or trim metal. The greatest hazard exposure is at the point of operation where the dies make contact with the metal. All employees must avoid the area where closure of the dies and die punch points occur.

30.1. GENERAL REQUIREMENTS

No modifications or additions that affect the capacity or safe operation of tools will be made without the manufacturer's written approval. If such modifications or changes are made, the capacity, operation, and/or maintenance instruction plates, tags, or decals must be changed accordingly.

Supervisors and all employees shall ensure that tools covered by this practice are:

- Inspected before use.
- Tagged or identified as defective and turned in for repair or replacement if found defective.
- In conformance with manufacturer's attachment and energy-level specifications.
- Equipped with required guards.
- Disconnected from their energy source when relocating the tool to a new work area, changing attachments, or conducting repairs/maintenance on the tool.
- Not hoisted or carried by attached hoses or electrical cords.
- Used with appropriate eye, face, hand, foot, hearing, and respiratory protection.
- Connected to a ground-fault circuit interrupter (GFCI) when used in conjunction with an extension cord or other temporary power source.

Supervisors and employees shall ensure that hand tools are maintained and used properly, and that:

- Employees keep hands and other parts of the body clear of the point of operation (blade, bit, etc.) at all times while the tool is connected to its energy source.
- Wrenches with sprung jaws are not used.
- Impact tools such as drift pins, wedges, and chisels are kept free of mushroomed heads.
- Portable power saws and grinders are equipped with approved blade or wheel guards. Blades and wheels must have the proper rating and revolutions per minute for the tool.
- Wooden handles of tools are kept free of splinters or cracks and are kept tight in the tool.
- Employees using hand and power tools and exposed to the hazard of falling, flying, abrasive, and splashing objects, or exposed to harmful dust, fumes, mists vapors, or gases are provided and use the particular personal protective equipment necessary to protect them from the hazard.

Employees using hand and power tools and exposed to the hazard of falling, flying, abrasive, and splashing objects, or exposed to harmful dust, fumes, mists vapors, or gases are provided with particular personal protective equipment necessary to protect them from the hazard. The following are the general safety practices for the use of a variety of power and hand tools.

- It is the responsibility of all employees to adhere to these practices whenever operating a power or hand tool, and to ensure they have received all required training prior to using a tool for the first time.
- Operation of machinery, tools, and equipment shall conform to the standard operating procedures established by the company who manufactures the machinery or equipment. Operation of machinery, tools, and equipment that deviate from this is prohibited.
- The safe operation of power tools, machinery and equipment for work for which they are not intended, or the use of any power tools, machinery, or equipment in a way that is not in compliance with any applicable operating requirement is strictly prohibited and subject to disciplinary action.
- All tools, regardless if they are owned by the M&O or Subcontractor shall be maintained in a proper and safe condition.
- A tool which is in good condition will be safer for the employee to use and will complete the job in a more effective manner.
- Inspect all tools before use and take damaged tools out of service. If taken out of service, tag out.
- It shall be the responsibility of both the tool room attendant (if applicable) and the employee to whom the tool is issued, to verify that all guards and handles are in place and in proper working order before the tool is issued or accepted. At no time shall a guard or handle be removed. Deliberately defeating a hazard control can result in disciplinary action. All guarding shall meet the requirements set forth in ANSI B15.1.
- Never wear loose clothing, dangling jewelry, rings or watches or loose, long hair around or near rotating machinery or tools.
- Shirt tails shall be tucked into pants, long hair shall be confined under the hard hat.

NOTE
Broken and/or defective tools shall be taken out of service and repaired or replaced.
Broken and/or defective tools shall be tagged-out.
Damaged tools shall be reported to the Tool Room (if applicable) and Supervisor.
Repaired tools shall be inspected prior to use.

30.2. ELECTRICALLY POWERED TOOLS

Supervisors and employees shall ensure that portable electrical tools are:

- Double-insulated or grounded in accordance with APM Section 15, Electrical Safety-Related Work Practices.
- UL listed, 115 or 220 volts AC or AC/DC marked accordingly by the manufacturer.

- Equipped with a constant pressure switch that shuts off power when pressure is released by the operator.

NOTE
Hand-held power grinders with wheels 2 inches or less in diameter, and routers, planers, laminate trimmers, nibblers, shears, scroll saws, and jig saws with blade shanks 1/4 inch wide or less, may be equipped with a positive "ON OFF" switch.

30.2.1. Electrical Equipment Inspection

All portable electrical equipment shall be maintained per manufactory requirements.

All portable (cord and plug) electrical equipment, portable GFCI's, extension leads and cords must be inspected and labeled quarterly.

Quarterly inspections shall be conducted by an electrical worker and shall be recorded on the Electrical Equipment Inspection Register, (AAA9020.867), or in an alternative format (for subcontractors) approved by the SMTR.

Quarterly inspections shall be documented by the following color coding and tagging.

- Color codes shall be used to indicate current status of quarterly inspections as follows:

January to March	Red
April to June	Green
July to September	Blue
October to December	Yellow

- Inspection tags or labels shall be used to document quarterly inspections and shall contain the following information, at a minimum:
  - Equipment/component description or ID number
  - Inspector
  - Date of inspection

NOTE
In lieu of color coded inspection tags, colors may be applied with colored tie wraps, paint, or tape. However, an inspection tag containing the above information will still be required.

Portable (cord and plug) electrical equipment, portable GFCI's, extension leads and cords found defective during quarterly inspections must be removed from service and destroyed or repaired in accordance with manufacturer's instructions.

NOTE
Subcontractors may use their own electrical equipment inspection procedures, if they provide hazard protection equal to or better than this one. SMTRs shall verify that subcontractors have an approved electrical equipment inspection program in place prior to use of electrical equipment.

30.3. PNEUMATIC TOOLS

Supervisors and employees shall ensure that portable pneumatic tools are equipped with:

- A tool retainer to prevent the tool from being ejected. Equip nailers or staplers that operate at more than 690 kPa (100 psi) pressure and have automatic fastener feed with a safety device on the muzzle to prevent unexpected ejection of the fasteners.
- Pressure reduction devices to prevent any hose with an inside diameter of 1/2 inch or greater from whipping in the event of hose failure.
- “Deadman” switches.
- A positive means to secure the tool to the hose or whip to prevent the tool from becoming accidentally expelled.

When using pneumatic tools:

- Suspend air hoses over the work area, whenever possible.
- Protect air hoses located on the ground from vehicle and/or foot traffic damage.
- Always shut off the air supply, prior to working on an air hose.
- Ensure that safety check valves and whip checks are installed on all air hoses for automatic shut off so they do not whip about when they accidentally become disconnected.

30.4. HYDRAULIC POWER TOOLS

Fluids used in hydraulic powered tools shall be the type specified by the manufacturer or equivalent.

30.5. POWDER-ACTUATED TOOLS

Supervisors shall ensure that:

- Operators of powder-actuated tools are qualified (and “licensed” if applicable) in accordance with the manufacturer’s instructions and this qualification is documented.
- Powder-actuated tools and loads are locked in a container, stored in a safe place when not in use, and are accessible only to authorized employees.
- Tools are operated in strict accordance with the manufacturer’s instructions. Only the types of fastener and powder loads recommended by the tool manufacturer are used.

Employees are responsible for the following:

- Before use, inspect and test the tool in accordance with the testing methods recommended by the manufacturer to determine if it is in proper working condition.
- Know, to the extent possible, what is on the other side of material(s) being fastened.
- Before driving a fastener, check the line of fire to ensure that no one may be hurt if the fastener penetrates completely through the work surface.
- Use with the correct shield, guard, and/or attachments specified by the manufacturer.
- Fasteners are not to be driven into very hard or brittle materials; including cast iron, glazed tile, hardened steel, glass block, natural rock, hollow tile, or face brick.

- Fasteners are not to be driven into easily penetrated materials or materials of questionable resistance, unless backed by a material that prevents the fastener from passing completely through the other side.
- Tools are not loaded until just before the intended firing time.
- Neither loaded nor empty tools are pointed at any person; hands are kept clear of the open barrel end.
- The tool is held perpendicular to the work surface when fastening into any material, except for specific applications recommended by the tool manufacturer.
- In the event of a misfire, the operator holds the tool firmly against the work surface for a period of 30 seconds and then follows the explicit instructions set forth by the tool manufacturer.
- The tool is not used in an explosive or flammable atmosphere.
- Tools are inspected, cleaned, maintained, and tested after each 1,000 fastenings. Documentation of each inspection, cleaning, and testing is retained in the workplace.
- When misfired, cartridges are handled and disposed of according to the safety data sheet.

30.6. ABRASIVE WHEELS AND TOOLS

Supervisors shall ensure that employees working with grinding machines, cut-off machines, or other applications for abrasive wheels are trained in their safe operation and maintenance.

NOTE
9-inch grinders are not permitted to be brought to the site.

Employees are responsible for the following:

- Abrasive wheels are handled and stored in a manner that prevents damage to the wheels.

NOTE
Do not allow abrasive wheels to be placed in a manner that could collect foreign materials such as dirt.

- Abrasive wheels and the mounting hardware or components of machines on which they are mounted are not modified or altered.
- Abrasive wheels are the correct size and type for the machine on which they are to be mounted and for the work to be performed.
- Abrasive wheels are “ring tested” before mounting, and visually inspected before each use.
- After mounting, new wheels are run at least 1 minute at full speed before work is applied or employees stand in front of, or in line with, the wheel.
- Proper equipment guards are in place.

30.7. WOODWORKING TOOLS

Portable, power-driven circular saws must be equipped with a blade diameter greater than 2 inches with guards above and below the bare plate or shoe. The upper guard covers the saw to the depth of the teeth, except for the minimum arc required to permit the base to be tilted for bevel cuts. The lower guard covers the saw to the depth of the teeth, except for the minimum arc required to allow proper retraction and contact with the work. The lower guard automatically and instantly returns to covering position when the tool is withdrawn from the work.

Radial arm saws shall be equipped with an automatic brake.

30.8. JACKS– LEVER AND HATCHET, SCREW, AND HYDRAULIC

Employees are responsible for the following:

- The manufacturer's rated capacity is legibly marked on jacks and is not exceeded.
- Jacks are provided with a positive stop to prevent over travel.
- Blocking and cribbing are provided at the base of the jack when necessary to ensure a firm foundation.
- A wood block is placed between the metal cap of the jack and the load when there is a possibility of slipping.
- After a load has been raised, it is immediately cribbed, blocked, or otherwise secured.
- Jacks are properly lubricated at regular intervals in accordance with the manufacturer's instructions.

31. MATERIALS HANDLING

PURPOSE

This section provides the requirements for safe materials handling.

SCOPE

This section includes the following major sections:

- Introduction
- Manual Handling
- Loading and Unloading Material using Support Equipment
- Responsibilities

APPLICATION

This section applies to work activities and employees under the control of the M&O and its subcontractors.

DEFINITIONS

Cradles – Purpose made equipment that is used to manage loads of equipment while being transported or lifted.

Flat Rack – Purpose made unit, which is compatible with shipping containers and come in 20 feet and 40 feet configurations.

Manual Handling – Any activity requiring the use of force exerted by a person to lift, push, pull, carry, or otherwise move or restrain any animate or inanimate object.

Palletized – Where materials and equipment have been stacked and restrained in pallet type sections whether tied, shrink-wrapped, etc.

Crated – Materials loaded into crates, which have tine access for forklifts.

Boxed – Equipment that has been packaged in boxes, which have tine access for forklifts.

Containerized – Material that can be transported in bulk or as mixed loads inside sea containers.

31.1. INTRODUCTION

31.1.1. General

The improper handling and storing of materials can result in personally and financially costly injuries. Handling and storing materials involve operations such as:

- Moving loads with a crane, forklift or other mechanized lift equipment,
- driving a truck loaded with materials,
- loading and carrying bags or materials manually, and

- Stacking palletized bricks or other materials such as drums, lumber, etc.

31.1.2. Awareness

Personnel expected to perform the duties listed in this section shall be trained in proper materials handling procedures during their safety and orientation training. They should be aware of the following:

- Proper work practices,
- Equipment and controls,
- When to move materials mechanically or manually, and
- Potential hazards associated with material handling.
- Proper lifting techniques.

31.2. MANUAL HANDLING

31.2.1. General Requirements

Manual handling is considered to have greater risk if any of the following characteristics are present:

- Repetitive or sustained application of force
- Repetitive or sustained awkward posture
- Repetitive or sustained movement
- Application of high force
- Exposure to sustained vibration
- Handling of unstable or unbalanced loads or loads that are difficult to grasp or hold
- Exposure to windy conditions
- Overhead obstructions

All tasks will be assessed for the risk of injury or harm from manual handling.

All employees will be trained in safe manual-handling techniques.

Compliance with applicable standards is required. Employees shall not lift more than 40 pounds alone.

31.2.2. Storage Hazards

Be aware of factors such as height and weight of the materials to be stored. To prevent storage hazards:

- Keep storage areas free from accumulated materials that cause tripping, fires, or explosions, or that may contribute to the harboring of rats and other pests,
- Place stored materials inside buildings that are under construction and at least 6 feet from hoist ways, or inside floor openings and at least 10 feet away from exterior walls.

- Separate non-compatible material,
- Wear appropriate fall protection if needed,
- Consider placing bound material on racks, and secure it by stacking, blocking, or interlocking to prevent it from sliding, falling, or collapsing.

31.2.3. General Considerations for Manual Handling

- Posture and Layout
  - What is the weight of the object?
  - Is stooping involved where the hands pass below mid-thigh height?
  - Is reaching above shoulder height involved?
  - Is significant sideways twisting of the body involved?
  - Is unbalanced or uneven lifting or carrying involved?
  - Is an awkward grip involved?
  - Is forward reaching (more than 12 inches away from the body) involved?
- Task and Object
  - Is handling performed for more than 1 hour at a time?
  - Is handling performed more than once every 5 minutes?
  - Is there a long vertical distance of travel (more than 10 inches)?
  - What is the weight of the object?
  - Does the object have sharp edges or contain hot/cold materials?
  - Does it have unstable/unbalanced contents?
  - Are slippery materials/objects handled?
  - Is the object bulky or awkward (more than 2 feet in 2 directions)?
  - Is the object an unusual shape (such as does it have handles)?
  - Are there any forces applied to move the object, apart from lifting, such as pushing, pulling, and restraining/holding?
- Workplace Conditions
  - Is the task performed in a confined space?
  - Is the workplace hot, cold, or poorly lit?
  - Are the floor surfaces slippery or uneven?
- Work Organization
  - Is the work affected by the unavailability of people to do work within a deadline?
  - Is the work frequency affected by bottlenecks or sudden changes or delays to the flow of materials?

31.2.4. Hazard Controls

Hazard controls include, but are not limited to, the following:

- Modify Object – The object being handled may be modified or repackaged into a bigger, smaller, or different size, shape, and/or weight.
- Modify Workplace Layout – The layout of the plant, equipment, and furniture may be modified or rearranged. This may include increased attention to housekeeping and maintenance functions.
- Rearrange Materials Flow – The schedule or timing and path(s) of materials flow may be modified.
- Different Actions or Movements – With or without workplace modifications, a task may be done in a different way using different actions and movements.
- Modify Task – Mechanical Assistance – The risk of a task may be reduced by simple mechanical assistance provided by simple levers and minor rearrangements of equipment and plant.
- Modify Task – Team Lifting – The actions and movements required can be modified by the assistance of others (such as team lifting).
- Mechanical Handling Equipment – The provision of mechanical handling equipment can reduce the risk by reducing the force required.
- Toolbox Meetings – Supervisors shall discuss the potential hazards and control strategies of manual handling to eliminate and/or reduce the potential for injury.

31.3. LOADING AND UNLOADING MATERIAL USING SUPPORT EQUIPMENT

Only employees trained on the hazards and safe work practices required shall be assigned to load or unload materials from trucks.

Cranes and other lifting machinery/equipment shall be managed in accordance with APM Section 13, Hoisting and Rigging.

Employees shall be designated as machinery and equipment operators according to APM Section 53, Motorized Heavy Equipment.

Lifting equipment shall be tagged and certified as detailed in accordance with APM Section 13, Hoisting and Rigging.

31.3.1. Hazards

The various hazards to employees involved with loading and unloading materials onto vehicles for shipping include, but are not limited to, the following:

- Poor or incorrect hazard identification
- Slips, trips, and falls from height
- Pinch points

- Falling loads or objects
- Overexertion while manual material handling
- Struck by operating machinery
- Load composition and characteristics
- Inclement weather conditions
- Caught in between or struck by from vehicle and employee interaction
- Defective vehicles and mobile equipment
- Forklift tip over

31.3.2. Hazards

Prior to starting work, operations involving loading and unloading materials onto vehicles using mobile support equipment shall be assessed using the Job Hazard Analysis (JHA). The JHA is required for this and other Life Critical operations to ensure that all hazards associated with the work are identified, the likelihood and severity are understood, and control measures are defined that will effectively reduce the risk.

In order for a JHA to be completed, the following documentation shall be reviewed (as applicable):

- Load composition: Describing load characteristics, individual material and equipment weights (were applicable).
- Shipping instructions.
- Relevant dangerous goods and hazardous material certificates. This includes the manufacturer's safety data sheet (SDS) and other appropriate/associated information.
- Rigging and lifting point certification (as applicable).

After the documentation has been checked, a comprehensive JHA shall be developed. This JHA should involve the following employees (as applicable):

- Responsible supervisor
- Equipment/crane/forklift operator
- Riggers
- Any other person involved with the unloading or loading of material and equipment

The loading and unloading of materials onto vehicles using mobile support equipment shall not progress unless all parties have reviewed the JHA and have signed the Pre-job briefing.

31.3.3. Mechanical Lifting Devices

When possible, mechanical lifting devices should be used for all material over 40 pounds. Methods such as pallets, boxes, crates, and containerization shall be used. Compliance with this section shall remove or significantly reduce the potential ergonomic hazards such as overexertion or repetitive motion when conducting unloading or loading material tasks.

Lifting equipment shall be made available for identified tasks as required. Mechanical lifting devices include, but are not limited to, the following:

- Trolleys
- Hydraulic lifts
- Forklifts
- Cranes
- Vehicle-mounted cranes and/or similarly mounted lifting arms

31.3.4. Communication

Wherever possible, communications between parties will be either by clear, precise hand signals or two-way radio.

31.3.5. Vehicle and Personnel Interaction

Spotters/flaggers shall wear high-visibility vests or clothing and use the correct signage at all times. FR-rated high-visibility vests are required in areas that require FRC.

Communications and hand signals shall also be standardized.

31.3.6. Loading/Unloading Area

To conduct loading and unloading operations without interference from adjacent activities, mobile machinery, equipment, and employees, an Exclusion Zone shall be established where practical.

The Exclusion Zone shall be clearly marked and sign-posted as a restricted area. Spotters/flaggers shall wear a high-visibility vest or like clothing, which clearly delineates them from other employees.

The Exclusion Zone will as a minimum have, but is not limited to having, the following control mechanisms in place:

- Vehicle and Pedestrian traffic control – Through the use of barrier tape, hard barricades, safety cones, or other appropriate means,
- Safe Work Zones – Designated and monitored areas on trucks and trailers where workers can stand during load movement to avoid contact with the load or falling objects.
- Specific personal protective equipment (PPE) – Standard PPE requirements and in addition a specific high-visibility vest.
- Radios – Designated radio frequency for those radios designated for use by crane crews and other personnel within the restricted area.
- Designated equipment – This may include forklifts, lifting equipment, and mobile anchor points (for employees rigging and working at height).

All of the above facilities, equipment, and safe work practices form the basis of a restricted area where only authorized personnel are allowed. These personnel will be trained in the systems and administrative controls used, as well as tested for competency in the use of designated equipment such as cranes, forklifts, and EWPs.

31.5. RESPONSIBILITIES

S&H Director

- Ensure the requirements of this standard section remain current with applicable regulatory directives.

ES&H Manager and Site Safety

- Oversee site personnel to ensure the material handling procedures are followed.
- Assist with inspections as needed.

Supervisors

- Ensure that elements of this policy are being followed by conducting inspections, reviews, spot-checks, and other follow-up actions.
- Ensure employees are aware of and properly trained on proper work practices, equipment and controls, when to move materials mechanically or manually, and any potential hazards associated with material handling.
- Conduct or arrange for inspections in their area of responsibility.
- Initiate corrective action for deficient items noted during inspections.

Employees

- Follow the requirements of this section.

SMTR

- Ensure subcontractors are following elements of this section by conducting inspections, reviews, spot-checks, and other follow-up actions.
- Initiate corrective action for deficient items noted during inspections.

32. SUPPORT EQUIPMENT

PURPOSE

This section establishes the requirements for safe operations of support equipment and watercraft pertaining to all personnel conducting work inside of the SPR.

SCOPE

This section includes the following major sections:

- General Requirements
- Maintenance/Inspection
- M&O Operator Qualification
- Subcontractor Operator Qualification
- Watercraft
- Responsibilities

APPLICATION

This section applies to work activities and employees under the control of the M&O and its subcontractors.

NOTE
This section does not apply to the use of handheld power tools.

DEFINITIONS

Competent Person — One who is capable of identifying existing and predictable hazards in the surroundings or working conditions which are unsanitary, hazardous, or dangerous to employees, and who has authorization to take prompt corrective measures to eliminate them.

Heavy Equipment – Support equipment that is personnel-operated mobile equipment that is used at an SPR work location. Examples of heavy equipment include, but are not limited to mobile cranes, earthmoving equipment, forklifts, vacuum trucks, tractors, and tractor mowers.

Equipment Operator - Any employee who by employment or job assignment will operate personnel-operated equipment such as mobile cranes, manlifts, forklifts, vacuum trucks, road graders, dozers, tractors or tractor mowers.

Support Equipment – Support equipment encompasses all major powered and heavy equipment (except GSA-furnished motor vehicles) necessary to support the operation, maintenance, and subcontract work on the SPR.

32.1. GENERAL REQUIREMENTS

Support equipment includes, but is not limited to, the types of equipment listed below.

- Boats
- Cranes
- Earthmoving equipment (dozers, graders, backhoes, skid-steers, track-hoes)

- Fire trucks
- Forklifts
- Portable trailer mounted generators, pumps, welding machines, air compressors
- Marsh buggies
- Scooters
- Powered mowers, bush hogs, batwings, zero-turn and riding mowers
- Tractors
- Vacuum trucks
- Elevated lift equipment (aerial lifts and elevating work platforms)
- Armored tactical vehicles

Additional equipment-specific safety requirements are outlined as applicable in the following sections of this manual:

- Section 13, Hoisting and Rigging Operations
- Section 45, Vehicle Safety Program
- Section 51, Powered Industrial Trucks (Forklifts)
- Section 52, Lift Equipment
- Section 53, Motorized Heavy Equipment
- Section 54, Lawn Equipment and Chain Saws

NOTE
Support Equipment is to be operated ONLY by fully trained and qualified personnel as determined/ identified by the M&O Performance Development group, M&O management, SMTR and DOE.

Prior to starting work, operations involving major powered or heavy equipment shall be assessed using the Job Hazard Analysis (JHA). The JHA is required for this and other Life Critical operations to ensure that all hazards associated with the work are identified, the likelihood and severity are understood, and control measures are defined that will effectively reduce the risk.

No modifications or additions that affect the capacity or safe operation of the equipment will be made without the manufacturer’s written approval. If such modifications or changes are made, the capacity, operation, and maintenance instruction plates, tags, or decals will be changed accordingly.

No one is allowed to operate any equipment while under the influence of drugs or alcohol. The use of a prescribed or over-the-counter drugs or medications that warns the user that it "may cause DROWSINESS," and/or "USE CARE when operating a vehicle or dangerous machinery," is prohibited. Employees are responsible for notifying their supervisor that such a drug/medication is being taken.

32.2. MAINTENANCE/INSPECTION

All users of support equipment are responsible for adhering to the applicable maintenance/inspection procedures and are expected to be aware of the day-to-day requirements for support equipment.

32.2.1. User's Responsibilities

- Ensure that the cleanliness and general upkeep of the equipment is maintained.
- Do not modify equipment to defeat safety devices, alter its use, or increase load capacity.
- If, at any time, support equipment is found defective or in any way unsafe, the equipment shall be tagged and taken out of service until it has been restored to a safe operating condition.

CAUTION
If you are unsure whether you meet requirements for operating support equipment, consult with your supervisor before using the equipment.

32.2.2. Initial-Receipt Inspections

An initial-receipt inspection is required of acquired, leased, subcontractor and loaned support equipment. This inspection is documented using the Support Equipment Acceptance Checklist (AAA9020.732) and shall identify the manufacturer's name, make and model, serial number, and current inspection date.

Equipment received for M&O use shall be inspected by a designated M&O Competent Person. Equipment received for subcontractor use shall be inspected by the subcontractor's designated Competent Person, but shall be verified by the SMTR or designee.

- This inspector, using the Support Equipment Acceptance Checklist (AAA9020.732), shall inspect each unit of support equipment as it is initially received on site and ensure that:
  - Equipment specific operating manual and applicable MRC or OEM inspection checklists are available with the equipment,
  - All safety and warning labels or placards on the equipment are visible and in good condition,
  - Equipment is free of defects and suitable for safe performance of the work,
  - There have been no modifications or additions that affect the capacity or safe operation of equipment unless made with the manufacturer's written approval,
  - Copies of inspection reports are provided and up-to-date (as applicable),
  - Copies of rated load tests are provided (as applicable),
  - Subcontractor operator(s) have provided proof of training that meets OSHA/ANSI minimum requirements and are aware of operating restrictions and precautions.

NOTE
SMTRs are responsible for seeking assistance from site Subject Matter Experts (SMEs), as needed, to conduct initial-receipt inspections.

- If the condition of the equipment warrants service or repair, the equipment shall be rejected (before use) and returned to the lessor or owner. The lessor shall be notified before such action and, if possible, allowed to make necessary repairs at his/her own expense.

- If a deficiency has the potential for causing bodily injury to the operator or ground employees, the equipment shall be tagged with “Danger – Do Not Operate” Tag, to avoid operation. The supervisor must be notified when the equipment is tagged out of service.
- Photographs should be taken and retained on file to document any existing deficiencies if applicable.
- The inspector shall sign the completed Support Equipment Acceptance Checklist upon acceptance, and shall retain the completed form as part of the Vehicle Maintenance File. SMTRs shall ensure the completed Support Equipment Acceptance Checklist is retained in the contract file.
- The inspector should ensure that all documentation received from the vendor is correct, such as Occupational Safety and Health Administration (OSHA) inspection requirements, load lifting certifications, OEM manuals, and similar items. Any required documentation to be provided by vendors or subcontractors should be requested on the submittals during the PR process.

NOTE
These types of inspections are required for support equipment used for SPR operation on SPR storage facilities or remote SPR work locations (examples: pipelines or Sun Terminal).

32.2.3. Pre-Operation Inspections

Before operating support equipment, the operator must perform the required inspection and complete the pre-operational inspection checklist.

- For M&O personnel, equipment-specific checklists are attached to the equipment MRCs. Immediately report to the maintenance supervisor any safety problems discovered and remove the equipment from service until repairs are made. The inspector shall sign the completed checklist and the supervisor or designee shall sign the verification block no later than the end of the working day of the inspection.
- For vendors, subcontractor or rental equipment, equipment-specific inspection checklists from the OEM manufacturer or equipment vendor shall be provided for any equipment brought on site. If vendor cannot supply them, substitute pre-operational checklists for support equipment are attached in approved MRCs, and can be provided upon request from the SMTR (if available). Immediately report any deadline deficiencies to the SMTR and remove the equipment from service until repairs are made. The inspector shall sign the completed pre-operational checklist and the supervisor or designee shall sign the verification block no later than the end of the working day of the inspection. **Note**: Subcontractors are responsible for coordination with the SMTR.

32.3. M&O OPERATOR QUALIFICATION

This subsection describes the mandatory qualification process for operators of support equipment for M&O personnel (including supervised subcontractors). This program complies with the DOE Rigging standard, the Code of Federal Regulations, Title 29, Part 1910, “Occupational Safety and

Health Standards" and Part 1926, "Safety and Health Regulations for Construction;" and American Society of Mechanical Engineers (ASME) B 30.5 - latest revision.

Persons who operate support equipment must learn and understand the basic safety information for the equipment and learn the special requirements for safe handling and use of the specific equipment that they operate. Because each item of equipment has its own special requirements, employees may need training in addition to the basic information they received that applies to a general class. The scope of training given in this section covers the general needs of an equipment class. Special requirements on individual equipment in the class may require more training on each piece of equipment, and will be determined by the site and New Orleans Performance Development. Requirements for training of temporary personnel (supervised subcontractors) will be determined by the sites and the M&O Performance Development group on a case-by-case basis.

Training for equipment operation requires two parts: an information exchange where rules, regulations, requirements, limits, and do's and don'ts are discussed and explained, and the physical application where safe operation is explained, demonstrated by the instructor, and tried by the trainee. Faults and errors are corrected and checks are made during this operation to ensure that correct physical controls are developed. Only qualified operators will be permitted to operate support equipment on the SPR.

32.3.1. Qualified Operators (M&O)

Operators of equipment shall meet the following minimum requirements:

- Age - At least 18 years old.
- Language - Understand spoken and written English or a language generally in use at the location.
- Physical – (Mobile crane operators). Mobile crane operators shall meet the physical requirements outlined in ASME B30-5a-1995 Section 5.3.1.2a Qualifications for operators.
- Knowledge - Have basic knowledge and understanding of equipment-operating characteristics, capabilities, and limits, including equipment-rated capacity, safety features, required operating procedures, and requirements of this manual.
- M&O operators shall have completed the approved training as identified by M&O's Performance Development group including rental equipment.
    - For M&O operators, the program for the maintenance of operators' qualifications will be maintained and determined by the M&O's Performance Development group.
    - The initial qualification of operators shall be determined by the M&O's Performance Development group and the sites as necessary. Qualifications will remain in effect as determined by the M&O's Performance Development group to ensure compliance with applicable OSHA/ANSI requirements.
- Skill - Demonstrate proficiency in manipulation and control of equipment through all phases of operation.

For M&O operators, Safety and the applicable Subject Matter Expert (SME) will review program content for safety significance and include in their routine audits the administration of and

compliance with the training and qualification program established and approved by the M&O's Performance Development group.

32.4. SUBCONTRACTOR OPERATOR QUALIFICATION

Subcontractors that employ personnel who operate the equipment covered in this manual shall ensure that training programs are in accordance with applicable OSHA/ANSI requirements to ensure that personnel are competent to perform the operations. Training of operators may be accomplished by outside contractors. The program for the maintenance of operators' qualifications will be maintained by the subcontractor and provided to the SMTR upon request.

Operators of equipment shall meet the following minimum requirements:

- Age - At least 18 years old.
- Language - Understand spoken and written English or a language generally in use at the location.
- Physical – (Mobile crane operators). Mobile crane operators shall meet the physical requirements outlined in ASME B30-5a-1995 Section 5.3.1.2a Qualifications for operators.
- Knowledge - Have basic knowledge and understanding of equipment-operating characteristics, capabilities, and limits, including equipment-rated capacity, safety features, required operating procedures, the safety terms and conditions of their subcontract, the APM and applicable OSHA/ANSI standards.
- Skill - Demonstrate proficiency in manipulation and control of equipment through all phases of operation.

Prior to operating support equipment, subcontractors shall submit the following to the SMTR to verify training:

- A signed copy of the Competent/Qualified Person Designation form (AAA9020.692), and any supporting documentations (certificates/qualifications/OJT) to support that the operator meets applicable OSHA/ANSI requirements;
- Documentation that operators have reviewed and understand the equipment-specific operator manual, and understand the equipment restrictions, hazards, and label requirements; and
- JHA(s) that address the equipment-specific operator manual and label requirements applicable to the project/task.

32.5. WATERCRAFT

The watercraft requirements discussed below are contained in DOE-PMR 109-38.53, Watercraft.

NOTE
All SPR boats with bilge pumps must have an automatic-type pump.

32.5.1. Operating Watercraft

No employee may operate SPR watercraft until qualified as possessing the knowledge and skills necessary to safely operate an SPR watercraft. All SPR boat operators must complete the State/Coast Guard approved online course for their state before training on specific pieces of equipment. Course information can be obtained from the site training coordinators. Operators must be trained on each specific component of the system (i.e. specific boat hull and motor).

32.5.2. Pre-Departure Check

Before any boat is launched on the SPR, the operator shall complete a Watercraft Utilization form (OSF87-0029). All blocks on this form must be verified prior to submitting it to the Operations shift supervisor before departure. The purpose of this form is to ensure all passengers are accounted for and that the Operations shift supervisor is fully aware of the launch site, departure time, area of intended operation, the personnel aboard, and the intended return time. This form is also intended to ensure that the necessary safety equipment is on board, in good operating condition and properly stowed, and all through-hull transom plugs are installed. The form ensures that the qualified operator has checked the condition of the watercraft and its operating systems prior to departure. The Watercraft Utilization form shall be retained by the Operations shift supervisor in accordance with the site RIDS schedule.

32.5.3. Daily Watercraft Utilization Log

The qualified watercraft operator must record all trip information and any deficiencies on the Daily Watercraft Utilization Log (OSF87-0030). Immediately after each boating operation, the qualified watercraft operator must return the completed log to the shift supervisor.

32.5.4. Radios aboard Watercraft

Operators aboard SPR watercraft shall not get underway unless they have either an installed marine radio aboard the watercraft, a cellular telephone, or a hand-held radio with which they can maintain radio contact with the shift supervisor at all times. At a minimum, the watercraft operator shall establish radio contact with the shift supervisor or a designated person every 30 minutes. The Operations shift supervisor should ensure that all radio/cell phone transmissions between the watercraft operator and the shift supervisor are properly logged in the site operations logbook. Although not required, watercraft operators are highly encouraged to check out a hand-held global positioning system (GPS) unit to carry aboard the watercraft. The GPS unit is an excellent way to document the watercraft location during the 30-minute interval radio/cell phone checks. If the shift supervisor does not receive a 30-minute radio/cell phone check from the watercraft operator, he shall report the occurrence immediately to the Site Director for action. In the event of an emergency, watercraft operators shall use Channel 16 on the marine radio if available. This channel shall be used only for distress situations and not for routine conversations or radio checks. Routine traffic shall be restricted to working frequencies. The Federal Communications Commission (FCC), under the provisions of the Bridge-to-Bridge Radio-telephone Act, has the authority to issue citations for misuse of radio communications. For example, obscene, indecent, or profane language used in radio communications is punishable by a $10,000 fine, imprisonment for 2 years, or both.

32.5.5. Displaying Flags and Seals

All SPR watercraft measuring 20 feet or more in length, except barges, must display the U.S. ensign. Display of the DOE departmental flag is optional.

The DOE departmental seal may also be displayed. If so, it must be placed amid ship and above the waterline.

32.5.6. Reporting Watercraft Accidents

The control room operator is to receive the first notification of a watercraft accident and will notify the Site Director, the Operations supervisor, and the site safety specialist by the quickest means available. The Site Director will ensure that all accidents are promptly reported to the NOLA Operations Control Center (OCC) and subsequent investigations are performed in accordance with the Accident Prevention Manual.

Accidents involving watercraft must be reported if any of the following conditions result:

- Loss of life or serious injury
- Loss of/damage to property
- Damage to the SPR watercraft
- Damage to any vessel or structure

The official report, in letter format, must contain, but is not limited to, the following information:

- Number of watercraft involved
- Date and time of the accident
- Individuals aboard, including witnesses
- Injuries or deaths of crew members or passengers
- Property lost
- Damage sustained by the watercraft
- Official registration number of any watercraft involved in the accident.

This report must be submitted to the Site Director as soon as possible, with copies furnished to the site safety specialist, the site property manager, the site security specialist, New Orleans property manager, the Stennis Manager of Facilities and Field support, and the New Orleans safety manager. In addition to the internal reporting requirements above, Louisiana and Texas and the USCG have accident reporting requirements. If there is a loss of life, personnel injury, or property damage in excess of $200, reporting is required. To ensure that any required state or federal accident report is filed in a timely manner, the Site Director or a designated representative shall immediately notify the New Orleans OCC and Emergency Management of the accident to obtain guidance if a state or federal accident report must be completed.

SPR watercraft operators are also apprised of the provisions of the United States

Code Annotated, Title 46, Part 2304, “Duty to Provide Assistance at Sea.” This compels the operator of a DOE/SPR watercraft to render whatever assistance can be safely provided to rescue any individual on the water in need of emergency assistance.

32.5.7. Mobile Radio Installation Request

Should the need arise to have a mobile radio installed on a watercraft, a Mobile Radio Installation request form (OSF87-0033) shall be completed and approved by the individuals indicated on the form. The completed form shall be forwarded to the M&O Radio/Frequency/Telecommunications Engineer.

32.6. RESPONSIBILITIES

Department Managers

- Ensure that their employees who are required to operate major powered and heavy equipment in the performance of their duties meet qualification requirements and maintain a high level of competence during the qualification period.

Site Training Coordinators

- Ensure that completion of training for M&O personnel is properly recorded and available for inspection.
- Maintain completed records in SAP Qualification catalogue Section in accordance with established procedures.

First-Line Supervisors

- Designate employees assigned to operate support equipment as Operators (including supervised subcontractors).
- Ensure that they are scheduled for, attend, and successfully complete required training associated with each equipment type, including all rental equipment. Records shall be made readily available on site.
- Ensure that elements of this policy are being followed by conducting inspections, reviews, spot-checks, and other follow-up actions.
- Follow proper guidance and procedures to ensure broken and/or defective support equipment be taken out of service and repaired or replaced before use.
- Ensure employees are properly trained on how to operate support equipment and that they understand all applicable regulatory directives and practice safe use.
- Conduct or arrange for inspections in their area of responsibility.
- Initiate corrective action for deficient items noted during inspections.

SMTRs

- Verify that subcontractor equipment has been inspected by the subcontractor’s designated Competent Person and documented on the Support Equipment Inspection Checklist.
- SMTRs shall ensure subcontractors submit the following to verify training prior to operating mobile support equipment:

  - A signed copy of the Competent/Qualified Person Designation form (AAA9020.692), and any credentials (certificates, qualifications, OJT, or other documentation) to support that the operator meets applicable OSHA/ANSI requirements.
  - Documentation that operators have reviewed and understand the equipment-specific operator manual, and understand the equipment restrictions, hazards, and label requirements, and operators have the authority to make changes to address hazards.
  - JHA(s) that address the equipment-specific operator manual and label requirements applicable to the project/task.
- SMTR shall review subcontractor operator training qualifications to ensure compliance with applicable OSHA/ANSI requirements.
- Oversee subcontractor personnel to ensure safety practices are followed during the use of support equipment.
- Seek assistance from site Subject Matter Experts (SMEs), as needed, to conduct initial-receipt inspections.

Employees

- Employees will not operate any equipment without first meeting the requirements of this program.
- Follow the requirements of the support equipment procedures and applicable regulatory directives.
- Ensure that broken and/or defective support equipment is taken out of service and repaired or replaced before use and reported to the supervisor.
- Be aware of potential hazards associated with support equipment.
- Inspect all support equipment before, during, and after operating in accordance with all applicable policies and directives.

Performance Development

- Determine required equipment training and frequencies, maintain up-to-date support equipment lesson plans and programs to ensure compliance with DOE, state, local and federal requirements.

Site Directors

- Take overall responsibility for ensuring that site organizations comply with this program.

Site Human Capital

- Coordinate with the necessary organizations to ensure employees identified as support equipment operators are scheduled for required physicals in accordance with ASME B30.5a.

S&H Director

- Ensure the requirements of this standard practice remain current with applicable regulatory directives.

ES&H Manager, Site Safety Specialists/Associates and Representatives

- Oversee site personnel to ensure safety practices are followed during the use of support equipment.

- Perform inspections as needed.

Subcontractors

- Ensure support equipment is operated in accordance with this section.

33. OFFICE SAFETY

PURPOSE

This section establishes the requirements for protecting workers from hazards in the office environment.

SCOPE

This section includes the following major sections:

- General Requirements
- Hazard Communication
- Hazard Recognition
- Personal Protective Equipment
- Signs and Posted Rules
- Housekeeping
- Clear Pathways
- Fire Prevention and Emergency Procedures
- Tools and Equipment
- Ergonomics
- Electrical
- Slips, Trips, and Falls
- Indoor Air Quality
- Elmwood Complex and GSA Warehouse

APPLICATION

This section applies to work activities and employees under the control of the M&O and its subcontractors.

33.1. GENERAL REQUIREMENTS

This section is meant to be used as a tool for quick reference for office safety and is not meant to replace or supersede other standards set forth in the M&O Accident Prevention Manual (APM).

Listed below are some general guidelines that should be applied in regards to office safety.

- Safety is a primary responsibility of employment.
- Cell phone use is prohibited while operating vehicles on the SPR, on company business, or in the SPR parking lots while driving.
- Tell your supervisor if there is some reason you cannot perform your usual tasks safely.
- Use the standard rules of the road in our parking-lot areas. Be cautious of pedestrian traffic. Drive at a reasonable speed; no more than 10 mph.
- Use appropriate walk areas and crosswalks. Walk, don't run.
- Prohibited items are not allowed at the facility. Immediately report all unsafe conditions and equipment to your supervisor. Ensure others are aware of the hazard.

- If there is a change in duties, be sure that you have a clear understanding of the work to be performed. You have the right to stop work if you doubt that you can perform it safely.
- Managers, supervisors, and all personnel are responsible and accountable for the workplace health and safety of those under their direction, including subcontractors and visitors.
- Don't lean back in your chair. Keep all legs on the floor. Take time to reach out and hold on to the chair as you sit down. Be sure that the chair is beneath you as you sit. If a chair is not operating correctly, stop using it and report it to the New Orleans Industrial Hygiene staff.
- Keep the floor and walkway clear of electrical, telephone and computer cables, boxes, etc. They are tripping hazards.
- Close one drawer in a filing cabinet before opening another. This prevents the file cabinet from tipping.
- Close the drawer in your desk before getting up and close file drawers before walking away from the file cabinet. This prevents people from walking into an open file drawer or desk drawer.
- Store supplies inside cabinets, not on top of them. Store heavy items in lower drawers or on low shelves.
- Look where you are going. Don't block your view by carrying loads higher than eye level. “Eyes on path.”
- Keep your eyes on task. Don't read, or use cell phones while walking.
- Walk, do not run.
- Don't climb on chairs, desks or boxes. Use an approved step ladder.
- When in doubt, refer to the APM or your supervisor for further guidance.

33.2. HAZARD COMMUNICATION

All personnel should consult with their supervisor or safety representatives to locate appropriate Safety Data Sheets (SDS) regarding types of liquids or chemicals that may be used in their environment, as well as safe use and storage. SDSs are located at each site including New Orleans at Right-to-Know Stations and in the Technical Document Centers.

For further information regarding Hazard Communication, refer to the Hazard Communications section of the APM.

33.3. HAZARD RECOGNITION

All jobs have associated risks.

If at any time conditions change that may potentially pose a risk or hazard, stop what you are doing and alert your supervisor or designee before proceeding. Proceed only if you can do so safely.

Ensure that you are aware of all hazards that may be relevant to your work surroundings.

Consult with appropriate sections of the APM for more information regarding hazards.

33.4. PERSONAL PROTECTIVE EQUIPMENT (PPE)

Use of PPE may be required for specific duties in the office environment. This may include computer equipment to prevent ergonomic injury, like a neutral hand position mouse or a split keyboard.

All personnel should reference the APM or supervisor for specific requirements and types of PPE that may be needed. If you are required to go to the field for any reason, ensure that appropriate PPE will be available on site for use or is brought with you. Typically, the site will be able to supply a hard hat, but you should bring protective shoes, eyewear, and clothing.

NOTE
Flame Resistant Clothing (FRC) is required in some site areas. Consult Site Operations to identify areas where FRC is required. FRC coveralls are available at the sites, but purchase is recommended for employees who will be visiting the sites on a regular basis.

33.5. SIGNS AND POSTED RULES

Read and be aware of posted signs and rules regarding safety. Consult with your supervisor to locate where the following signs are posted:

- Required federal, state and local agency regulations for OSHA and workers compensation.
- Locations of first-aid support, materials and instructions for reporting work-related injuries and illnesses
- Emergency telephone numbers and evacuation routes
- Updates on our safety policies and procedures.

33.6. HOUSEKEEPING

Housekeeping is an important component of an office safety program. A general overview is listed below. Additional information can be found in the General Housekeeping section of the APM:

- Tools and equipment must be secured and/or stored to prevent tripping or falling. At the end of each shift or task, ensure proper storage and clean up.
- Trash should not be permitted to accumulate in anyone's work area. Place all trash in properly designated and approved containers. Check with your supervisor to recycle scrap materials, paper, trash, and used equipment.
- Clean up spills promptly.
- Keep floors clear of tools, papers, binders, etc.
- Keep walkways clear for access to all work areas.
- Ensure materials are stored in accordance to the SDS or other procedures
- Keep cords lying flat and clear of doorways and walkways. Cover extension cords or other cords that could be a tripping hazard with duct tape or protector.

- Keep desk and file cabinet drawers closed unless they are in use.
- Keep all stairways and passageways clear of material that may result in tripping hazards. Do not store material under stairways.
- Keep kitchen areas clean. Do not leave unused food in refrigerators.
- Switch off electrical equipment when not in use, unless otherwise directed.
- Notify supervision about damaged equipment in order for it to be repaired or replaced.
- Keep doorways clear of obstructions.

33.7. CLEAR PATHWAYS

In order to ensure a safer workplace, all areas need to be kept clear of obstructions that may pose a hazard. Some items to remember are:

- Safe and sufficient clearances must be allowed for aisles and fire exit paths.
- Ensure all doorways are clear of obstruction
- Corridors must be kept free of materials.
- If unable to mitigate a spill, notify a supervisor when a spill has occurred in a walkway.
- Exterior walkways must be well lit.
- Carpeting, rugs and floor coverings must be maintained flat and secure to avoid tripping hazards.
- Open doors carefully in case someone is on the other side.

33.8. FIRE PREVENTION AND EMERGENCY PROCEDURES

All personnel should know what to do during a fire, fire drill, or other evacuation procedure. Consult with a supervisor regarding specific roles and responsibilities regarding fire prevention or with Emergency Management pertaining to specific fire prevention and emergency procedures. At a minimum, all personnel should:

- Be aware of emergency evacuation routes and procedures.
- Know where the nearest fire alarm box is located and how to operate it.
- Know where the nearest fire extinguisher is located, what type it is, and operate only if properly trained.
- Return spent fire extinguishers immediately after use for servicing.
- Do not block access to fire extinguishers.
- Know where exits are located and notify Fire Protection if exit signs are not properly lit.
- Keep hallways and stairways free of materials.
- Use stairs, not elevators during emergencies.
- Be aware of the posted evacuation plan and of any roles or responsibilities.

- Know where to gather and to whom to report during an evacuation.
- Know who to contact for emergency notification procedures. Dial 1-800-258-0547 for weather and work status.

33.9. TOOLS AND EQUIPMENT

Even though in most cases office personnel do not use heavy equipment or other power tools, hazards exist when using office tools as well. Listed below are a few general guidelines personnel should follow regarding office tools and equipment. Consult the tools and equipment section of the APM regarding concerns related to this subject. Some office tasks may require a job hazard analysis. Refer to the Job Hazard Analysis section for tasks which could involve hazards.

- Tools should only be used in accordance with manufacturer specifications.
- All paper cutters must have proper guards in place before use.
- File cabinets should be properly secured with all drawers kept closed when not in use.
- Secure loose carpeting, flooring and temporary lines (electrical, phone and computer).
- Keep fingers, body parts, and clothing away from moving and sharp equipment or objects or other pinch points.

33.10. ERGONOMICS

For information on Ergonomics, consult APM Section 18.

In New Orleans ergonomics is an issue because of the office environments and the use of computers. Employees may spend many hours at their work station using their keyboards and mouse, which can lead to ergonomic related injuries. New Orleans Industrial Hygienists will assess employees' work areas at intervals of 3-5 years and whenever requested to ensure that all ergonomic issues are addressed. Whenever a significant change in the workstation has occurred a new assessment may be required (such as, an employee changes offices, configuration change of furniture or the employee has new physical demands). New employees will have their work station assessed to ensure that it is ergonomically safe.

In the Warehouse, ergonomic hazards can exist when lifting, pushing, pulling, and carrying materials. These hazards are also assessed by the Industrial Hygiene staff and hazard controls put in place, such as the two-person lift, carts to carry equipment, hand trucks, storage arrangements that consider weight and frequency of use, etc. For additional information on ergonomics see Section 18.

Below are a few tips to help ensure proper ergonomics:

- Take regular short breaks from repetitive tasks.
- Change your body position frequently.
- If possible, plan each task so you can bring the work to you instead of moving your body to the work
- Ensure that computer monitors are in a position that is comfortable.
- Place any heavy materials in middle or lower drawers or shelves.

- Practice proper lifting:
- Consider the weight first by inspecting the load.
- Plan where the load is going before lifting, ensuring the path is clear.
- Hold the load close to your body, bend your knees, and lift with your legs, not with your back.
- Avoid jerking or twisting while carrying.

NOTE
For a workstation evaluation contact the Industrial Hygiene staff in New Orleans.

33.11. ELECTRICAL

Most electrical hazards associated with office personnel are a result of improper use of cords, or overloading circuits because too many cords are plugged in to one device. Below are a few items to consider regarding electrical hazards:

- Ensure only trained, designated, or qualified electricians work on or near potentially energized electrical equipment.
- Ensure all cover plates and panel doors are closed and secured.
- Ensure that all receptacles and outlets are covered and guarded.
- Inspect electrical cords and appliances frequently and replace them as needed.
- Do not overload power strips or outlets. Do not power large electrical loads (printers, microwaves, copiers, etc.) by plugging them into electrical outlets in the cubicles. Use a wall receptacle.
- If an electrical cord must be placed in an area where people walk, properly cover and mark it.

33.12. SLIPS, TRIPS, AND FALLS

The majority of injuries occurring in the office are a result of slips, trips, and falls. All personnel should be aware of their surroundings and notify their supervisor of any potential hazards. Some things to remember are:

- Watch for slippery surfaces. Spilled drinks or water from umbrellas are typical hazards and need to be cleaned up/or identified immediately.
- Plastic bags for wet umbrellas are provided at the entries of the 850 and 900 buildings.
- Keep walkways free of electrical cords, computer cords, phone cords, cables and debris.
- Report loose or damaged carpeting.
- Use handrails when ascending/descending stairs.
- Post warning signs and provide equipment for small spill clean-ups.
- Use caution when walking on floor mats near entrance doors, elevators, and kitchen areas.
- Report walkways that are not well lit to Facilities Management.

- Walk, don't run.
- Hold onto handrails when using stairways. Do not run on the stairs. In New Orleans, use elevators when carrying boxes if available.

33.13. INDOOR AIR QUALITY

- Report air quality problems to New Orleans Industrial Hygienists.
- For mold issues or concerns contact New Orleans Industrial Hygienists.

33.14. ELMWOOD COMPLEX and GSA WAREHOUSE NEW ORLEANS

The New Orleans site is the administrative offices for the M&O and the Department of the Energy. The hazards at this site are related primarily to hazards related to an office environment. The GSA Warehouse is a typical non-air conditioned warehouse used for receiving, dispatching, and storing equipment and supplies. This sub-section identifies the safety and health requirements applicable to personnel or facilities in the New Orleans DOE SPR Elmwood Complex and GSE Warehouse.

33.14.1. Heat Stress Management Program

In New Orleans most work is performed in office environments which make heat stress less of a factor. However, New Orleans employees need to be aware of the hazards of heat stress if going to a site and any other time they are working in high heat. Section 17 of the Accident Prevention Manual discusses the M&O heat stress program further. The GSA Warehouse is not climate controlled. The New Orleans Safety and Health safety professionals monitor GSA warehouse employees to address heat stress issues. Fans, light weight clothing (including shorts), and hydration are used to control heat stress in the warehouse.

33.14.2. Hazard Communication Program

The only covered chemicals used or stored in New Orleans are in the Graphics Department and the Warehouse. Material Safety Data Sheets are kept in these areas for all of the hazardous chemicals used or stored. All employees that use hazardous chemicals receive hazard communication training.

33.14.3. Industrial Hygiene Program

Since there is limited storage of hazardous chemicals in New Orleans the requirement for monitoring is limited. Most of the Industrial hygiene issues have to do with office safety and health issues such air quality and ergonomic issues. These issues are addressed when brought to the attention of the New Orleans Safety and Health Department.

33.14.4. Safe Work Permit

Safe work permits are not issued in New Orleans because most physical (buildings, repairs, and cleaning) work is performed by the facility owner and his subcontractors. As there is no work order system in New Orleans, safety related issues are reported to the Help Desk and entered into Support Magic, an electronic system similar to the work order system at the sites. Safety items are usually addressed quickly and those that go past 30 days are entered into the Action Tracking System.

33.14.5. Training Requirements

Employees that visit the sites from New Orleans must check with Performance Development and/or Site ES&H to determine what training is needed for the work to be done. There are training requirements that must be met before wearing Personal Protective Equipment, entering confined spaces, excavations or using other safety equipment. Employees are made aware of M&O safety requirements during new hire orientation.

34. PAINTING

PURPOSE

This section establishes the requirements for safe operations of painting pertaining to all personnel conducting work inside of the SPR.

SCOPE

This section includes the following major sections:

- General
- Hazards
- Safety
- Health
- Storage and Handling
- Removal of Lead-based Paint
- Responsibilities

APPLICATION

This section applies to work activities and employees under the control of the M&O and its subcontractors.

34.1. GENERAL

Painters are exposed to a variety of chemicals in the paint and solvents they use. Paint is a combination of chemicals producing a film that flows, dries and sets in a specific manner to create a durable surface. Some of these chemicals are very toxic and can result in health problems if inhaled or absorbed through the skin. Many paints or solvents have the potential to catch fire, explode, or react violently if mixed with other chemicals. Working with paints can be done safely if the hazards associated with the painting process are kept in mind, and if precautions are taken to protect individuals from exposure to harm.

34.2. HAZARDS

Painting and paint removal present hazards requiring effective controls. These hazards may include:

- Exposure to toxic materials and flammable or explosive mists, particulates, and vapors.
- Inhalation of mists and vapors from nearly all paints, solvents, thinners, cleaning chemicals, strippers, and epoxies can be injurious depending upon the agent's toxic characteristics and the amount and method of exposure.
- Physical injury to the skin and eyes, or
- Absorption through the skin.

Potential physical and health hazards can be effectively controlled by appropriate work procedures, controls, facility design, protective clothing, and equipment.

34.3. SAFETY

34.3.1. Pressure Equipment

Pressure equipment used in painting operations is hazardous because of the compressed air component. Supervisor shall assure that spray painting equipment is in serviceable condition.

- A pressure regulator valve shall be installed in the air line between the compressor and painting equipment on all air-type spraying equipment.
- A pressure relief valve and a pressure gauge shall be installed between the pressure regulator and pressurized paint containers and/or spray guns.
- Pressure relief valves shall be set to open at pressures not more than 10 pounds above the required working pressure.

34.3.2. Other Equipment

Painter's ladders, scaffolds, and other equipment shall be inspected prior to use to be certain they are in safe condition and meet all requirements set forth in the APM.

34.3.3. Paint Mixing

- Paint mixing shall be done in designated, adequately ventilated areas.
- All sources of ignition shall be prohibited in mixing areas.
- All electrical fixtures or equipment in or within 20 feet of designated paint preparation areas shall meet the requirements of the National Electrical Code (NFPA #70) for Class I Division 2 locations.
- Paint mixing shall be done in an area which has a barrier between mixed paints and ground.

34.4. HEALTH

34.4.1. Personal Exposures

- There is a wide variety of organic solvents in paints. All organic solvents have some effect on the central nervous system and the skin.
- The principal modes of personnel exposures are inhalation of vapors and skin contact and absorption.
- Personnel engaged in painting operations should review the Safety Data Sheets (SDS) in order to acquaint themselves with the properties and hazards of the solvents that are used. Skin contact with solvents may cause dermatitis, ranging in severity from a simple irritation to actual damage to the skin.

34.4.2. Protective Equipment

- Personnel engaged in painting and paint removal shall wear protective clothing, respiratory devices if required and appropriate face, eye, and hand protection as specified in the SDS.
- Eye or face protection is required during scraping or paint preparation (abrasive techniques).

- Clothing shall be changed, as needed, to minimize body contamination.
- Refer to the PPE section of this manual for additional guidance on PPE requirements.

NOTE
If you have questions about the correct PPE to wear when performing any kind of painting, please contact NOLA IH.

34.4.3. Respiratory Protection

Refer to APM Section 39 for respiratory requirements.

34.4.4. Personal Hygiene

- The hands and face shall be kept clean, clothes shall be changed when contaminated and hands and soiled objects shall be kept out of the mouth.
- Personnel shall wash their hands prior to smoking or consuming food.

34.5. STORAGE AND HANDLING

Bulk storage of these liquids shall be in a separate building detached from other buildings or in rooms specifically designed and constructed to meet flammable storage room requirements.

Whenever flammable or combustible liquids are transferred from one container to another, both containers shall be effectively bonded and grounded. This practice prevents electrical discharge from the accumulation of static charge because of the transfer process

34.6. REMOVAL OF LEAD-BASED PAINT

Due to the potential exposure of personnel to lead released during abatement of lead-based paint, proposed EPA regulatory authority over lead abatement activities in federal buildings, and existing regulatory mandates governing the disposal of hazardous wastes, the following procedures shall be adopted in order to reduce the possibility of human exposure and contamination of the environment.

34.6.1. Identification of Lead-Based Paints

The presence of lead on existing painted surfaces shall be determined by sequential use of the following methods:

- Knowledge by painters, maintenance personnel, or contractors of a specific paint that has been applied where the manufacturer's Safety Data Sheet documents there is greater than 1% lead in the paint.
- All "red or rust-colored", and gray primer coats are assumed to contain lead and should be tested.
- Presence of lead as determined by taking a sample and having it analyzed.
- Analysis by a contracted analytical laboratory certified by the AIHA Environmental Lead Accreditation Program.

34.6.2. Training of Personnel

OSHA requirements govern activities associated with lead exposure.

- OSHA hazard communication training specific to lead and any hazardous materials used during the paint removal process.
- Respiratory protection training and fit testing.
- Maintenance supervisors responsible for causing the removal of lead-based paints should attend an accredited lead abatement course for supervisors.
- Hazardous waste training pursuant to 1910.120q.

34.6.4. Work Practices

The requirements below are based upon worst case scenario and with the caustic (2- and 3-part paint system) paint used on the pipelines. PPE exemptions to the below requirements may be authorized if painting is conducted outside with a brush/roller and non-caustic paint. This exemption may eliminate the need for a respirator in most cases; however, gloves shall still be worn to prevent paint from getting on hands.

- All personnel shall wear respiratory protection (half-mask, dual cartridge with HEPA filters, as a minimum) and full-body disposable clothing. Personnel shall have a current medical clearance (within last 365 days) to wear a respirator and have been fit-tested with their respirator.
- Personnel shall also be provided and instructed to wear face shield or vented goggles, gloves, head coverings, and disposable shoe coverlets.
- Personnel are not permitted to eat or drink in or near the work area.
- Personnel shall be instructed to wash their face and hands before eating, drinking or smoking and before leaving the work area for breaks or lunch.
- Contractors are responsible for meeting OSHA personnel air monitoring, personal protective equipment, and medical surveillance requirements for lead exposures (29 CFR 1910.1025, or 29 CFR 1926.62, as appropriate).
- New Orleans Industrial Hygiene will review the scopes of work for removing paints from piping.

34.7. RESPONSIBILITIES

S&H Director

- Ensure the requirements of this standard practice remain current with applicable regulatory directives.

Site Safety Specialists

- Oversee site personnel to ensure the painting procedures are followed.
- Ensure proper PPE is utilized by employees during painting operations.
- Verify all respirator requirements are compliant with applicable standards if needed.

- Perform inspections as needed.
- If monitoring is performed provide copies of the summary statement of results to the individuals making up the SEG. Explain the results and ask them to sign indicating that they understand the results. Maintain these records at the site

SMTR/Supervisor

- Ensure that elements of this policy are being followed by conducting inspections, reviews, spot-checks, and other follow-up actions.
- Conduct or arrange for inspections in their area of responsibility.
- Identify the need for monitoring during pre-job briefing.
- Request assistance from an industrial hygienist if monitoring is needed.
- Verify with an industrial hygienist that the respirators to be used are correct.
- If supplied air is used, verify that the respirator system (mask, hose, and couplings) is NIOSH approved.
- Initiate Safe Work Permit for painting if needed.
- Verify all respirator requirements are compliant with applicable standards if needed.
- Initiate corrective action for deficient items noted during inspections.
- Notify the industrial hygienist and M&O S&H in New Orleans if an over exposure to harmful agents occurs.

New Orleans Industrial Hygiene/Contractor Industrial Hygienist

- Upon request from SMTR, determine if monitoring is needed for painting procedures.
- Conduct monitoring procedures if needed.
- Specify the type of respirator required.

Employees/Painting Contractors

- Follow the requirements of this painting procedure.
- Uses all prescribed personal protective equipment and follow the recommended control procedures. Not using PPE that is assigned and provided is a violation of company procedure and is subject to disciplinary action.
- Notify the SMTR/supervisor immediately about potential exposures to harmful agents when working with paint that may cause illness or injury.

35. PERMIT PROCESSES AND PROCEDURES

PURPOSE

This section provides information on the purposes and procedures for obtaining Safe Work and Hot Work Permits, as well as directions for filling out permit applications (see tables at the end of section).

SCOPE

This section includes the following major sections:

- Safe Work Permits
- Hot Work Permits
- Responsibilities
- Tables

APPLICATION

This section applies to work activities and employees under the control of the M&O and its subcontractors.

35.1. SAFE WORK PERMITS

35.1.1. Purpose

The purpose of a Safe Work Permit (SWP) is to create and sustain a working environment as free of hazards as possible.

By issuing the permit, M&O Operations validates that they have made the work area as safe as possible and authorized the work to be performed based on the description of work.

By accepting the permit, employees signing pre-job briefing and qualification sheet, they are committing to performing the work in accordance with the permit requirements.

35.1.2. Who is Required to Obtain a Safe Work Permit

Anyone performing the work activities listed in Table 35.2 on an SPR site or on an SPR right-of-way is required to obtain a SWP.

If work is performed at an offsite facility (e.g., Sun Terminal), a SWP may be required for both the M&O plus the offsite facility; therefore, check with Operations Manager or Designee to ensure compliance.

NOTE
If working at another's offsite facility, their locks would be first on and last off as they will be responsible for lock out.

Other companies or subcontractors are required to follow the SPR safe work permit procedure. They may also be required to receive a permit from their organization.

35.1.3. What Type of Activity Does NOT Require a Safe Work Permit

An SWP is not required for normal site operations of process equipment when operated within design parameters.

NOTE
Examples of the Safe Work Permit (SWP), the SWP Update/Additional Reading form, and Safe Work Permit Form Instructions are located in the appendix of this APM.

NOTE
Fueling a vehicle at a site's gas pumps does not require a hot work permit. During fueling, ensure that the vehicle is turned off and do not use a cell phone.

35.2. HOT WORK PERMITS

35.2.1. Introduction

This section specifies minimum requirements for performing hot work in any area or on any equipment that may contain combustible or flammable material.

A Hot Work Permit (HWP) is designed to control operations that produce sparks or that require the use of open flames, where flammable gases or vapors may accumulate, or where operations are conducted in areas with combustible materials.

For the purpose of this section and for the criteria used when issuing an HWP, hot work includes, but is not limited to, the following tasks:

- Any work performed in areas that may contain combustible or flammable material that involves:
  - Burning, welding, brazing, or soldering
  - Any type of open flame
  - Use of electrically powered equipment or motor starters (not designed for use in the designated classified area) and other potential ignition sources in locations where flammable gases or vapors are or may be present in quantities sufficient to produce explosive or ignitable mixtures
  - Locations that are hazardous because of the presence of combustible dust
  - Spark, flame, or high-temperature-producing apparatus, such as tar kettles for roofing repairs
- Vehicle traffic (for example, trucks, forklifts, and condor lifts) in areas with electrical classifications of Class 1, Division 1 or 2 areas containing flammable materials.

35.2.2. Procedures

An HWP is required for all work that produce sparks or that require the use of open flames or introduces another ignition source, where flammable gases or vapors may accumulate, or where

operations are conducted in areas with combustible materials. Observe the following procedures when an HWP is issued.

- A site plot plan/map identifying the Class 1 areas shall be posted at the Safe Work Permit office.

NOTE
If working at another facility the facility owner/operator must delineate the Class 1 areas.

- All items used in Class I areas shall be approved for use in the area classification. An HWP and testing will be performed when items not approved for use in the area classification are used in Class I areas.
- All hot work shall be done outside Class I areas if possible. If this is not possible, controls shall be in place and verified.
- Continuous or periodic air monitoring may be maintained during exposure. The area where the task is being performed will be assessed to determine whether continuous or periodic monitoring is needed.
- A full-time fire watch, knowledgeable of his or her responsibilities, will be present when welding or using torch. The operator of the equipment may act as the fire watch if trained and capable of observing the operation.
- All unnecessary equipment shall be moved out of the classified areas during hot work.
- Before work is done, the employee, the employee's supervisor, and the Operations manager (or designee) will review the work to be done and the required hazard controls.
- Alternate/additional controls, if required, shall be documented on the HWP.
- An employee qualified to shut down the equipment being used for hot work shall be in the area of the hot work. The employee may be the same employee performing the work. The employee shall be able to mitigate the consequences of the hot work activity by shutting down the particular hot work and making proper notifications.
- If work conditions change while hot work is being performed, monitoring (including gas monitoring) and all work activities will be stopped and mitigation actions taken to alleviate unsatisfactory conditions.
- The HWP shall be reviewed and evaluated by the supervisor/Technical Representative (TR) and Operations manager/designee to make sure that conditions have been adequately mitigated to allow work to safely resume.

35.2.3. Hot Work on Wellheads

- A qualified person or supervisor knowledgeable of well control procedures shall be present when the wellhead is open and depressurized.
- If more than one employee or employer will be working in the Class I area when hot work is being performed on wellheads, emergency shutdown procedures shall address their interaction and responsibilities.
- Procedures shall require a person or persons be appointed for shutdown responsibilities, and procedures shall be reviewed by all participants before work is started.

- This will ensure that employees understand their roles when responding to an upset.
- The review will also address first response, warning systems, and evacuation routes.
- This review shall be conducted by the supervisor/technical representative (TR) responsible for the work and documented.

35.2.4. Monitoring Procedures

Ensure lower explosive limit (LEL), oxygen (O2), carbon monoxide (CO), and hydrogen sulfide (H_2S) atmospheric gas monitoring is conducted and recorded based on the following:

- For HWPs on hydrocarbon process lines and flammable fuel lines; entries into permit required confined spaces (PRCS) for welding, burning, cutting, and brazing; open wellhead work; and work in Class I Division 1 or 2 areas, perform any required gas test within 30 minutes of beginning work.
  - For all other HWPs, perform any required gas test within 1 hour of beginning work.
  - Unless a formal deviation request has been approved by New Orleans Operations and New Orleans Safety, permitted work will not proceed until the LEL is zero.
- If H2S readings exceed 10 parts per million (ppm), work will not continue until written approval to exceed 10 ppm has been given by New Orleans Operations and New Orleans Safety.
- In general, work will not be allowed in areas where oxygen levels are less than 19.5 percent or greater than 22 percent without appropriate respiratory equipment.
  - These areas should be considered confined spaces, and entry, including allowable oxygen levels, will be governed by an approved confined spaces permit.
- The presence of CO must be checked when work involves the use of internal combustion equipment in low-lying areas, confined spaces, excavations, or unvented areas.
  - CO levels will not exceed 35 ppm unless the work is governed by an approved safety plan requiring the use of engineering controls or respiratory equipment.

Equipment used for air monitoring shall be calibrated, field tested, and operated according to the manufacturer's requirements. Employees shall check the calibration date on the equipment to ensure it complies with the manufacturer's requirements.

35.2.5. Hot Tap Procedures

All procedures for welding of the saddle, metal type, pre-weld testing, minimum flow and maximum pressure all are covered in the Corrective Maintenance Procedure (CMP) that is produced by engineering.

WARNING

The following lines or equipment must not be hot tapped under any circumstances:

1. Those operating below atmospheric pressure.
2. Those used for acetylene, chlorine, hydrogen, oxygen, peroxides, or hydrochloric or sulfuric acid.
3. Air lines.

ASME-code vessels may be hot tapped only if formal written approval has been obtained from Engineering.

All pumping into or out of tanks must be stopped at least eight hours before hot tapping.

- Hot taps must not be made above the liquid level in the tank; a minimum of three feet of liquid must be above the hot tap location.

Before the hot tap nozzle is welded into place, nondestructive testing must be performed to ensure that the metal in the area to be welded is at least 1/4-inch thick to prevent burn-through.

- The exact area at which the weld can be safely performed must be marked. Before beginning, the welder must demonstrate that the welding apparatus is set with reverse [electrode (+)] polarity.
- The welder must then be informed of the minimum wall thickness in the area of the weld.

Hot tapping requires close coordination among the Operations manager or designee, the personnel responsible for the job, and the personnel performing the work.

35.3. RESPONSIBILITIES

Site Director

- Approve “Technically Competent Individuals” authorized to sign SWP.
- Approve Initiators authorized to prepare and sign the SWP.
- NOTE: Documented lists are to be maintained in SWP Office.

Operations Manager (or Designee)

- Complete Safe Work Permit Training (M&O Lesson Plan ESSH 1700). (NOTE: Documented on TAAR.)
- Review the description of work activity before authorizing permit.
- Ensure process systems are prepared for work activities.
- Determine whether lockout is required or if fire and/or security system(s) must be disarmed in areas covered by the SWP.
- Ensure Lower Explosive Limit (LEL), Oxygen (O2), and Hydrogen Sulfide (H2S) atmospheric gas monitoring is performed prior to work being initiated and results recorded in Section II Block 14. (Use SWP Update / Additional Reading Form, if necessary.) (NOTE: APM Sections 10 & 35. This testing is to ensure area is safe for work activities and not intended for exposure monitoring purposes.)
- Sign and issue the SWP to the “Craftsman Assigned” for posting at the primary work location. Signature signifies systems and equipment are prepared and available to perform task safely.
- When appropriate, review and sign SWP Update / Additional Reading Form for each day a permit is extended. (NOTE: Initiator must sign also.)
- Conduct inspection of the site to verify permit accuracy. Initial and date SWP in Section IV upon completion of satisfactory inspection.

- Do not allow issuance of an additional SWP for a task until the Initiator has returned the original copy of the “original” SWP.
- Upon completion of work, ensure operational systems and equipment are restored to operational readiness and all safety barriers / requirements put in place by Operations have been removed in accordance with applicable procedures. NOTE: If all SWP requirements are not completed, notify the Initiator to complete the task(s).
- Maintain copies of SWPs with appropriate attachments according to the M&O Records Inventory and Disposition Schedule (RIDS). (NOTE: SWPs including confined space entry shall be kept for 30 years.)

SWP Initiator, Initiator’s Supervisor (or Designee)

- Complete Safe Work Permit Training (M&O Lesson Plan ESSH 1700). (NOTE: Documented on TAAR.)
- Prepare the SWP in accordance with the guidelines in this procedure. If conditions change during performance of work, notify Control Room; permit shall be cancelled and a new permit issued.
- Attach all required documents. (Refer to Table 35-1.)
- Select and check all applicable boxes in Section II to identify the type(s) of work being authorized. (NOTE: May require more than one type of work.)
- If the task requires use of a Buddy System or Heat Stress Program, indicate this in Section II Box 13.
- Ensure the Supervisor of all employees affected by the SWP has completed the JHA, PPE HA, and Training portions and signed Section III, Block 15 of the SWP. Once complete, submit the SWP to Operations for approval with all applicable documents attached.
- Review the SWP and all applicable documents with the personnel assigned to perform the work prior to the start of the work. (See Table on SWP Attachment Requirements.)
- Designate an assigned craftsman in SWP Section I Block 8 “Craftsman Assigned”.
- Ensure general housekeeping is maintained during work activities.
- Ensure initial gas monitoring has been performed as required, results recorded, and person who performed the test initials the SWP Section II Box 14. If gas testing is required in >3 areas, use the SWP Update/Additional Reading Form.
- Whenever a fire watch is required, ensure it is maintained for 30 minutes after work is completed. (NOTE: See APM Section 46.)
- Ensure an SWP involving potential exposure to energy sources of 480 volts or more is signed by a designated “Technically Competent Individual” (TCI). (NOTE: If a TCI is not available, Site Safety Specialist may sign if approved by the Site Director.)
- When SWP work is completed, ensure all safety barriers have been removed in accordance with applicable procedures. (Example: lockout/tagout, excavation barriers, etc.)
- Prior to checking Section III Block 19 “Job Complete”, ensure area is restored to normal and equipment is ready for return to service.
- Sign, date, and enter time in Section III Block 18 PERMIT CLOSED.

- Return the “original” SWP to Operations to be closed. NOTE: If original is lost, close out the Operations copy for the record. If damaged or otherwise illegible, initiate a new SWP.
- SPECIAL CIRCUMSTANCE: Work Incomplete at End of Day
- If work is incomplete at end of day and plans are to continue work AND conditions remain unchanged, initiate and submit SWP Update / Additional Reading Form at the end of the day.
- The SWP Update / Additional Reading Form must be prepared for each day the permit is extended. Attach copy of each day’s Update Form to each copy of the original SWP. NOTE: Update is allowed for no longer than a period of 15 calendar days.
- On day work is to resume, verify all safety barriers / requirements for work are still in place and work conditions are unchanged.
- Sign appropriate blocks of the SWP Update / Additional Reading Form. (NOTE: Ensure Operations Manager or Designee also signs.) Note other activities affecting the task on the SWP update form as they differ each day/
- SPECIAL CIRCUMSTANCE: Work Performed at Another Facility
- SWP may be required for both M&O plus the other facility. Check with the Operations Manager or Designee to ensure compliance.

Site Safety Specialist

- Inspect any site area or equipment upon request and provide consultation on safety matters.
- Inspect SWPs daily for excavation, confined space, electrical high voltage ongoing tasks because of the potentially high risk level of this type of work.
- Monitor or conduct gas tests when requested.
- Require additional tests at any time during work to ensure that affected area, equipment, and material are free from hazards to personnel.
- Conduct special testing that may be required in unique or unusual situations as required by the SWP.
- Conduct weekly review of selected SWPs (to include ALL contractor / subcontractor SWPs) and perform onsite inspections. Initial and date SWP Section IV at completion of an inspection.
- For tasks involving potential exposure to energy sources of 480 volts or more, if a Technically Competent Individual is not available, review the SWP and verify that hazards have been controlled or mitigated. Sign SWP Section III, Block 17. (NOTE: Only if approved to do so by Site Director.)

All Affected Personnel Performing Work on the SPR, On an SPR Right-of-Way, or Offsite (i.e., Sun Terminal), including contractors and subcontractors

- Review, understand, and comply with the SWP, all attachments, and the JHA and/or PPE Hazard Assessment associated with the task.
- Perform work ONLY for which training has been provided.
- When designated as “Craftsman Assigned”, ensure the SWP is maintained at the work site. Return to the “SWP Initiator” when work conditions change, at end of shift, or when work is complete.

- Conduct gas testing when required ONLY IF TRAINED TO DO SO.
- Perform housekeeping of work area.
- Inform personnel entering the work area of the hazards and required controls.
- SPECIAL CIRCUMSTANCE: Work Performed at Another Facility.
- If work is performed at an offsite facility (i.e., Sun Terminal), an SWP may be required for both M&O plus the offsite facility. Check with the Operations Manager or Designee to ensure compliance.

SMTRs, Technical Representative (TR) for Contractors/ Subcontractors

- Complete Safe Work Permit Training (M&O Lesson Plan ESSH 1700). (NOTE: Documented on a TAAR.)
- Review and concur with the SWP and initial Block 2, Section I block of the SWP. Deliver the permit to Operations for approval.
- Ensure the required hazard analysis and activity hazard analysis has been developed for the task. (NOTE: TR may initiate SWPs and assume responsibilities for “SWP Initiator” above.)
- Ensure a PPE Hazard Assessment is completed by contractors performing work under the Basic Safety contract boilerplate requirements for onsite services. (NOTE: Required for major service and construction contracts only.)
- Coordinate contractor activities with Operations and any other personnel who may be affected by the permitted work or within the work area.
- Ensure that contractor employees have been briefed on the SWP conditions, and understand and enforce the SWP requirements.

Contractor Employees

- Initiate SWP ONLY if trained to do so. (NOTE: SWP Training M&O Lesson Plan ESSH 1700. Document on a TAAR.)
- Review, understand, and comply with the SWP, all attachments, and the JHA and/or PPE Hazard Assessment and/or Activity Hazard Analysis associated with the task.
- When designated as “Craftsman Assigned”, ensure the SWP is maintained at the work site. Return to the “SWP Initiator” when work conditions change, at end of shift, or when work is complete.
- Coordinate with M&O Area Operator or Control Room Operator prior to start of work. Update changes in equipment status and completion of work in an operational area.
- Perform housekeeping of work area.
- Conduct gas testing when required ONLY IF TRAINED TO DO SO.

M&O Area Operator

- Inspect the area protected by the SWP to ensure that all potentially hazardous equipment and material is properly identified and isolated prior to start of work.
- Conduct gas testing when required ONLY IF TRAINED TO DO SO.

- Inspect the area protected by the SWP periodically to ensure that work is being performed safely and in accordance with the SWP. Initial and date SWP Section IV.
- Upon completion of work, return equipment to operation.
- Upon completion of work, inspect the work area to verify its safety and housekeeping.

Personnel Entering Areas Protected by SWP

- Before entering a-SWP area, consult with employees performing the work to ensure compliance with established hazard controls.

Personnel Performing Walk-through Inspection of Areas Protected by an SWP

- Ensure work is being performed safely and in accordance with the SWP. Initial and date SWP Section IV Box 21.
- See Walk-through Inspection definition in Glossary for more information.

Technically Competent Individual (TCI)

- For tasks involving potential exposure to energy sources of 480 volts or more, review the SWP and verify that hazards have been controlled or mitigated. Sign SWP Section III, Block 17.
- If not available, the Site Safety Specialist may sign if approved by Site Director.

Craftsman Assigned

- Post the authorized SWP with all applicable documents at the primary work location. (NOTE: Contractor SMTR may also post the permit.)
- Maintain the SWP during the job and return it to Initiator for closeout.

Supervisor of All Employees Affected by an SWP

- Ensure that you and all personnel under your supervision who prepare, submit, review, approve, and issue -a SWP receive SWP Training M&O Lesson Plan ESSH 1700. (NOTE: Documented on a TAAR.)
- Confirm that Job Hazard Analysis (JHA) and/or Personal Protective Equipment (PPE) Hazard Assessment (HA) are available and adequate for the task to be performed.
- Review the JHA and/or PPE HA with employee(s) prior to their commencing work. Check blocks 5a and 5b in Section I of the SWP.
- Confirm that all workers assigned to perform task(s) are trained to perform the task(s). Check block 5c in Section I of the SWP.
- Sign Section III Block 15 confirming the JHA exists, has been reviewed, is adequate, and workers assigned are trained to perform the task.
- If the task described on the SWP indicates a possibility for exposure to crude oil, issue a Gas Alert Extreme personal H2S detector to all employee(s) performing the task, and note in the Safety/PPE in SWP Section II. Sign-out of specific personal monitors is recorded on an equipment checkout log.

35.4. TABLES: PERMIT PROCESSES AND PROCEDURES

TABLE 35-1. REQUIRED SAFE WORK PERMIT ATTACHMENTS*	
Attachment	APM Section
Alternate Confined Space	Section 10
Confined Space Permit	Section 10
Confined Space Rescue Plan	Section 10
Reclassified Confined Space	Section 10
Controlled Evacuation Committee (CEC) Checklist	Section 12
Job Hazard Assessment (JHA)	Section 27
Lockout/Tagout Log	Section 29
Pre-Job Briefing and Qualifications Form	Section 27
NOTE The following documents do not have to be attached to the SWP.	
Contingency Review Committee (CRC)	Section 11
Excavation Plan	Section 19
PPE Hazard Assessment (PPE HA)	Section 36
*Attachments required when applicable to SWP task.	

TABLE 35-2. SAFE WORK PERMIT REQUIREMENTS		
WORK ACTIVITY REQUIRING SWP	APM SECTION	BRIEF DESCRIPTION
Hot Work	Section 35	Activities that may introduce an ignition source in Class 1 Division 1 or 2 electrical areas or where flammable gasses or vapors may accumulate, or in areas with combustible materials.
Excavation	Section 19	Any man-made cut, cavity, trench, or depression in the earth surface formed by earth removal.
Safe Clearance	Sections 12, 15, & 29	Requires barriers, barricades, critical lift, energy control procedures (lockout/tagout), Radiation Safety, work on electrical systems 480 volts and above. (NOTE: Critical Lift Determination is defined in DOE-STD-1090-2011, Section 2)
Confined Space Entry	Section 10	Examples of SPR Confined Space Areas – Not All Inclusive: • Storage tanks (open top, internal, external floating roof) • All sumps and pits • Sewers • Pig traps and piping • Oil/water separator units • Heat exchangers • Transformers
Work Authorization	Section 35	Work area that may impact operations and/or security systems but does not meet the requirements of any other permit type identified in SWP Section II.

36. PERSONAL PROTECTIVE EQUIPMENT

PURPOSE

This section provides for and establishes the requirements for use of personal protective equipment (PPE) when necessary to protect personnel from workplace hazards that could cause injury or illness.

SCOPE

This section includes the following major sections:

- General Requirements
- PPE Hazard Assessment
- Eye and Face Protection
- Head Protection
- Hearing Protection
- Foot Protection
- Hand Protection
- Flame Resistant Clothing (FRC)
- Responsibilities

APPLICATION

This section applies to work activities and employees under the control of the M&O and its subcontractors.

36.1. GENERAL REQUIREMENTS

36.1.1. Introduction

In addition to the purpose listed above, this also defines the responsibilities for evaluation, procurement, distribution, maintenance, inspection, identification, and use of PPE. The employer provides the required PPE at no expense to the employee. This procedure applies to SPR operating sites and work locations.

NOTE
Personal protective devices alone should not be relied on to provide protection against hazards, but should be used after deploying engineering controls, administrative controls, guards, and sound operating practices.

36.1.2. Overview

This procedure defines the minimum expectations for personal protective equipment (PPE) when working on site or at off site SPR locations.

NOTE
All SPR employees, subcontractors and visitors must wear PPE at the SPR operating sites as prescribed in this procedure. The term **SPR employee** refers to all M&O personnel, M&O subcontractors, Protective Force, DOE, DOE prime contractor personnel, and visitors.

The minimum PPE required on site for field personnel consists of:

- Hard hat,
- ANSI approved Z-87 safety glasses with permanent or approved side shields,
- Hard toe work shoes that meet the ASTM F2413 standards,
- Gloves when performing work except where prohibited (i.e. rotating equipment) or exposed to cut hazards, and
- Hearing protection in designated areas.

Flame Resistant Clothing (FRC) and personal H_2S monitors (Crickets) are required in designated areas. Personal H_2S monitors are addressed in Section 26.5 of the APM.

Additional PPE requirements and exceptions are defined in this procedure. If unsure about PPE requirements contact a supervisor or the Site Safety Specialist.

Exclusion Zones (areas not requiring PPE) have been designated as:

- In employee/contractor/visitor parking lots;
- In the entry portals;
- In vehicles;
- When walking to or from the parking lot on paved surfaces to arrive or depart from work;
- When walking between buildings on paved sidewalks or roadway surfaces;
- Canine training lanes;
- Within enclosed cabs of heavy equipment; and
- In office work areas.

SPR employees, contractors, and visitors, will generally not be required to wear PPE inside the exclusion zones. This exception is intended to allow people to travel to/ from points in the exclusion zones without PPE.

PPE shall be required at all times outside of the exclusion zones unless otherwise specified in this procedure.

PPE may be required in an exclusion zone based upon the task. If work that requires PPE is being performed in exclusion zones, the exclusion zone shall be demarcated to warn others that PPE is required in that area. If an exclusion zone is demarcated for work being performed, all personnel inside of the demarcated area shall wear the minimum PPE required on site.

Subcontractor employees and visitors are required to wear PPE as prescribed above for SPR employees. The sites have a limited supply of personal protective equipment (PPE) for loan. Upon departure from the site, the checked-out PPE shall be returned to the designated point of contact. <u>The sites can not supply safety shoes. In most cases the subcontractor employer is responsible to provide the required PPE. Visitors who plan to enter PPE-required areas should bring their own safety shoes.</u>

Visitors shall be required to meet the PPE standards for the areas they are visiting unless a waiver has been approved in accordance with this section.

36.1.2. Application

All activities shall be assessed to determine PPE requirements, to include changes in operation, products and/or services. This is especially important wherever hazards of processes or hazards based on the environment, chemicals, radiological threats, or mechanical irritants can be encountered in a manner capable of causing injury or impairment in the function of any part of the body through absorption, inhalation, ingestion or physical contact.

36.1.3. PPE Design

- All personal protective equipment shall be of safe design and construction for the work to be performed.
- All personal protective equipment shall be designed and approved according to the appropriate ANSI/ASTM standard.

36.1.5. Defective and Damaged PPE

- Protective equipment, including personal protective equipment for eyes, face, head, and extremities, protective clothing, and protective shields and barriers, shall be used and maintained in a sanitary and reliable condition.
- Employees must inspect all PPE before use to ensure it is fit for use. Defective or damaged personal protective equipment shall not be used and shall be removed from service and disposed of.

36.1.6. Training

Supervisors shall provide on-the-job training (OJT) to each employee required by task to use PPE. Each such employee shall be tested to know at least the following:

- When PPE is necessary;
- What PPE is necessary;
- Why is PPE necessary;
- How to properly don, doff, adjust, inspect, and/or wear PPE;
- The limitations of the PPE; and,
- The proper care, maintenance, useful life and disposal of the PPE.

36.2. PPE HAZARD ASSESSMENT

36.2.1. Assessment and Selection

PPE shall be used as a last resort. Before use of any PPE is considered, an assessment shall be performed and documented on the JHA to determine if implementation of engineering or administrative controls would abate the hazard, eliminating or changing the PPE requirements.

To determine the need for PPE, an assessor (supervisor) shall either conduct a walk-through assessment of each task or perform an assessment of the entire workplace. The assessment examines the following:

- Sources of motion (such as machinery, tool processes, and personnel movement)
- Sources of high temperature that could result in burns, eye injury, or ignition of PPE
- Sources of chemical exposure (refer to applicable safety data sheets [SDSs]; or similar)
- Sources of harmful dust
- Sources of light radiation (such as welding, brazing, and cutting)
- Sources of falling objects or potentially dropped objects
- Sources of sharp objects with potential to puncture feet or hands
- Sources of rolling or pinching objects that could crush feet
- Electrical hazards
- Layout of workplace and employee placement
- Potential for atmospheric hazards, such as inadequate oxygen or the presence of hazardous vapors
- Repetitive motion and/or vibration.
- Sources of high noise (equipment operations)

The assessment shall be incorporated in the Job Hazards Analysis.

Hazards shall be reviewed with personnel performing the task(s). Engineering and/or administrative controls shall be considered in order to eliminate or minimize the hazards. For additional steps in the work planning process, see Section 27 and Section 35.

NOTE
If a Safe Work Permit (SWP) is required to perform the task(s), the potential hazards and engineering, administrative, and PPE controls shall be addressed in the Job Hazard Analysis (JHA), which shall be attached to the permit.

OSHA and Integrated Safety Management (ISM) require that personnel consider certain criteria for assessing hazardous situations that exist in an operation or process, and match the protective devices required to the particular hazard.

Select PPE that ensures a level of protection consistent with the hazards.

- Fit the user with the protective device and provide instructions on the use and care of the PPE.
- Ensure employees are made aware of all warning labels and limitations of their PPE.

36.2.3. Waiver of PPE Requirements

A waiver of PPE requirements can only be approved by the SSR for DOE visitors; or the M&O Site Director for M&O visitors. The waiver shall be documented on the Waiver of PPE requirements form (AAA9020.698), and signed by the applicable approving authority (SSR or Site Director) on a case by case basis after an evaluation of risk. Waiver of the safety shoe requirement for visitors can only be made while work is not in progress in the area(s) to be visited. The signed waiver represents written documentation that the SSR or Site Director assumes full responsibility for the safety of their guests.

36.3. EYE AND FACE PROTECTION

Eye protection includes protection from chemicals, flying or moving objects, and ultraviolet radiation.

Those wearing non-safety prescription glasses shall wear ANSI Z-87 approved eye cover protection that fits securely over their prescription glasses (i.e., goggles face shield, or visitor spectacles). Prescription safety glasses are encouraged and may be purchased for reimbursement by the Company (see Section 36.3.5 $220.00 max/yr.).These shall be approved by the supervisor or the site safety specialist.

All prescription safety glasses must have permanent or approved side shields. Flimsy, slip-on type side shields are not permitted. Approved side shields shall meet the most current ANSI Z-87 standard. If unsure, consult the Site Safety Specialist.

NOTE
Additional eye protection is required when grinding, buffing, burning or welding, handling chemicals, chipping, or when exposed to flying objects. Observe warning signs that are posted requiring the use of goggles or face shields, over safety glasses. Review the JHA for required eye protection.

36.3.1. Types of Eye and Face Protection

Safety Glasses

- Safety glasses shield the wearer's eyes from frontal impact and optical radiation. They shall consist of the following major components:
  - front with bridge area
  - Lens
  - Temples
  - fixed or approved side shields (ANSI Z-87 compliant)
- Each lens shall be distinctly marked with the manufacturer's monogram, usually a letter.
- The remaining major components shall bear a trademark identifying ANSI Z87.1.
- All markings shall be legible and permanent.

Face Shields

- Face shields have headgear supporting a protective window.

- The window is curved to surround and cover the wearer's face.
- Face shields are assembled in many combinations of the various major component types to provide the user with a wide choice of suitable equipment.
- Face shields shall be used only as a secondary means of eye and face protection. A face shield alone doesn't provide enough protection by itself. Any time a face shield is used it must be used in combination with approved safety glasses or goggles.
- All major face shield components shall bear a trademark identifying the manufacturer and shall be marked "Z87" to indicate compliance with American National Standard Z87.1.
- All markings shall be legible and permanent.

Goggles

- Goggles contain an eye cup, to cover the eye sockets completely, and can be worn over glasses.
- Goggles are constructed to fit snugly to the face, sealing the eyes from the forehead to the temples, cheeks, and bridge of the nose.
- Chemical goggles are designed to protect the eye from splash hazards.
- Impact goggles are designed to protect the eye from objects or particles reaching the eye surface.
- Goggles must be used according to their design purpose.
- Each lens shall be distinctly marked with the manufacturer's monogram.
- All major goggle components shall be marked "Z87" to indicate compliance with American National Standard Z87.1.
- All markings shall be legible and permanent.

Special Purpose Lenses

- Special purpose lenses provide eye protection while the user is performing visual tasks that require unusual filtering of light.
- Special purpose lenses meet all the requirements of the ANSI standard Z87.1 except the transmittance requirements.
- A common type of special purpose lens is the photochromic lens. This lens darkens when exposed to sunlight and fades when removed from sunlight. It is frequently used to provide comfortable vision for a wide range of ambient light conditions requiring critical acuity, or fast reaction to visual stimulation.

36.3.2. Eye and Face Protection Hazard Assessment Criteria

Personnel shall use appropriate eye and/or face protection, in addition to safety glasses when exposed to the following hazards:

- Flying hazards
- Flying particles
- Liquid chemicals

- Acids or caustic liquids
- Chemical gases or vapors
- Potentially injurious light, such as welding or brazing
- Nuisance dust
- Harmful ultraviolet radiation
- Arc Flash hazards

36.3.3. Inspection and Maintenance

Eye and face protection shall be inspected visually by the user prior to each use.

- Users shall check for broken parts, heat distortion, or excessive scratches, abrasion, and deterioration.
- Before use, the defect must either be corrected or the item replaced.

Work in a humid atmosphere tends to cause glasses to fog. If this occurs, the user should apply a Qualified Products List (QPL) approved anti-fog liquid or spray to the glasses before use.

Eye and face protection should be stored so that lenses or windows are protected from scratches, abrasion, and deterioration, and away from heat that could distort plastic parts.

36.3.4. Proper Selection and Donning

The general procedure for selecting eye and face protective devices is as follows:

- Supervisors ensure employees are familiar with the selection, the type of protective equipment available, and what each type can do.
- Compare the anticipated hazards listed on the JHA associated with the environment and the available equipment.
- Select the appropriate protective equipment so that the protection is greater than the estimated hazard.
- Fit the user with the protective device and provide instruction on care and use as recommended by the manufacturer. If assistance is needed, contact site safety or industrial hygiene.
- Dark lenses shall not be worn while indoors, before daylight, or during night time hours. The exception to this is ANSI Z87 approved transition style or amber lenses which are designed to enhance vision in low light conditions.
- Eye and face PPE shall be distinctly marked to facilitate identification of the manufacturer.
- Prescription safety glasses must have fixed or approved side shields (ANSI Z-87 compliant).

36.3.5. Procedures for Procurement (M&O Only)

Employees requiring prescription safety eyewear should procure the eyewear from a commercial source.

- Eyewear must be marked "Z87," certifying it meets the specifications of ANSI Z87.1, and have fixed or approved side shields.
- The site safety specialist, or New Orleans Safety and Health, will inspect the eyewear and approve for use.
- New Orleans M&O employees will enter a Request for Check (RFC) in SAP, and site procurement will enter a RFC in SAP for site employees.
- The S&H Director approves the request on-line, authorizing reimbursement.
- The site-specific label number for Safety Equipment and Supplies shall be used as the accounting charge number.
- The eyewear user submits this form and the receipt to New Orleans Accounts Payable. Reimbursement will be provided up to $220 per year.
- The cost of the eye exam should be covered by personal insurance.

36.4. HEAD PROTECTION

36.4.1. General Requirements

All head protection must meet ANSI Z89.1 (2009 or newer) requirements for industrial head protection.

The required hard hat for M&O sites is an ANSI Z89.1 (2009 or newer) Type 1, Class E.

The wearer should be able to identify the type of helmet by looking inside the shell for the manufacturer, ANSI designation, and class. For example:

Manufacturer's XYZ ANSI Z89.1-2009 (or newer) Class E

Hard hats shall not be modified or changed in any way. Hard hats that have been altered or have sustained an impact shall be removed from service immediately.

In some cases, such as high wind conditions and tower climbing, a chinstrap may be needed to keep the helmet on an employee's head. Chinstraps should break at a reasonably low force however, to prevent strangulation. The use of chinstraps shall be annotated on the JHA.

Hard hats must be worn with "brim to the front." The typical exception is for connectors/riggers during erecting structural steel or welders whose hard hats may have to be reversed to accommodate welding shields while performing welding operations. If hard hats cannot be worn during welding operations, alternate means of overhead protection must be provided. When not welding, welders must wear hard hats with brim to the front.

Employees are responsible for inspecting their hard hats prior to use each day.

Hard hats failing inspection shall be removed from use and disposed of immediately.

NOTE
All new hard hats purchased must meet Type I Class E as specified in ANSI Z89-1.2009 or newer.

36.4.2. Inspection and Maintenance

Users shall:

- Inspect the suspension system daily before use.
  - Make sure all harness support clips are properly positioned on the shell.
  - Verify that the headbands are adjustable and fit so that the actual hat doesn't touch the head and maintains 1¾ inch clearance above the suspension.
  - Do not tamper with the harness and headbands because this could decrease the impact capabilities of the hat.
  - Pay special attention to the condition of the suspension system because of the important part it plays in absorbing the shock of a blow.
  - Look for torn cradle straps, broken sewing lines, loose rivets, defective lugs, and other defects.
  - If necessary replace the suspension system.
- Inspect hard hats daily for cracks, dents, or holes. If any of these conditions are identified, replace the hat immediately. Also, inspect for fading caused by UV radiation. Faded hard hats that do not meet the ANSI test standards shall be removed from service. Hard hats can become brittle over time and shall be removed from service if they do. A simple field test can be performed to determine possible degradation of polyethylene shells: Compress the shell inward from the sides about 1 inch with both hands and then release the pressure. The shell should quickly return to its original shape, exhibiting elasticity. There should be no residual deformation. If the hat does not exhibit elasticity similar to that of a new shell, or if it cracks because of brittleness, it shall be removed from service and replaced immediately.
- Clean hard hats only with a mild soap or detergent, and rinse in clean water. After rinsing, carefully inspect the shell for any signs of damage. Be careful not to use solvents than can damage the shell; consult the hard hat manufacturer to find out what solvent should be used.
- Store hard hats away from ultraviolet light when not in use.
- Not apply solvents or paint to the hard hat. Stickers may be placed on hard hats, avoiding excessive amounts that could possibly cover cracks, dents, or holes.
- Never drop or throw a hard hat, and do not use it as a support.
- Not store or carry hard hats on the rear-window deck of an automobile, as sunlight and extreme heat may adversely affect the degree of protection offered.
- Ensure the suspension system inside the hard hat is inspected for damage. Replace suspension at first sign of damage.
- Wear hard hats squarely on top of the head, with the sweatband and brim over the forehead to provide maximum protection.

- Adjust the harness to achieve a snug fit that allows space for ventilation between the shell and headband.

36.4.3. Service Life and Replacement

ALL hard hats that do not meet ANSI Z89.1 (2009 or newer) Type I Class E requirements shall be disposed of and replaced immediately.

The hard hat shell shall be replaced at a minimum every 5 years, or sooner per manufacturer's guidelines, after the start of service life, immediately after an impact or penetration, or upon a failed inspection.

- A hard hat's service life begins when it is placed in service. The hard hat "expiration date" (MM/YY) 5 years later shall be recorded on the ANSI label in permanent marker by the user prior to placing the hard hat in service. Note that the "date code" on the brim of the hard hat is the date of manufacture, not the starting date for service.
- The user shall inspect the hard hat in accordance with this procedure prior to placing in service.

The hard hat suspension shall be replaced at a minimum every 12 months after the start of service life, or immediately if a user inspection shows signs of wear.

- A suspension's service life begins when it is placed in service. The suspension "expiration date" (MM/YY) 1 year later shall be recorded in permanent marker on the suspension near the manufacturer date code. Note that the "date code" on the suspension is the date of manufacture, not the starting date for service.
- The user shall inspect the suspension in accordance with this procedure prior to placing in service.
- NEVER attempt to interchange suspensions from one hard hat manufacturer to another. Use only the appropriate replacement parts from the original manufacturer. If you do not know who manufactured your hard hat you will need to replace the entire hard hat.

36.4.4. Tactical Assault Helmets

The PT A-Alpha Tactical Assault Helmets manufactured by Pro Helmets can be used by Protective Force Officers during daily operations and during force on force exercises in lieu of the standard industrial hard hat.

Evaluators and controllers tasked with shadowing Protective Force officers during force on force exercises may also utilize the tactical assault helmet, as long as use is consistent with the exercise.

PPE for training exercises and other non-routine events conducted by the Protective Force are evaluated and specifically addressed in a risk assessment. The risk assessment shall address the hazards, controls, and PPE requirements for the task(s) to be performed, and be approved by M&O Safety.

NOTE
Tactical assault helmets shall not be worn lieu of the standard industrial hard hat in active construction areas, and other areas that are likely to present hazards from small falling objects.

36.5. HEARING PROTECTION

Hearing protection shall be available at all times when outside of the exclusion zone.

Warnings shall be posted at the perimeter of areas where possible exposure to excessive noise exists.

As a general rule, if someone has to raise his or her voice within 3 feet to tell you something, hearing protection shall be worn.

For additional information on proper selection and requirements for hearing protection, see Section 25 of the APM.

NOTE
Hearing protection (ear plugs, ear muffs, or both) shall be worn when noise levels exceed 85 decibels. At noise levels of 100 decibels or higher double hearing protection will be worn except on the firing range. In specified areas, e.g. firing range, administrative controls may be used to limit exposure.

36.6. FOOT PROTECTION

36.6.1. Requirements

Safety shoes are required in all site areas except locations designated as exclusion zones.

In recognition that slips, trips, and falls account for the majority of workplace injuries, at a minimum, substantial footwear shall be required on all storage sites.

NOTE
Substantial footwear shall be made with firm material, and excludes high heels (greater than 1.5 inches), flip-flops, and open heel shoes without support straps. When in doubt, the supervisor will determine whether shoes meet the requirement.

In the event of a medical diagnosis where substantial footwear or safety shoes may not be worn due to a medical condition, the employee must contact Human Capital (Medical Services) and their supervisor with an accompanying note from a physician.

- Safety shoes or boots with metatarsal guards shall be used for operations that may be very hazardous to the feet, such as heavy demolition or while operating equipment such as tamps, chainsaws, jackhammers, and whackers.
- Safety shoes with a distinct heel shall be required for any personnel climbing vertical ladders. A distinct heel means that the heel is clearly distinguishable from the rest of the sole of the shoe.
- Leg guards (chaps) are required when using chainsaws.
- All personnel working or walking near offsite pipelines and equipment, or other areas where snakes are likely to be located, shall wear shin/leg guards to prevent snakebites. Safety leg guards for snakebite protection include metatarsal and shin guards used to prevent injury to the legs and lower extremities of the leg, and shall be made available by the site and donned as required by employees working in areas with dense/tall vegetation.

- Safety footwear must comply with F2413 standards.

36.6.2. Foot Protection Hazard Assessment Criteria

Personnel should use the correct foot and leg protection when working around the following hazards:

- Falling objects
- Rolling objects
- Electrical Hazards
- Slip Hazards
- Chemical Exposure
- Extreme temperatures
- Overgrown weedy areas, such as the offsite valve stations

36.6.3. Inspection and Maintenance

Users shall:

- Before donning footwear, check that the soles are free of cracks or holes, heels are in good condition, and soles and heels are firmly attached to the uppers.
- Don footwear in a relatively uncontaminated area, and store footwear away from excessive heat or cold, dust and chemicals.
- After any significant impact or crush-type contact, inspect your footwear for evidence of distortion of the toe box and metatarsal protector. If damaged, replace the footwear.
- Before use, all leggings shall be inspected for cuts, scrapes, and deformities that affect protective qualities. If any such deficiencies are found, discard the leggings immediately.

For additional information on inspection, proper care, and maintenance of safety footwear consult with site safety.

36.6.4. Provision of Safety Footwear

The M&O will reimburse up to $110 per pair for safety footwear for M&O employees (including New Orleans M&O personnel) who are exposed to job-related hazards of electrical shock or foot injury by entering a Request for Check in SAP after demonstrating that the footwear purchased meets all requirements.

The M&O requires employees whose job function exposes them to electrical shock or foot injury to request the proper shoes through their respective supervisors.

M&O Supervisors will verify the need for new safety footwear prior to purchase.

The M&O allows the purchase of one pair of safety footwear every year unless the supervisor approves the purchase of an additional pair to replace excessively worn safety footwear when needed.

If new shoes are required more frequently than every year, supervisors are responsible for determining the need for the purchase of replacement safety footwear; inspecting the old safety footwear to verify that new footwear is required.

Visitors, contractors, subcontractors, and DOE personnel are expected to provide their own safety footwear.

36.7. HAND PROTECTION

36.7.1. General Requirements

Appropriate hand protection (gloves) is required when the hands are exposed to hazards such as those from skin absorption of harmful substances, or when it is likely that cuts or lacerations, abrasions, punctures, chemical burns, thermal burns, electrical shock, and harmful temperature extremes could result from performing the task.

NOTE
Gloves are not to be worn when operating equipment that has a rotating motion (for example, when using hand tools with moving parts that could catch the gloves and cause injury).

Gloves are also required in accordance with SDSs and/or as indicated on a Job Hazard Analysis.

Each type of glove is designed to handle a certain range of hazards. No one glove is universally acceptable for all tasks, and glove selection must be carefully considered. Selection of the type of hand protection is based on published product performance characteristics, degree of dexterity required to perform the work/task, and the appropriate application for protection against the hazard(s) identified in the JHA.

No glove protects against crushing or pinching injuries of the hand, or from injuries resulting from striking the hand against, or being struck by, an object.

36.7.2. Types of Hand Protection

Figure 36-3. Types of Hand Protection

Type	Use and Purpose
Elastomeric gloves	• Gloves made from any of the various polymers with elastic properties resembling those of natural rubber (for example, coated latex, nitrile, and rubber). • These gloves are used for protection from exposure to all types of chemicals.
Non-elastomeric gloves	• Gloves that protect personnel from physical hazards and provide little protection from corrosive agents (for example, cotton, leather, or steel mesh).
Anti-vibration gloves	• Gloves designed to ergonomically protect employees from repeated vibrations caused by hand held power tools.
Cut/puncture-resistant gloves	• Gloves designed to protect hands from direct contact with puncture or sharp edges such as needles, glass, metal, ceramics and other materials.

36.7.3. Hand Protection Hazard Assessment Criteria

Hand protection shall be worn during tasks that have the following potential hazards:

- Skin absorption of harmful substances
- Severe cuts or lacerations
- Severe abrasions
- Harmful temperature extremes
- Chemical burns
- Thermal burns
- Punctures
- Electrical
- Vibration
- Blood-borne Pathogens
- Impact

36.7.4. Inspection and Maintenance

- Users shall ascertain the performance characteristics of gloves relative to the specific hazard anticipated, such as chemical hazards, cut hazards, or flame hazards.
- Gloves shall be inspected before each use to ensure they are free of holes, cuts, loose or open seams, severe wear, or contamination by oil or chemicals. Replace them if deterioration is present.

36.8. FLAME RESISTANT CLOTHING (FRC)

Flame-Resistant Clothing (FRC) used on the SPR shall meet or exceed the requirements set forth in the most current editions of NFPA 2112, *Standard on Flame-Resistant Garments for Protection of Industrial Personnel against Flash Fire* and NFPA 2113, *Specific Requirements for Wearing Flame-Resistant Garments*.

Security is exempt from wearing FRC on the SPR.

Personnel purchasing their own FRC shall ensure the garments have a product label or labels permanently and conspicuously attached to each garment. Typically, labels on the outer portions of the garment are labeled as “FR” and the product label is located on the inside of the garment or on the shirt tail. The product label on FRC shall include the following elements:

- Statement of compliance with NFPA 2112,
- Manufacturer name,
- Country of Manufacture,
- Garment ID Number,
- Fiber Content, and

- Care Instructions.

36.8.1. General Requirements

FRC shall be worn as the outside layer of all clothing to protect the area of the body below the waist including the legs, but excluding the ankles and feet, and above the waist and extending to the shoulders.

> **NOTE**
> FRC is designed to protect the arms, legs, and torso of the body. In areas where FRC is required, the use of other clothing not designated as FRC is not prohibited underneath FRC. However, it is recommended that clothing worn under FRC is made of 100% natural fiber (cotton, wool, silk). The outmost layer worn over FRC – such as a coat – must be FRC also.

FRC shall be in good condition and free of holes or tears. In accordance with NFPA 2113, FRC shall be worn properly in areas where FRC is required. Sleeves and cuffs shall be worn down and secured, and when wearing two piece FRC (shirt & pant separates) **the shirt must be tucked into the pants**.

Due to the possibility of welding slag being trapped in a tucked in shirt and creating additional hazards, welders are exempt from the FRC shirt tucking policy during welding operations only. Personnel wearing FRC not provided by the site uniform service shall wear FRC that is labeled with a tag or other means to clearly identify the clothing as FR.

FRC requirements are only applicable to the garments used to protect the arms, legs, and torso of the body. Other items such as hard hats, gloves, welder's caps, etc., are not prohibited.

36.8.2. FRC Designated Areas

FRC is required on all SPR operating sites when employees are performing work within electrically classified areas, such as Hazardous Classified locations.

Maps for each site showing the designated areas where FRC is required can be found on the S&H SharePoint site and posted in the site entry portal areas. SMTRs are responsible for sharing this information with subcontractors they are supervising.

FRC is required when entering the areas listed below.

- Caverns
- Slop oil tanks
- Pig launcher / receivers (with oil present)
- Crude oil transfer pumps
- Heat exchangers
- Tanks 1-4 (BM only)
- Meter skids
- Crude Oil High Pressure Pump Pads

- Crude Oil Pump Pads

FRC shall also be worn when working in areas where the potential for a flash fire exists in designated areas, and during well servicing operations (workover) and crude oil process operations, such as:

- Pulling wet string tubing
- Snubbing tubing
- Fracturing or perforating the well
- Using bridge plugs or packers
- Open hole work
- Flow testing
- Plugging an abandoned well
- Cementing
- Stimulation
- Wireline operations
- Equipment openings (e.g., line breaking or valve changes)
- Gauging the crude oil system
- Transfer of hydrocarbons
- Maintenance operations on production equipment
- Hot work operations
- Using open flame
- Launching and retrieving a pig
- Start-up operations
- Any operation working with wellhead or wellbore under pressure
- Degas plant operations

Other operations may be included if the JHA and/or Safe Work Permit indicates that FRC should be a requirement.

36.8.3. Wearing FRC

FRC shall be worn when entering areas with the potential for a flash fire (see Section 36.8.2.) or when performing a task which has flash fire as a potential hazard. Maintenance and operations personnel are required to wear FRC full time when in the field, because of their job requirements. Some others, including some visitors, only need FRC periodically if they have a need to enter Hazardous Classified areas.

The following groups of site employees shall be furnished FRC in quantities adequate for full time use:

- All Site Operations department personnel
- All Site Maintenance department personnel (including painters & grass cutters)
- All personnel provided to site maintenance under labor contracts and required to work in areas requiring FRC, i. e., painters & grass cutters.
- All Workover personnel

All Instrumentation and Electrical (I&E) personnel shall be furnished ARC Flash clothing and PPE in accordance with APM Section 15 and the most current version of NFPA 70E.

NOTE
The use of Arc Flash clothing by site I&E personnel satisfies the requirement for FRC. However, the use of FRC does not satisfy the requirement for the use of Arc Flash protection.

The following groups of site employees shall be furnished a minimum two (2) sets or pair of FRC for part time use:

- M&O Site Management (as identified by the site director)
- DOE Site employees (SSRs and Engineers)
- M&O site support personnel (includes; Site Safety Specialists, Site FP/ EMS, Site Security Specialist, Site Engineers)

NOTE
Additional sets of FRC shall be provided as determined/approved by the Site Director. Each site shall maintain 10-15 spare FRC coveralls, in various sizes, for visitors, or other employees as needed who may occasionally need to enter an area that requires FRC in accordance with this procedure.

- New Orleans personnel who provide onsite support shall be furnished two (2) pair of FRC coveralls or (2) two piece FRC (shirt & pant separates). This will require approval by their respective director.

36.8.4. FRC Rental/Service Agreements for M&O Employees

- The M&O shall provide FRC clothing for M&O employees who are required to wear FRC in accordance with this policy/procedure.
- The M&O shall utilize rental/service agreements to obtain and maintain the FRC clothing in accordance with the most current version of NFPA 2112 and NFPA 2113 for all groups, as described above, requiring full time use of FRC.
- The M&O shall purchase and maintain additional FRC clothing at each site for visitors or other employees who may need to periodically enter areas that require the use of FRC as described in this policy/procedure.
- The M&O shall utilize service agreements for laundering, maintenance and inspections services for FRC that has been purchased, as spares or for support personnel, on an as-needed basis.
- Employees possessing FRC clothing purchased by the M&O may choose to utilize the laundering service contracted by the M&O or launder the clothes themselves. If an employee

chooses to launder the clothes they are responsible for insuring it is laundered in accordance with the manufacturer's recommendations.

- All rental uniforms provided to operations and maintenance personnel for full-time use shall be Shirts / Pants.
- Coveralls shall be purchased for personnel not requiring full-time use and for spares.
- Rental uniforms provided to the workover crew shall be shirts / pants.
- Employees required to work in cold weather shall be provided FRC jackets.
- Employees required to work in rainy weather shall be provided FRC rain gear. This gear shall be provided at the discretion of site management.
- FRC rented for full-time or part-time use should have employees' first name (nickname or initials) and/or last name embroidered on the right side of the shirt between the pocket and shoulder. The employees name is not required for personnel provided under labor contracts, i.e., painters and grass cutters.
- All FRC shall have the approved M&O logo embroidered on the right side between the pocket and shoulder.
- ARC Flash Uniforms provided for I&E personnel shall be shirts /pants.

NOTE
The requirements of this section shall be effective for all new contracts established beyond the effective date of this procedure. Contracts already in place shall be allowed to remain in place until they expire.

36.8.5. FRC Requirements for Subcontractors

The requirements of this procedure shall flow down to M&O subcontractors through M&O S&H subcontract language, SMTRs, and Procurement.

36.9. RESPONSIBILITIES

Safety and Health Director

- Establish the policies and identify the requirements for PPE.
- Specify the applicable standards PPE.
- Authorize payment of Request for Checks on-line. (M&O Only)

Managers

- Support supervisors and ensure adequate implementation of this procedure.

Supervisors

- Evaluate the hazards of tasks being performed by employees to determine if PPE is needed.
- Authorize new shoes if a new employee or an existing employee requires replacement of safety footwear.

- Ensure that a JHA has been performed before a job begins to determine what PPE is required. This includes, but is not limited to, requirements for head, eye, hand, foot, respiratory, and skin protection. Consult Safety Data Sheets for equipment needed for assignments involving hazardous chemicals.
- Ensure that the need for, and type of PPE is identified in the JHA for work requiring a SWP.
- Provide PPE that meets the appropriate standard(s) for the hazards anticipated.
- Provide adequate storage for PPE.
- Ensure that PPE is issued to personnel according to the hazards of their work area.
- Ensure that personnel are trained in the proper use of PPE and that they maintain these items in a sanitary, reliable condition.

ES&H Manager or Site Safety

- Visually verify that prescription safety eyewear obtained by employees from commercial sources is marked "Z87" and has permanent or approved side shields.
- Perform a visual inspection of safety footwear obtained by employees from commercial sources to verify that the footwear meets the requirements in ASTM F2413.
- Perform or assist with the training of site employees in PPE use.
- Perform periodic assessments to ensure proper use and care of PPE.
- Reassess the workplace hazard situation as necessary, by identifying and evaluating new equipment and processes, reviewing accident records, and reevaluating the suitability of previously selected PPE.
- Assist in determining engineering and procedural solutions before implementing PPE.

Employees

- Adhere to this procedure and all posted PPE signage.
- Ensure that appropriate PPE is worn at all times.
- Ensure prescription safety eyewear purchased is marked "Z87" and has attached side shields.
- Enter a Request for Check on-line (M&O Only) and submit it with an attached receipt to Accounts Payable for reimbursement. (M&O Only). Note: All safety glasses must have permanent or approved side shields.
- If safety footwear is commercially purchased, complete the Request for Check form (M&O Only) and include a receipt. If the manufacturer’s certification that the shoes meet the safety specifications outlined in ASTM F2413 is not engraved or sewn on the safety footwear and verified by the site safety specialist (site employees) or New Orleans Industrial Hygiene (New Orleans), the manufacturer’s certification must be submitted with the receipt.
- Enter a Request for Check in SAP (M&O Only) and attach the receipt for approval and reimbursement for purchased safety footwear.
- Assist in the walk-through PPE hazard assessment of each task.
- Review the PPE required/listed on the JHA before performing a task.

- Obtain and use PPE identified in the hazard assessment of the task.
- Maintain PPE in a sanitary, reliable condition.
- Discard and replace all damaged PPE immediately.

SMTRs

- Ensure assigned subcontractors adhere to the requirements listed in this procedure.

Site Property

- Ensure that minimum stock levels of PPE are maintained as directed in writing by the site director.
- Ensure that PPE ordered meets the requirements established in this section.
- When purchasing gloves from the manufacturer, request documentation that the gloves meet the appropriate test standard(s) for the hazard(s) anticipated.
- Maintain the contract for rental and cleaning of FRC.
- Dispose of all PPE that is damaged or in any way fails to pass pre-use inspection.

Sub-contractors

- Adhere to all requirements listed in this procedure.

37. RADIATION SAFETY FOR SUBCONTRACTED SERVICES

PURPOSE

This section provides procedures for protection from health hazards of ionizing radiation for SPR employees, subcontractors, and the general public on the SPR project.

SCOPE

This section includes the following major sections:

- Introduction
- Procedures
- Responsibilities

APPLICATION

This section applies to work activities and employees under the control of the M&O and its subcontractors.

37.1. INTRODUCTION

In addition to the purpose listed above, this section also ensures that the SPR complies with all federal and state laws and regulations on radiation safety. It is not intended to replace either state or federal regulations.

37.2. PROCEDURES

In most cases, a subcontractor is responsible for the use of a radioactive source to accomplish specific tasks such as wire-lining and x-ray of welds/pipes. M&O employees do not operate this equipment.

37.2.1. Licensing

Any subcontractor using a radioactive source is required to submit to the Subcontract Manager's Technical Representative (SMTR) a copy of his license to possess and use radioactive material.

37.2.2. Leak Test Records

- Before the start of work, the subcontractor is required to submit a copy of the most recent leak test on the radioactive source to the SMTR.
- The level of radiation detected should not exceed 0.005 uCi of removable contamination.
- Leak test results will be maintained in the SMTR contract file.

37.2.3. Radiation Protection Practices Training

Before the start of work, the subcontractor is required to submit a copy of the training records for their employees in radiation protection practices to the SMTR.

37.2.4. Survey Meter Calibration Records

Before the start of work, the subcontractor is required to submit a copy of the current calibration papers for the survey meter used in establishing the restricted area to the SMTR.

37.2.5. Radiographic Inspections

Subcontractor radiographic inspections are performed within a limited-access restricted area according to the following procedures.

- The subcontractor establishes a restricted area using a calibrated radiation survey meter to control exposure of personnel outside of the area to less than 2 mR per hour.
  - Personnel barriers are erected and radiation warning signs are posted on the barriers every 25 feet and, if possible, at points of entry such as gates, doors, and stairs.
  - The warning signs contain "CAUTION - Radiation Area" and show the standard, magenta, three-bladed radiation symbol on a yellow background.
- At all times, all subcontractor personnel within the restricted area are required to wear a direct-reading pocket dosimeter and either a film badge or a thermo-luminescent dosimeter (TLD).
- No SPR personnel shall be authorized access to the restricted area while the radiation source is exposed, that is, out of the source housing.
- At all times when the radiation source is exposed, a yellow, flashing caution light shall be used to warn employees in the vicinity of the restricted area.
- The Industrial Radiography Survey Report (OSF91-0038) to be used by the subcontractor is shown as a sample in the appendix, and can be found in the forms section of the S&H SharePoint site. This checklist should be used in establishing the restricted area and should be provided to the SMTR and filed at the site. The checklist documents the following information:
  - Exposure rates at the barrier
  - Type of barrier used (for example, rope or sign)
  - Type of radiation source (for example, X ray or isotope)
  - Source strength
  - Number and time of exposures
  - Distance of source from the barrier
  - Names of SPR personnel entering the restricted area
  - Any incident that occurred during radiographic inspection
  - A rough, dimensioned sketch that shows the 2 mR per hour boundary and any significant features
  - Start of shift and end of shift dosimeter readings.

37.2.6. Well Logging Operations

Well logging operations shall be performed within a limited-access restricted area according to the following procedures.

- The subcontractor establishes a restricted area at the well pad entrance. Radiation warning signs are posted on the entry gate. The warning signs contain "CAUTION - Radiation Area" and show the standard, magenta, three-bladed radiation symbol on a yellow background.
- All subcontractor personnel are required to wear a direct-reading pocket dosimeter, a film badge, or a TLD.
- No SPR personnel shall be authorized access to the restricted area while the radiation source is exposed, that is, out of the source housing and the wellhead piping.

WARNING
Under no circumstances are unauthorized personnel allowed within the restricted area

37.2.7. Emergency

In the event of an emergency arising from damage to or loss of a radiation source, perform the following procedures.

- Secure the area immediately and, if possible, survey the area with a radiation survey meter.
- Erect radiation warning signs and a personnel barrier, if possible, at such a distance that personnel outside the area receive no more than 2 mR per hour.
- The TR shall notify the Control Room Operator of the event.

WARNING
Under no circumstances should the area be left unattended.

- The control room and operations shift supervisor shall notify the site safety specialist, who in turn contacts the RSO, DOE SSR, and Site Director
- In the event of an incident involving overexposure of personnel to radiation, the site safety specialist should be contacted, who in turn contacts the RSO.

37.3. RESPONSIBILITIES

Site Safety Specialist

- Perform random audits of the subcontractors performing radiographic inspections or well logging operations to ensure compliance with this section.
- Review safety procedures and scopes of work for subcontractors performing radiographic inspections or well logging operations to ensure compliance with radiation protection practices.

Quality Assurance

- Coordinate the review of all procedures and scopes of work for subcontractors performing radiographic inspections or well logging operations with the RSO for review and approval.

Subcontract Manager's Technical Representative

- Ensure that all M&O subcontractors performing radiographic inspections or well logging operations comply with this section.
- Keep a file of Industrial Radiography Survey Reports filed out by subcontractor.
- Perform and document a walkthrough inspection before the work starts to ensure that all safety precautions are in place.
- Notify the Control Room Operator of any emergency event.
- Assure that applicable subcontractor prepared technical submittals are reviewed and approved prior to commencement of work.

New Orleans Industrial Hygienist

- Ensure that the radiation survey meter is in operable condition and is calibrated annually.
- Perform periodic exposure assessments to verify radiation control procedures are effective for minimizing exposure.
- Provide the RSO for M&O.

38. REPORTING/RECORDING PROCEDURES

PURPOSE

This section defines the requirements for reporting, investigating, and managing incidents that have safety and health significance.

SCOPE

This section includes the following major sections:

- Reporting and Recording Injuries and Illnesses
- DOE Accident Reporting Requirements and Investigation Activities
- Corrective Actions
- Responsibilities
- Figures

APPLICATION

This section applies to work activities and employees under the control of the M&O and its subcontractors.

38.1. REPORTING AND RECORDING INJURIES/ILLNESSES

38.1.1. Introduction

This sub-section establishes the procedures and responsibilities for reporting, investigating, and recording injuries/illnesses. Figures 38-1 are 38-2 are flow diagrams of these processes.

NOTE
The requirements for investigating, reporting, and recording vehicle accidents are located in APM Section 45.

The purpose of an accident investigation report is to convey in clear and concise language the results of the investigation, the facts surrounding the occurrence, the analysis of those facts, conclusions drawn, and recommendations in order to prevent a recurrence.

- The investigation report constitutes a record to document the objective analysis of an accident and to identify root cause(s), including identification of unsafe acts, procedural deficiencies, and/or latent organizational weaknesses.
- The reporting method is consistent with the Department of Energy's Occurrence Reporting and Processing System (ORPS).

All accident incidents are investigated, following the requirements provided by DOE Order 231.1B, ES&H Reporting; 225.1B, Accident Investigation (March 2011); and this section of the M&O's APM.

The M&O reserves the right to require a physician's written release (return-to-work) whenever an employee has been absent or temporarily removed from work because of an illness or injury. This includes non work-related illnesses and injuries that may affect safe performance of work activities.

38.1.2. Injury and Illness Reporting Procedures

All injuries/illnesses that occur at an SPR work location or impact SPR employees shall be reported. This section describes the reporting procedures which apply to all contractors/subcontractors working at SPR work locations.

The categories for reporting and recording injuries/illnesses are:

- **Medical Treatment Case (MTC)** – A work-related injury or illness that requires medical treatment beyond first aid. Medical treatment means the management and care of a patient to combat disease or disorder. Medical treatment does not include:
  - Visits to a physician or other licensed healthcare professional solely for observation and counseling
  - Diagnostic procedures such as x-rays and blood tests, including the administration of prescription medications used solely for diagnostic purposes (such as eye drops to dilate pupils)
  - First Aid (as defined in 29 CFR 1904)
- **First Aid**– A work-related injury or illness that is not an OSHA recordable illness or injury, which (only) includes:
  - Using a non-prescription medication at nonprescription strength (for medications available in both prescription and non-prescription form, a recommendation by a physician or other licensed health care professional to use a non-prescription medication at prescription strength is considered medical treatment for recordkeeping purposes)
  - Administering tetanus immunizations (other immunizations, such as Hepatitis B vaccine or rabies vaccine, are considered medical treatment)
  - Cleaning, flushing or soaking wounds on the surface of the skin
  - Using wound coverings such as bandages, Band-AidsTM, gauze pads, etc.; or using butterfly bandages or Steri-StripsTM (other wound closing devices such as sutures, staples, etc., are considered medical treatment)
  - Using hot or cold therapy
  - Using any non-rigid means of support, such as elastic bandages, wraps, non-rigid back belts, etc. (devices with rigid stays or other systems designed to immobilize parts of the body is considered medical treatment for recordkeeping purposes)
  - Using temporary immobilization devices while transporting an accident victim (e.g., splints, slings, neck collars, back boards, etc.)
  - Drilling of a fingernail or toenail to relieve pressure, or draining fluid from a blister
  - Using eye patches
  - Removing foreign bodies from the eye using only irrigation or a cotton swab
  - Removing splinters or foreign material from areas other than the eye by irrigation, tweezers, cotton swabs or other simple means
  - Using finger guards

  - Using massages (physical therapy or chiropractic treatment are considered medical treatment for recordkeeping purposes)
  - Drinking fluids for relief of heat stress
- **Notification** – the incident does not meet the requirements to be considered First Aid or MTC, but should be reported in case of possible future need.

> **NOTE**
> Notification cases only require page 1 of the Injury/Illness/Incident Report (AAA.9020.680) unless otherwise determined by New Orleans Safety.

Step 1.

Sites, immediately report all injuries and illnesses to the Control Room Operator (CRO) regardless of severity. Anyone may call 911 if they feel it is necessary, however, calling the CRO will result in a faster response.

New Orleans, report all injuries and illnesses to the Protective Force Security Contractor (x4321); dial 9-911 if medical response is needed immediately. If notifying 911, state clearly what building and office the patient is in.

Step 2.

Sites: The Control Room Operator (CRO) shall:

- Notify the site's Emergency Response Team (ERT) and Emergency Medical Services (EMS) if needed.
- Notify the employee's supervisor, the site safety specialist, the site director, the NO OCC, and the DOE SSR.
- If applicable, the CRO shall also notify the portal security officers to assist with EMS entry onto the site. The security personnel will report information on where the employee is being transported to the employee's supervisor.

New Orleans: The Protective Force Security Contractor shall:

- Notify EMS if needed.
- Provide First Aid/CPR to the extent of their training and remain with the employee until medical response personnel arrive.
- Notify the NO OCC immediately.
- Provide the NO OCC with updates and information on where the employee is being taken, if transported off-site by EMS.

Step 3.

The supervisor will notify the managed care provider (WorkCare) as soon as possible. See Section 38.1.4. for instructions.

> **NOTE**
> In case of an emergency, medical treatment is not to be delayed to complete paperwork or make notifications.

The investigation phase begins as soon as the supervisor is made aware of the incident. While treatment of injuries and immediate S&H concerns created by the incident are the initial top priority, the supervisor should be carefully observing the incident scene – planning for follow-up action and future reference.

Prompt incident investigation may reveal contributing factors to the incident that may not be present at a later date and time. As soon as possible, after dealing with any injuries or personnel problems as a result of the incident, a Site Safety Specialist should interview the personnel involved in, and witnesses to, the incident.

The important considerations after an incident are:

- Mitigating the impact to personnel involved in the incident.
- Mitigating the impact to SPR employees as a result of the incident.
- Preventing reoccurrence of a similar incident.

Step 4.

Once the immediate needs caused by the injury/illness have been satisfied, the supervisor should begin to investigate the incident in detail using the Injury/Illness/Incident Report (AAA.9020.680).

Step 5.

The supervisor, with assistance from site safety, shall begin completing the first page of the Injury and Injury/Illness/Incident Report (AAA.9020.680). The first page shall be completed and submitted to the employee's line management, Site Safety, Human Capital (Medical Services), and NO Safety within 24 hours of the event.

Site Safety shall maintain case file documentation on All First Aids and MTCs, to include where applicable:

- Completed Injury/Illness/Incident Report (AAA.9020.680).
- Copies of the JHA(s) for work being performed (if applicable).
- Copies of any applicable work authorizations, permits, etc.
- Any attachments, photos, etc. to support the Injury/Illness/Incident Report (AAA.9020.680).

Step 6.

Site Safety shall submit a completed case file to NO Safety within 5 calendar days.

Step 7.

NO Safety uses the case file to determine OSHA recordability. If the case is determined recordable then NO Safety enters the case into the DOE CAIRS database, which generates a DOE F 5484.3, "Individual Accident/Incident Report." The completed DOE F 5484.3 report shall be forwarded to Site Safety to be filed in the case file.

Step 8.

If an injury/illness is determined to be OSHA recordable, Site Safety records the case on the OSHA 300 Log of Work-Related Injuries and Illnesses.

38.1.3. Injury and Illness - Initial Investigation Procedures

Investigations are done to determine the causes of an event and develop corrective actions to eliminate or minimize recurrence, not to lay blame. Investigations are intended as exercises in fact-finding, not fault-finding.

A graded, team approach should be used for investigations, with the appropriate level of management involved according to the severity – or potential severity – of the event. The investigation team typically includes the employee's supervisor and site safety.

Secure the Incident Scene

- The Site Director (or his designee) acts as the investigation lead until one is appointed.

> **NOTE**
> The participants in the investigation shall be documented on the Injury/Illness/Incident Report (AAA.9020.680).

- Secure the area against further danger to personnel, or damage to the facility and equipment.
- The scene of the event should be left intact to the greatest extent possible, with nothing moved or disturbed until the investigation is complete. If the Site Director (or his designee) determines that the scene cannot be preserved intact, photograph the scene and any equipment or other relevant objects including date, time, location in the scene, and an indication of size (if appropriate) in the photograph.
- Secure evidence in such a way as to protect its integrity. Use barricades, signs, or other means to isolate the site, warn of hazards, and otherwise restrict access. For significant accidents, the Protective Force shall be assigned to protect the scene.
- Anyone entering the scene shall be logged in and entrants should be limited to those on the investigation team if possible.
- If the scene is being preserved intact, no one should be allowed to handle or otherwise disturb evidence. If they do this, their actions should be documented on the entry log.
- Remember that you are about to enter an area where an accident has occurred and a worker may have been injured. Don't become another statistic — protect yourself.
- Secure and maintain strict control over all notes, documents, photographs, and other items gathered or created during the course of the investigation.

> **NOTE**
> Any photographs gathered from the scene shall be documented on Part (a.) of the Injury/Illness/Incident Report (AAA.9020.680), and attached to the case file.

Visual Inspection

- Familiarize yourself with the incident scene and the existing conditions, so that your interview questions will be relevant and constructive.
- Inspect the incident scene carefully to identify obvious component failures.
- Photographs are more reliable than memories. Retain all photographs to assist in interviews or consequent reports.
- Record your thoughts, observations, findings, and questions. If it is worth remembering, then it is worth writing down.

Preserve Evidence

- Before and during the investigation, make a prompt and careful effort to preserve the evidence that is necessary to answer the key questions about the incident (who, where, what, when, how, and why).
- Observe and record perishable or environmental evidence (such as instrument readings, control panel settings, and weather conditions). Use photographs, sketches, and diagrams to record evidence or conditions. Make detailed notes about any photographs, sketches, or diagrams.

Interview Affected Employee

- The affected employee shall be interviewed as soon as possible after the accident.
- The affected employee shall provide a employee statement on part (b) of the Injury/Illness/Incident Report (AAA.9020.680).

Identify Witnesses

- When arriving at the scene, identify the individuals who were either involved in the incident or saw it happen. Ask them to identify others who were also in the area, and make a list of potential witnesses. Separate witnesses when possible.

NOTE
Witness's names shall be documented on the Injury/Illness/Incident Report (AAA.9020.680).

Interview Witnesses

- It is important to interview witnesses promptly in order to record their observations while the events are fresh in their memory.

NOTE
Witness's statements shall be documented on part (c) of the Injury/Illness/Incident Report (AAA.9020.680).

- Interview witnesses individually. Interview the personnel directly involved first (if possible), then eyewitnesses and observers.
- When possible, interview witnesses at the scene.
- Start the interview itself by asking the witness to describe the event from start to finish.

- Encourage the witnesses to present their own account of the incident.
- Get the facts, not assumed opinions.
- After the interview, ask each witness how the incident could have been prevented or the condition corrected.
- Ask the right questions (refer to Figure 38-3).

Establish Incident Causation Factors

There is usually more than one causative factor; the most obvious causes are not always the principal causes (or root causes) of the incident. Information gained about the situation before the incident occurred is important in identifying hazards such as:

- Plant or equipment
- Procedures or processes
- Materials or products
- Environmental considerations (such as ventilation)
- Latent organizational errors

Information gained about the incident may identify a deviation from normal procedures or the point where/when components have failed. Look for: **What changed?**

Building a Chain of Events

For the incident investigation to be successful in the identification of all causes, it will be necessary to establish the following items in sequence:

- Events leading up to the incident:
  - Each event must be an action in the sequence.
  - Don’t use names — use job titles.
  - Actions should be factual, nonjudgmental, precise, and quantified (where possible).
- Facts of the incident itself:
  - Job title of individuals directly involved and those involved at a distance (if any)
  - Tools, equipment, materials, and fixtures directly concerned
  - Time of the incident
  - Injuries or damage resulting directly, and indirectly
- Relevant facts or what occurred immediately after the incident:
  - The job title of individuals involved, including those rendering aid
  - Problems in dealing with the injuries or damage such as no method for releasing a trapped individual, a faulty extinguisher, or an isolation switch difficult to locate
- Conditions relating to the events of the incident:
  - The description of work being conducted

- Training and experience of individuals conducting the work
- The instructions given for the work; any procedures
- Variations from instructions or safe systems of work
- Workplace conditions such as lighting, floor surfaces, stair treads, handrails, warning signs, temperature, and weather
- The exact location of the incident
- The materials and tools in use or being handled
- The type of transport or equipment in use
- Incorrect actions or equipment functioning in unintended ways
- The JHA(s) and Pre-Job Brief
- Any permits associated with the job (Safe Work Permit, hot work permit, confined space entry, etc.).

Once the contributing factors to the incident have been determined, analyze such facts for future incident prevention. Determine what could have been done differently that would have eliminated the contributing factors to the incident. Talk with the persons involved in the incident to determine what they believe could have been different so as to prevent a similar occurrence from happening.

- Causal factors:
  - Conditions or events, if eliminated, could have prevented the incident or reduced its severity.
  - Maybe more than one causal factor related to an incident.
  - Identify and investigate all causal factors.
- Human Performance Improvement (HPI)
  - Identify all applicable “error precursors” that appear to have been associated with the incident.

Document Results of Investigation

Complete the Injury/Illness/Incident Report (AAA.9020.680). At a minimum, the following information must be included in the completed report:

- Activity in progress at time of the incident
- Sequence of events leading to the incident
- Emergency response to the incident
- Medical treatment provided to the injured/ill employee
- Direct contributing and root causes
- Corrective actions taken or planned (including estimated completion dates)
- Fatality potential/probability assessment
- Name(s) of individual(s) responsible for corrective actions

38.1.4. WorkCare

WorkCare shall be contacted for all non-life threatening injuries/illnesses.

If an injury/illness is life threatening or emergency medical care is critical, notify the control room immediately. The managed care provider shall be notified after the site has dealt with the immediate response.

Direction by Site ERT takes priority over starting the managed care process.

If a Site sends an employee to the hospital for life threatening injuries, the managed care provider may still be able to assist in obtaining the best medical care depending on the specific situation/condition. These cases will be reported to the managed care provider after the employee has been transported from the site. Employees should be accompanied to the medical care facility.

In these cases the managed care provider can call ahead and brief the doctors on where the employee is being sent, can help locate a specialist, and/or provide other details and information that could be helpful to the employee's receiving the best and most appropriate care.

The Site ERT can contact the managed care provider if they want to receive medical assistance immediately.

At the onset of a non-life threatening injury/illness and after contacting the site control room, the supervisor and/or employee should contact WorkCare at 1-888- 449-7787. If the injured employee is either not available or does not want to discuss the injury/illness with the managed care provider, see below:

After being contacted, the managed care provider will:

- Discuss the injury/illness/concern with the caller to assess situation
- Explain the clinician's role and the process to the employee.
- Determine the nature of the concern.
- Provide appropriate consultation including recommended "first aid" and/or recommended self care.
- Determine injury/illness path and expectations.
- Help execute path forward, including referral to a designated medical facility if required or requested.
- If a clinic visit is required, the managed care provider will contact the treating provider to discuss a treatment plan.
- Provide followup support via telephone until incident is closed.
- Maintain medical confidentiality.

<u>If the employee is not available, or does not want to discuss the injury/illness with the managed care provider, the employee's supervisor should make the contact</u>. The supervisor should provide the managed care provider with the details of the situation to the extent known, such as: the nature, extent, severity, signs or symptoms of injury, the location where the employee is seeking medical

attention (Hospital, Clinic, or Emergency Room), the doctor's name and contact information, and current status of employee (i.e., in route to clinic). The managed care provider (as the employer's representative) will contact the medical staff of where the employee is seeking medical treatment to ensure the employee receives the best and appropriate care.

38.2. DOE ACCIDENT REPORTING REQUIREMENTS AND INVESTIGATION ACTIVITIES

38.2.1. General

Conducting a Headquarters' investigation is not mandatory but based upon a determination made by Heads of Headquarters' elements.

- There are five criteria used to determine when and if DOE will appoint an Accident Investigation Board (AIB):
    1) Human Effects
    2) Loss of Control of Radioactive Material
    3) Environmental Release of Hazardous Material
    4) Property Effects
    5) Other Effects.
- Of these, (2) does not apply to the SPR and (5) is anything else that Secretary or Deputy Secretary chooses to investigate.
- The order does not discuss field office accident investigations or those conducted by contractors.
- This section also implements the contractor requirement to support Federal investigations of accidents included in the Contractor Requirements Document of DOE O225.1B.
- Contractors/Subcontractors are responsible for investigating their accidents, although DOE or M&O contractor may choose to perform their own investigation in addition to the contractor's.

38.2.2. Accident Types

The table below describes the various types of accidents that may initiate a DOE accident investigation.

ACCIDENT TYPES	
TYPE	**DEFINITION**
Human Effects (Limited to human injuries and illnesses)	a. An injury or chemical or biological exposure that results in, or is likely to result in, the death of an employee or member of the public. b. Any single accident that results in the hospitalization for more than five calendar days, commencing within seven calendar days of the accident, of one or more DOE, contractor, or subcontractor employees or members of the public due to a serious personal injury or acute chemical or biological exposure. c. Any single accident resulting in three or more DOE, contractor, or subcontractor employees having lost-workday cases. d. Accidents involving Federal or contractor employees driving vehicles while on official Government business, on or off Government property, if the consequences result in meeting a-c above
Loss of Control of Radioactive Material	Does not apply to the SPR

ACCIDENT TYPES	
TYPE	**DEFINITION**
Environmental Release of Hazardous Material	a. The environmental release of a hazardous material from a DOE facility (on site or off site), in an amount greater than five times the reportable quantities specified in 40 CFR Part 302. b. The release of a hazardous material from a DOE facility that meets the criterion for classification as a Site Area or General Emergency in DOE Order 151.1C. c. Any offsite transportation incident involving hazardous materials that would require immediate notice, d. A catastrophic release of a highly hazardous chemical in the workplace.
Property Effects	a. An estimated loss of or damage to DOE property equal to or greater than $2.5 million dollars b. Cleanup costs equal to or greater than 2.5 million dollars
Other Effects	a. Any accident of series of accidents for which an AIB is deemed appropriate by the Security or Deputy Secretary

DOE reporting procedures are governed by DOE Orders 231.1A and 225.1B.

All investigations will be performed in accordance with DOE Orders 231.1A and 225.1B this procedure.

The M&O will support Federal investigations of accidents related to activities under the contract. The M&O will:

- Maintain a capability to respond to accidents, mitigate accident consequences, assist in collecting and preserving evidence, and assist during the conduct of the investigations. Assistance provided includes preserving and documenting the accident scene.
- Prepare, implement, and track to completion approved corrective action plans that are identified as the responsibility of the M&O by the Accident Investigation Board.

38.2.3. Appointing the Board for Investigations

Boards for Headquarters investigations will be appointed according to DOE Order 225.1B.

Contractor-led accident investigations are conducted by a trained accident investigator working for the company whose employee has been injured or made ill and appointed by the contract Project Manager. For Expanded-C investigations see the procedures that follow.

- Accidents involving DOE employees are investigated by a DOE safety professional, or DOE investigation boards.
- Accidents involving M&O personnel, DOE property, or facilities for which the M&O contractor has responsibility are usually investigated by a safety professional employed by the M&O but may be investigated by a member of the DOE safety staff or a team made up of both.
- Accidents involving M&O contractor/subcontractor employees are usually investigated by the contractor/subcontractor safety personnel and when directed by the Site Director. The M&O may choose to conduct their own investigation if they feel that a subcontractor's report appears to be biased or inadequate.

- The DOE Project Manager or the M&O Project Manager can direct that an expanded contractor accident investigation be completed if they believe that the accident merits investigation beyond routine reporting on the DOE 5484.3 form.
- In the event that a subcontractor employee or member of the public is involved, legal will be contacted immediately.

38.2.4. Expanded Contractor Investigation Reports

Some accidents require extensive analysis and documentation, but do not warrant the level of effort of a Headquarters investigation. These accidents will be designated "Expanded Contractor Investigations" and will involve an in-depth investigation according to the requirements provided by this section. Expanded contractor investigations require an appointed investigation board and a formal accident report prepared by the board.

38.2.5. Expanded Contractor Investigation Procedures

Determination of the need for an Expanded Contractor Investigation will be made within 48 hours following the initial report of an accident.

- The DOE Project Manager may direct and/or approve an Expanded Contractor Investigation.
- The M&O Project Manager may direct and/or approve an Expanded Contractor investigation.
- The M&O ES&H APM may direct an Expanded Contractor investigation with the approval of the M&O Project Manager.
- The S&H Director will review the DOE F 5484.3, "Individual Accident/Incident Report" and determine if the injury/illness merit an Expanded Contractor Investigation and make a recommendation to the ES&H APM.

Appointment of a Contractor investigation team.

- The M&O Project Manager will formally appoint an investigation team within 48 hours of the accident. A letter to the SPR Project Manager will document this decision, including the required completion date for the report and a list of the investigators. The M&O Project Manager may delegate this authority to the ES&H APM.
- If responsibility is so delegated, the ES&H APM will appoint the investigation team, establish the completion deadline, and document the decision.
- The investigation team will be led by someone with training in accident investigations (either DOE 225.1B training and/or TapRoot® training). If the lead investigator has had the DOE training, at least one member of the team shall have TapRoot® training or experience.
- The lead investigator must be someone who is not within the management chain of the organization to which the injury/illness victim reports, i.e., an Operations or Maintenance manager shall not lead an accident investigation of an injury occurring during the performance of maintenance. However, members of the same directorate may act as technical experts and may be on the investigation team.
- The lead investigator will contact members of the investigation team, notifying them of their responsibilities, required travel arrangements, assigning team duties, etc.
- The Site Director will hand over the accident scene, entry log, photographs and other evidence to the lead investigator and document this action.

Nature of the accident investigation:

- TapRoot® investigations: TapRoot® has been chosen by the M&O and approved by DOE as the format to be used to analyze accidents and document root causes. It was chosen because it is a proven, nationally known instrument that is consistent with the revised ORPS reporting process. It also includes the elements used in the DOE Accident Investigation training.
- Human Performance Improvement (HPI) Interventions: Some Expanded Contractor investigations will be determined to merit an HPI intervention, either when the initial team is appointed or when the team decides that the causes of an accident may be human error and/or latent organizational weaknesses.
    - Initiation of an HPI intervention is at the discretion of the DOE Project Manager or the M&O Project Manager and may be delegated to the M&O ES&H APM. The HPI Coordinator or the M&O S&H Director can recommend that an intervention be conducted.
    - The DOE Project Manager, the M&O Project Manager or their designees will document the decision to direct an HPI intervention by memo.
    - An HPI team, which must include members who have received HPI training, will follow the HPI intervention process established by the M&O HPI coordinator. HPI intervention teams may have only 1-2 trained members.
    - The completion date must allow time for the team to review their findings and add the resulting conclusions to the formal accident report.

Expanded Contractor Investigation Report Format

- An Expanded Contractor accident report will begin with an Executive Summary that briefly explains the accident, identifies root cause(s) and contributing causes, and summarizes the recommendations of the investigation board. If an HPI intervention has been directed, a short summary of its conclusions will be included.
- The second section of the report will describe in detail how the accident occurred and the appointment of the accident investigation board.
- The third section will describe the root cause(s) and contributing causes that led to the accident and the reasoning/evidence that supports this analysis. HPI analysis and causes should be summarized in this section.
- The fourth section will present the investigation team's recommendations, including any recommendations arising from the HPI analysis.
- Names shall not be used in the accident report, other than those of the accident investigation team. Persons involved in the accident will be referred to by job title.
- When possible the report should use photographs to augment the written description of the accident scene and consequences.
- The report may be presented in draft to the M&O senior management for factual review and comment, but no changes may be made except to correct inaccurate information and revise any conclusion no longer supported by the facts.
- Report appendices will include:

- A copy of the DOE F 5484.3 for the injury/illness. (Note: A DOE F 5484.3 is required even though the investigation is documented in the report. Names and other information that specifically identifies the individuals involved shall be deleted)
- A timeline for the accident.
- A copy of the Injury/Illness/Incident Report (AAA.9020.680). (Note: Names and other information that specifically identifies the individuals involved shall be deleted.)
- Copies of pertinent supporting documentation such as certifications, equipment maintenance records, operators' manuals, training, etc. at the discretion of the investigation lead.

CAUTION
Copies of interviews, witness statements, and other information obtained in confidence will be classified as Official Use Only (OUO) and shall not be included in the report.

- A cover letter and the report will be presented to the M&O Project Manager and the M&O Contracting Officer.
- The M&O Contracting Officer will transmit a copy of the report to the DOE Contracting Officer.

- Tracking and Closure of Expanded C Recommendations
  - Recommendations/judgment of needs (JONs) shall be entered into the DOE Action Tracking System (DATS) as safety issues if directed by the DOE Project Manager.
  - If the recommendations will not be entered in the DATS, the team leader will enter them in the Assessment Tracking System.
  - The M&O Project Manager or his designee will assign actionees and due dates to ach recommendation/judgment of need (JON) that is assigned to the M&O Contractor.
  - M&O S&H will document a risk assessment for each of the entries in the ATS.
  - Accident investigation recommendations shall be tracked to closure.
  - The accident investigation lead will be responsible for closing the ATS entry upon verification of satisfactory completion of corrective actions. He or she may delegate this responsibility.
  - Status of the recommendations will be briefed to the senior staff at the M&O Executive Safety Council meeting by the directorate responsible for action.

NOTE
The investigation team should review their findings for potential lessons learned and input those identified into the Lessons Learned Database. Anyone may identify and submit a lesson learned. There is no limit to how many may be submitted.

38.3. CORRECTIVE ACTIONS

38.3.1. The M&O Contractor

- Responsible for tracking two categories of corrective actions resulting from an accident or incident:
  - All recommended corrective actions from Expanded Contractor Investigations that do not result in permanently disabling injuries or fatalities.
  - Corrective actions from investigations of accidents that did result in disabling injuries or fatalities assigned to the M&O by the SPR Project Manager. (The Judgment of Needs section of these investigations shall be converted to corrective actions with the responsible individual identified.) Corrective actions for accidents resulting in disabilities and fatalities will be entered and tracked in the DOE Action Tracking System (DATS).
- Monitor the progress of M&O corrective actions and report the status of Class A and B recommendations, if any, quarterly to the DOE Assistant Project Manager for Technical Assurance.
- Enter Class C accident actions requiring configuration or procedural changes into the Assessment Tracking System (ATS), flagged for independent reporting. Update status monthly with information provided by the actionee.
- Monitor the progress of all Class C recommendations and report their status to the M&O project manager as requested.

38.3.2. Operations & Maintenance APM

- Ensure that the site directors complete actions required to abate the hazards assigned to the site and report this action to the senior site representative.
- Review Engineering Change Proposals (ECPs) intended to address a corrective action, in accordance with Configuration Management system requirements, to ensure change proposals are cost-effective and operationally correct.
- Enter status for those corrective actions in ATS for which O&M is the owner, monthly

38.3.3. Criteria to Close Corrective Actions

- Tasks requiring configuration changes completed by accomplishment of maintenance recommendations or by construction will be physically verified following the criteria established for the tracking system in which the recommendation was entered.
- Tasks requiring procedure changes will be verified by locating the completed procedure in a permanent M&O document.
- Documentation of closure information will be entered in ATS or DATS.
- Completed ATS items will be closed in the ATS database upon verification of closure.
- Completed DATS items will be closed by the DOE Project Manager or his designee.

38.4. RESPONSIBILITIES

Site Safety Specialist or the Site Director's designee(s)

- Be trained in accident investigation techniques.
- Conduct accident investigations as directed by site management.
- Conduct and document individual and private witness interviews

- Ensure that interviews are conducted by personnel not involved in the accident
- View and document the conditions with photographs and sketches
- Ensure photographs of the accident scene are labeled and dated.
- If physical damage to equipment occurred that will result in property loss, ensure that the equipment is photographed.
- Ensure photographs contain some means of determining relative size, location, and date
- Obtain the signature of the supervisor responsible for recommended corrective action, and submit the form to the New Orleans Safety department within 5 calendar days of notification of an OSHA recordable injury/illness.
- If an open recommended corrective action exists, include an estimated completion date. Number each recommendation sequentially. Ensure open action items are being acted upon by site supervision.

Site Security Specialist

- As soon as the medical needs have been met, ensure that the accident scene is secured (preserved) by security officers
- Mark the area in which the accident occurred
- Restrict access within that area to those designated by the Site Director to perform investigation-related activities
- Ensure that anyone entering the restricted area signs in and out on an entry log and that the evidence is not disturbed without authorization, if evidence is disturbed, document the action taken.
- Maintain the log as an accident record.
- Photograph the scene/evidence and sequester witnesses, but only under the direction of the lead investigator or the Site Director
- Verify the evidence is not disturbed.
- Ensure the accident area is protected, area as directed.

Lead Investigator

- Decide whether preserving the scene as it was at the time of the accident is feasible and will not damage/deteriorate the evidence or present an additional hazard or whether evidence should be collected from the scene, documented, and safely stored
- If possible leave the evidence in situ until OSHA has a chance to examine the scene
- If DOE Headquarters appoints the board, the lead investigator may request that the scene be maintained intact until they arrive

Department Manager

- Evaluate all accidents and incidents occurring within the department quarterly, review for any trends, and identify cause(s) with assistance from the site safety specialist. Present this information to the Site Safety Management Council (SSMC).
- Recommend corrective action(s) to supervision to prevent future occurrences

Site Director

- Act as lead investigator and be responsible for preserving the scene of an accident, collecting witness statements, photographs, and other evidence until a lead investigator has been appointed.
- Supervise accident-related activities until an accident board lead has been appointed.
- Delegate specific actions as needed to support the investigation.
- Decide whether preserving the scene as it was at the time of the accident is feasible and will not damage/deteriorate the evidence or present an additional hazard or whether evidence should be collected from the scene, documented, and safely stored
- If possible, leave the evidence in situ until OSHA has a chance to examine the scene
- Provide any support required by the accident investigation team.
- Formally turn over the scene and any evidence collected to the accident investigation lead upon their arrival.

Security Force officers

- Protect the accident area as directed.

Worker Compensation (WC) Site Representative

- Notify the WC analyst of a work related injury by telephone as soon as possible.
- Provide all required forms to the WC analyst as soon as possible.
- Provide the employee with all forms that may be required by state.
- Submit all subsequent medical records, state or hearing notices, medication requests, citations, or petitions to the WC analyst.
- Serve as a liaison with WC analyst on any medical or return to work issues.
- Continue to communicate with the injured employee until he or she is released to return to work full duty.

Injured Employee

- If possible, immediately notify the CRO at the site, and the Protective Force Security Subcontractor (x4321) if in NO.
- Complete Section (b.) of the Injury/Illness/Incident Report (AAA.9020.680) as soon as possible.
- Keep the immediate supervisor apprised of medical conditions and the disability status as it relates to work

Employees (At Sites)

- Immediately report all injuries/illnesses to the CRO

Employees (New Orleans)

- Report all injuries and illnesses to the Protective Force Security Contractor (x4321)
- Dial 9-911 if medical response is needed immediately. If notifying 911, state clearly what building and office the patient is in.

CRO

- Notify the ERT if needed, the employee's supervisor, the site safety specialist, the site director, the NO OCC, and the DOE SSR.
- Call for an ambulance for serious injuries.
- Notify the front gate to facilitate entry.
- Notify the New Orleans OCC of any reported accident/injury/illness

Protective Force (Sites)

- Report information on where the employee is being transported to the employee's supervisor.

Protective Force (NO)

- Notify EMS if needed.
- Provide First Aid/CPR to the extent of their training and remain with the employee until medical response personnel arrive.
- Notify the NO OCC immediately.
- Provide the NO OCC with updates and information on where the employee is being taken, if transported off-site by EMS.

Supervisor

- Assist the ERT to coordinate appropriate first aid, medical treatment, or CPR.
- Notify the managed care provider as soon as possible
- Maintain status of the employee's medical condition, and coordinate with Human Capital as needed.
- investigate the incident in detail
- complete and submit the first page of the Injury and Illness Incident Report within 24 hours
- Provide employees the form specified in "Reporting and Processing Workers' Compensation Injuries"
- Prior to the employee's return to work consider whether a fit for duty evaluation should be made.
- Ensure employee sent offsite for medical treatment has a return-to-work form from physician
- Submit the return to work form immediately upon the employee's return following an injury or illness involving lost workdays to Human Capital

First Aid Provider

- If currently trained in first aid/CPR provide treatment only to the extent of your training.
- If providing first aid, document treatment on First Aid and Bloodborne Pathogen Exposure Incident Log.

Site Safety

- Report all injuries/illnesses to the NO Safety department immediately.

- Assist supervisor as needed with the first page of the Injury and Illness Incident Report
- Submit a copy of the first page of the Injury and Illness Incident Report to NO S&H within 24 hours; submit original to workers' compensation representative
- Interview personnel involved in the incident.
- Gather and maintain case file documentation on all first aids and MTCs
- Submit a completed case file to NO Safety within 5 calendar days
- File completed DOE F 5484.3 in case file upon receipt
- Record the case on OSHA 300 log if OSHA recordable
- If recordable, notify the appropriate OSHA office and report the accident within the allotted time period, document the call, and notify NO S&H that this has been done
- Maintain an up-to-date site OSHA 300 Log and post the previous year's summary from February 1 - April 30.

NO Safety

- Follow up on each case to ensure that DOE F 5484.3 forms are prepared in all cases when required by recordkeeping guidelines.
- Maintain files for all SPR sites of all forms and reports related to injury or illness, including the Injury/Illness/Incident Report (AAA.9020.680) and the DOE F 5484.3 (if applicable).
- Input the Injury/Illness/Incident Report (AAA.9020.680) electronically into the CAIRS database for cases determined to be OSHA recordable. Submit a copy of the DOE F5484.3 to the Site Safety and the DOE Safety department as defined by DOE Order 231.1
- Review OSHA recordable injuries/illnesses at the quarterly meeting of the Executive Safety Committee.
- Track open recommended corrective actions from investigations to closure using the ATS.
- Review Accident Investigations and identify any Lessons Learned for inclusion in that program. There should be at least one (minimum).
- Provide support to sites to identify trends and to prevent recurrences.

Operations Control Center (OCC)

- Notify the M&O Safety department, M&O Operations, and the DOE counterpart of accidents/incidents.

Site Director

- Ensure compliance with requirements for reporting and recording of injuries/illnesses.
- Ensure the OCC is notified and forward required reports to the OCC.

Systems Safety Department

- Review DOE F 5484.3 "Individual Accident/Incident Reports" for applicability to systems and prior to a PHA.

Contractor/Sub-contractor

- Follow all notification requirements, including notifying the CRO immediately to expedite notification of 911 and facilitate their quick arrival. This is also how the ERT will be activated for immediate response.
- Follow all of the reporting requirements in the APM for MTCs, First Aids, and Notifications for all injuries/illnesses.
- Investigate accidents/injuries; identify root causes, and corrective action plan.
- Ensure that employees returning to work are fit for duty.

38.5. FIGURES: REPORTING/RECORDING PROCEDURES

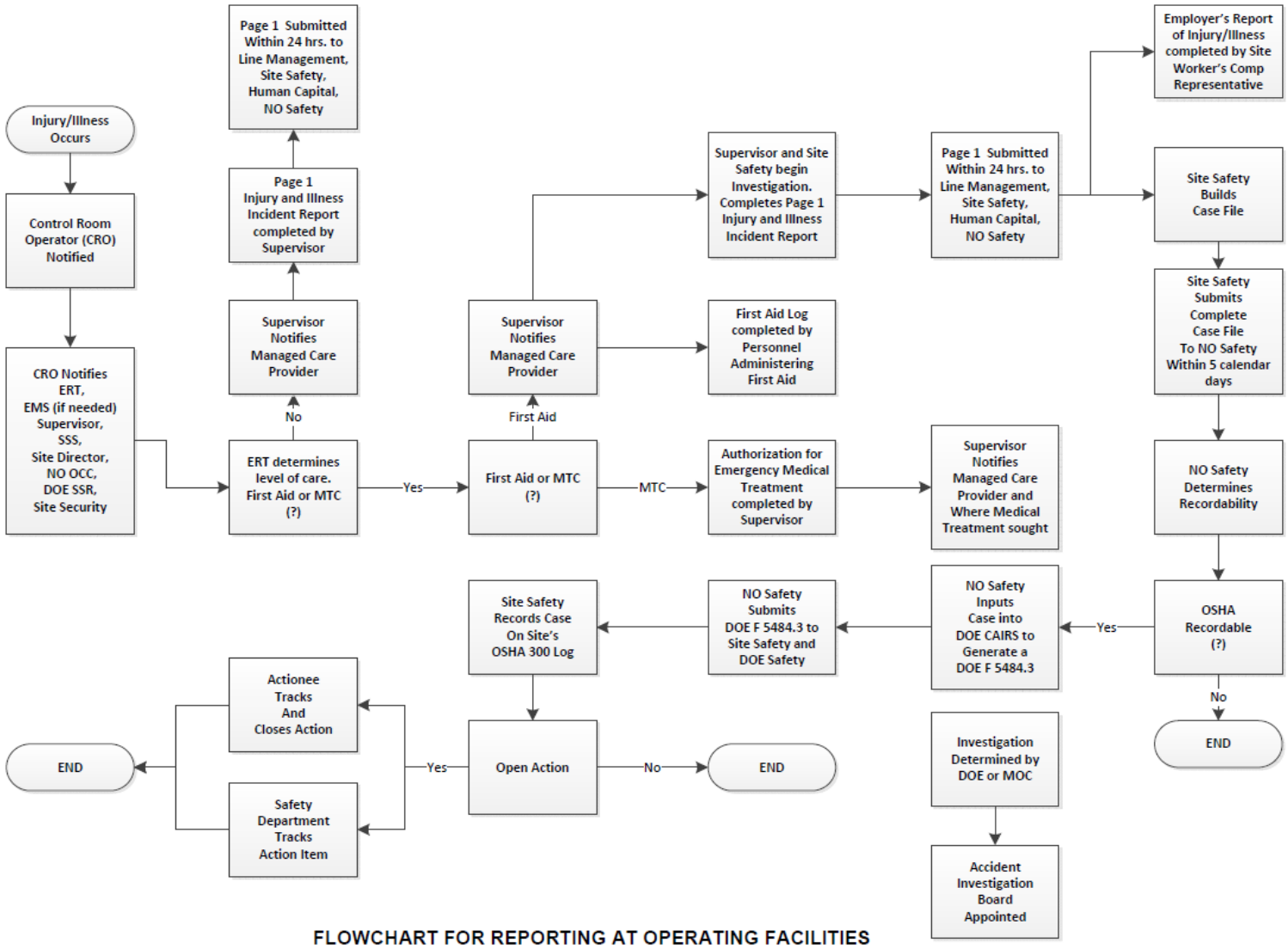


Figure 38-1. Flow Chart for Reporting at Operating Facilities

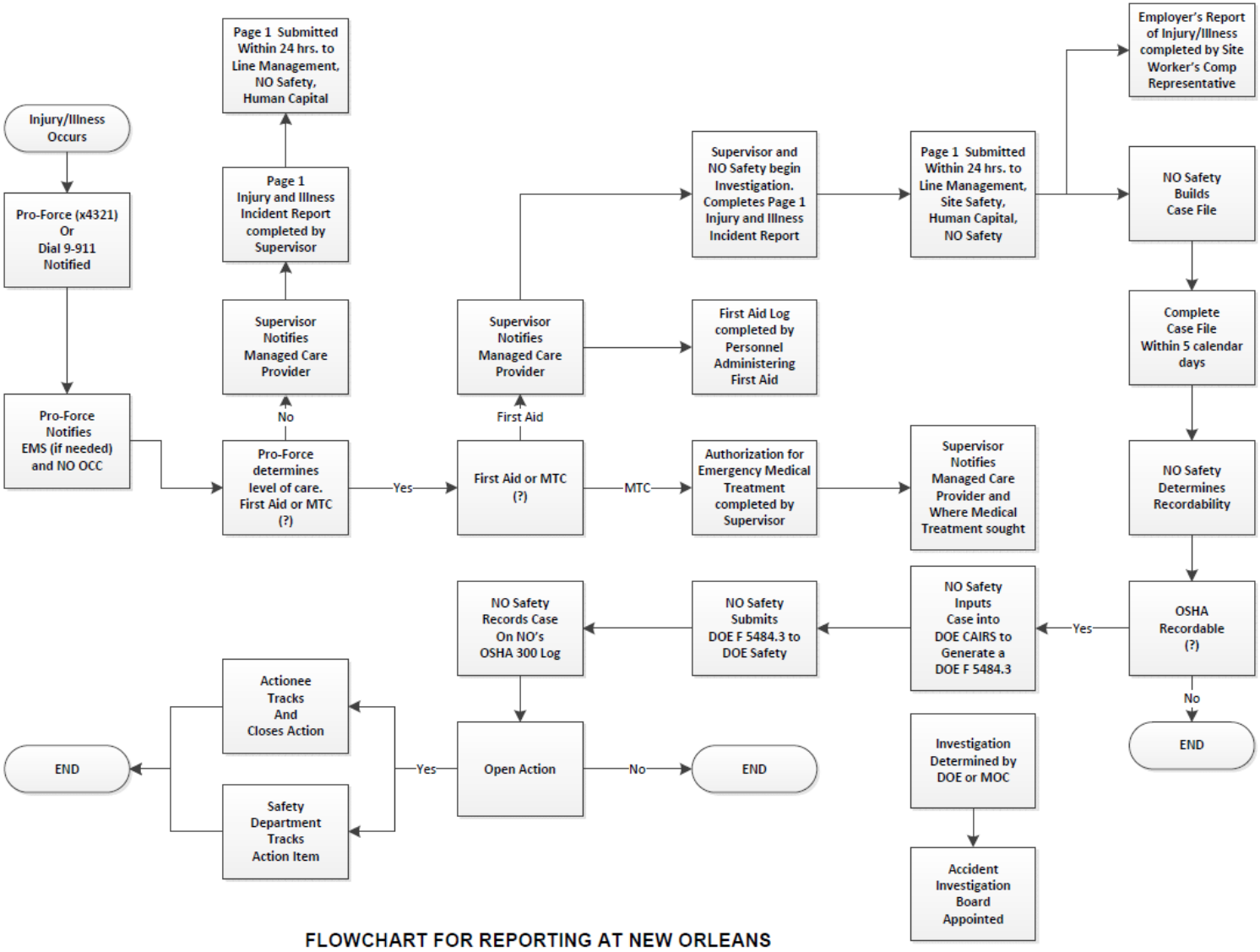


Figure 38-2. Flow Chart for Reporting at New Orleans

Who	When
• Who was injured? • Who saw the incident? • Who was working with him/her? • Who had instructed/assigned him/her? • Who else was involved? • Who else can help prevent recurrence?	• When did the incident occur? • When did he/she start on that job? • When was he/she assigned on the job? • When were the hazards pointed out to him/her? • When did his/her supervisor last check on job progress? • When did he/she first sense something was wrong?
What	**Why**
• What safety system failed? (Pre-Job Briefing, JHAs, training, hazard identification, enforcement, inadequate rules) • What did the supervisor do to prevent the injury? • What type of training has the employee had? • What was the incident? • What was the injury? • What was he/she doing? • What had he/she been told to do? • What tools was he/she using? • What machine was involved? • What operation was he/she performing? • What instructions had he/she been given? • What specific precautions were necessary? • What specific precaution was he/she given? • What protective equipment should have been used? • What protective equipment was he/she using? • What had other persons done that contributed to the incident? • What problem or question did he/she encounter? • What did he/she or witnesses do when the incident occurred? • What extenuating circumstances were involved? • What will be done to prevent recurrence? • What safety rules were violated? • What new rules are needed? • What did he/she or witnesses see?	• Why did the safety system fail? • Why was he/she injured? • Why did the other person do what he/she did? • Why wasn't protective equipment used? • Why weren't specific instructions given him/her? • Why was he/she in the position he/she was? • Why was he/she using the tools or machine he/she used? • Why didn't he/she check with his/her supervisor when he/she noted things weren't, as they should? • Why did he/she continue working under the circumstances? • Why wasn't supervisor there at the time?
	Where
	• Where did the incident occur? • Where was the supervisor at the time? • Where were fellow workers at the time? • Where were other personnel who were involved at the time? • Where were witnesses when incident occurred?
	How
	• How did he/she get injured? • How could he/she have avoided it? • How could fellow workers have avoided it? • How could supervisor have prevented it?

Figure 38-3. Interviewing Witnesses: Asking the Right Questions

39. RESPIRATORY PROTECTION PROGRAM

PURPOSE

The Respiratory Protection Program provides the practices and guidelines for selection, use, and maintenance of respirators to protect the health of workers from hazardous airborne contaminants and atmospheres.

SCOPE

This section includes the following:

- Overall Program Description
- Respirator Selection Process
- Medical Evaluation
- Fit Testing
- Proper Respirator Use
- Immediately Dangerous to Life and Health (IDLH) Atmospheres
- Training
- Program Evaluation
- Recordkeeping
- Responsibilities
- Tables

APPLICATION

This section applies to work activities and employees under the control of the M&O and its subcontractors.

PROGRAM ADMINISTRATION

The Respiratory Protection Program is administered by the New Orleans Industrial Hygiene (IH) Group.

DEFINITIONS

Atmosphere-Supplying Respirator – A respirator that supplies the respirator wearer with breathing air from a source independent of the ambient atmosphere and includes supplied-air line respirators (SARs) and self-contained breathing apparatus (SCBAs) units.

Air-Purifying Respirator – A device that removes specific air contaminants by passing ambient air through the air-purifying element.

Atmospheric Contaminant – Any substance, either gaseous or particulate, that is not a constituent of the normal atmosphere or that is present in a concentration greater than that found in the normal atmosphere.

Breathing Air (Respirable Air) – Air of quality intended to be suitable for human respiration at normal atmospheric pressure with an oxygen range of between 19.5 percent and 23.5 percent.

Bottle Watch - Person assigned to prepare and continuously oversee the supplied air line respirator system from user to air supply while in use.

Disposable Respirator – A device for which maintenance is not intended and which is designed to be discarded after excessive resistance, sorbent exhaustion, physical damage, or end-of-service-life renders it unsuitable for use.

End-of-Service-Life-Indicator (ESLI) – A system that warns the respirator wearer of the approach of the end of adequate respiratory protection.

Escape-Type Respirator – A device for emergency escape from a respiratory hazard.

Fit Factor – A quantitative estimate of the fit of a particular respirator to a specific employee, and typically estimates the ratio of concentration for a substance in ambient air to its concentration inside the respirator when worn.

Filter or Air-Purifying Element – A component used in respirators to remove solid or liquid aerosols from the inspired air.

Full-Facepiece – A close-fitting device to cover the eyes, nose, and mouth and be secured in position by suitable means.

Hood – That portion of the respirator that completely covers the head, neck, and portions of the shoulders.

High Efficiency Particulate Air (HEPA) – A filter that is at least 99.97 percent efficient in removing monodisperse particles of 0.3 micrometers in diameter.

Immediately Dangerous to Life and Health (IDLH) – An atmosphere that poses an immediate adverse effect on health or the ability to escape.

Negative Pressure Respirator (Tight Fitting) – A respirator in which the air pressure inside the facepiece is negative during inhalation with respect to the ambient air pressure outside the respirator.

Oxygen-Deficient Atmosphere – An atmosphere that does not contain enough oxygen (less than 19.5 percent) to fully support the body's metabolic processes.

Particulates – A term used in this section to refer to particulate aerosols such as dusts, mists, smoke, and fumes.

Positive Pressure Respirator – A respirator in which the pressure inside the respiratory inlet covering is positive with respect to ambient air pressure outside the respirator.

Powered Air-Purifying Respirator – An air purifying respirator that uses a blower to force the ambient air through air-purifying elements to the inlet covering.

Pressure Demand Respirator – A positive pressure atmosphere-supplying respirator that admits breathing air to the facepiece when the positive pressure is reduced inside the facepiece by inhalation.

Qualitative Fit Test – A facial fit test giving pass/fail results and relying on the wearer's response to a test agent.

Quantitative Fit Test – An assessment of the adequacy of respirator fit by numerically measuring the amount of leakage into the respirator.

Respirable Air (Breathing Air) – Air of quality intended to be suitable for human respiration.

Respirator – A personal respiratory protective device that is designed to prevent the inhalation of contaminated air.

Routine Respirator Use – Wearing a respirator when carrying out a regular and frequently repeated task.

Self-Contained Breathing Apparatus (SCBA) - A self-contained atmosphere-supplying respirator where a limited supply of compressed breathable air is provided for which the breathing air source is designed to be carried by the user, and used in conditions where a higher level of respiratory protection is required such as entering an IDLH (immediately dangerous to life or health) area or emergency response.

Supplied-Air Respirator (SAR) – A respirator that supplies a reliable source of respirable air, independent of the work environment and conveyed to the wearer through a supplied air system which can include an airline, air hose, or by the wearer carrying an apparatus that provides the air (supplied airline, escape pack, or SCBA).

39.1. OVERALL PROGRAM DESCRIPTION

The need for respiratory protection indicates a task with a higher hazard level. Respiratory protection is considered a "last line of defense" against exposure, so it is imperative that workplace respiratory hazards are identified and evaluated for potential exposure, the appropriate respirator is selected for use, and respirators are worn properly. This level of control measure is only to be considered when engineering controls are not feasible or while they are being implemented.

39.2. RESPIRATOR SELECTION PROCESS

39.2.1. Respirator Selection – Factors to Consider

There are a number of important aspects that are considered when identifying and evaluating the respiratory hazards and selecting the appropriate respirator. These aspects are defined in Figure 39-1. Respiratory Selection Considerations.

Figure 39-1. Respiratory Selection Considerations

Contaminant and Atmosphere-Based	Task-Based	Wearer-Related
• Chemical state and physical form • Multiple contaminants • Toxicity • Concentration • OEL(s) • Expected biological / physical effects • Skin absorption / irritation • Eye irritation • Warning properties (odor threshold) • Sensitization • Additional PPE • Oxygen deficiency • Potential IDLH • Potential LEL	• Intended Use (regular, emergency, or escape) • Duration of time of task • Anticipated physical work load level • Mobility • Access to / nature of working environment • Proximity to suitable breathing air • Need for clear vision and communication • Facilities available to maintain respirator and/or system	• Impact of wear on basic physiological systems (cardiac, respiratory, muscle) • Impact of additional PPE to be worn • Impact on protection level due to respirator fit / sealing issues • User acceptance • Respirator choices (more than one)
Legend: OEL(s) – Occupational Exposure Limit(s); LEL – Lower Explosive Limit; IDLH – Immediately Dangerous to Life or Health		

39.2.2. Respirator Selection – General Provisions

- Respirators are selected and provided to qualified employees based on the respiratory hazards to which the worker is exposed.
- Respiratory hazards are identified and evaluated to provide a reasonable estimate of employee exposure.
- If the hazard evaluation cannot identify or reasonably estimate the employee exposure, the atmosphere is considered Immediately Dangerous to Life and Health (IDLH) until the exposure determination changes. The respirator selected must reflect being used under those conditions.
- Employees required to wear a respirator are qualified to do so prior to first use of the respirator.
- Respirator models and sizes are acceptable to, and correctly fit, the user.
- Only respirators and respirator systems certified and approved for use by the National Institute for Occupational Safety and Health (NIOSH) shall be used.

39.2.3. Respirator Selection – Reasonable Estimate of Exposure

Identifying the hazard type, determining the toxicity, and measuring employee exposure can require specialized equipment and expertise. Direct reading and/or personal monitoring are the most accurate and preferred methods for estimating potential exposure to atmospheric vapors, gases, mists, fumes, dusts, smoke, or other particulates. Estimating exposure is accomplished during work-planning processes such as the:

- Preliminary Hazard Review (PHR), Process Hazard Analysis (PHA), and Design Review processes.
- ES&H review of the hazardous properties of chemicals to be used on site, including Safety Data Sheets (SDSs), as part of implementing the Environmental Instruction: Qualified Products List for Purchasing.
- Research and review of industry standards and applicable occupational exposure limit (OEL) documentation provided by the OSHA, ACGIH®, and NIOSH.
- Periodic industrial hygiene (IH) monitoring of existing tasks, or IH monitoring of new tasks / new chemicals to characterize exposure potential.
- Review of historical exposure experience, including data and observations from short-term or task duration monitoring, or previous time-weighted averages of the task.
- Annual IH review of the Occupational Exposure Index (OEI).
- Conducting of a Job Hazard Analysis (JHA).

When insufficient information is available, a conservative approach will be taken and a “worst-case” scenario of exposure will be planned for and/or estimated.

39.2.4. Respirator Selection – Respirator Types

Respirators are categorized according to their capabilities, limitations, and level of protection against the hazardous atmospheric conditions and/or contaminants for which they are being used. The main types of respirators used on the SPR are the:

- Air Purifying Respirator (APR)
- Atmosphere Supplying Respirator or (Supplied Air Respirator) (SARs)
  - Supplied airline (with or without escape pack)
  - Self-Contained Breathing Apparatus (SCBA)
  - Escape-only respirator
- Chemical, Biological, Radiation, Nuclear (CBRN) canister respirator (only used by the SPR Protective Forces subcontractor).

NOTE
The SPR Protective Force has their own internal respiratory protection program which is implemented and managed separately from this M&O Contractor program.

39.2.5. Respirator Selection – Assigned Protection Factors and Maximum Use Concentrations

The Assigned Protection Factor (APF) is the workplace level of protection expected to be provided by the respirator type. APFs are used to select a respirator that meets or exceeds the required level of protection.

The Maximum Use Concentration (MUC) is the maximum atmospheric concentration of a hazardous substance an employee can be expected to be protected from when wearing a respirator.

The MUC is determined by multiplying the APF of a specified respirator by the occupational exposure limit (OEL) for the atmospheric contaminant. Dividing by 2 helps ensure that the MUC is never exceeded.

$$MUC = \frac{APF \times OEL}{2}$$

Figure 39-2. M&O MUC

The MUC cannot be applied to IDLH conditions. Instead, respirators listed for IDLH conditions must be used.

The following figures provide basic information about respirator types (with accompanying APFs) that may be selected for use on the SPR.

Figure 39-3. Air Purifying Respirator (APR) Types with APFs

Filtering Facepiece / Dust Mask APR APF=10

Half-Face APR
(Elastomeric)

Full-Face APR
(Elastomeric)
APF=50

PAPR APF=25

APRs are negative pressure respirators that remove air contaminants by mechanical filtration and / or a cartridge or canister. The filter or cartridge type is dependent upon the specific contaminant being protected against.

Filtering facepieces / dust masks only filter out low hazard particulate dusts or nuisance dusts. They do not protect against gases or vapors.

For tight-fitting elastomeric respirators, respirators are either equipped with a filter that removes dust particulates or cartridges that adsorb gases and vapors, or a combination of both.

Highly hazardous particulates or fibers require HEPA – high-efficiency particulate air – filtration (with 99.97% efficiency) be used when using an APR. Equivalent NIOSH HEPA particulate filters are the N100, R100, and P100 filters.

APRs can be either disposable or reusable.

PAPRs (powered APRs) are APRs that provide a filtered positive air flow into the mask or hood by a mobile battery powered source.

NOTE: APRs are not allowed for protection for unknown concentration, for day-to-day operations against H2S, for IDLH conditions, or oxygen deficient atmospheres. The only exception is the CBRN respirator, which is only used for escape by the Protective Force.

Figure 39-4. Atmosphere - Supplying Respirators (Supplied Air Respirators)

Full Mask SAR with Escape
APF = 1000

SCBA
APF = 10,000

SARs use uncontaminated air supplied by a hoseline or tube connected to a compressor or contained air cylinder, creating a positive pressure airflow into the respirator face-piece.

SAR systems provide a higher level of protection than APRs, and allow for more mobility, and usually longer work times (supplied air line only).

Depending on the type of work to be performed, some supplied air line respirators use a tight-fitting facemask, and others use a shroud-type hood.

Tight-fitting face-piece supplied air pressure demand respirators have an APR of 1000.

Loose fitting hoods have an APF of 25, unless manufacturing and/or independent testing supports a higher number. Blasting hoods have been designed for and are tested towards a much higher protection factor (1000+).

The highest level of respiratory protection is the positive-pressure demand SCBA (self-contained breathing apparatus). This respirator type also provides greater mobility, but has a limited air supply.

39.3. MEDICAL EVALUATION

Anyone required to wear a respirator must be medically evaluated prior to being fit tested and prior to initial use and annually thereafter.

This evaluation is conducted by a Physician or other Licensed Health Care Professional (P/LHCP), which includes a review of a medical questionnaire completed by the employee, and testing as determined by the P/LHCP, and/or as required by the M&O.

The P/LHCP is provided with the following information for the evaluation:

- A copy of the employee's job description.
- A copy of the employee's completed SPR Respirator Medical Evaluation Questionnaire (OSF02-0021).
- The type and weight of the respirator system(s) to be worn.
- The expected duration and frequency of respirator use.
- The expected physical work effort.
- Additional protective clothing and equipment to be worn.

- Temperature and humidity extremes that may be encountered.

The employee is given the opportunity to complete this process during normal work hours. During the evaluation, it is the employee's responsibility to disclose any medical conditions that may impact their wearing of respiratory protection.

The P/LHCP may refer the potential respirator wearer for further medical evaluation at his/her discretion.

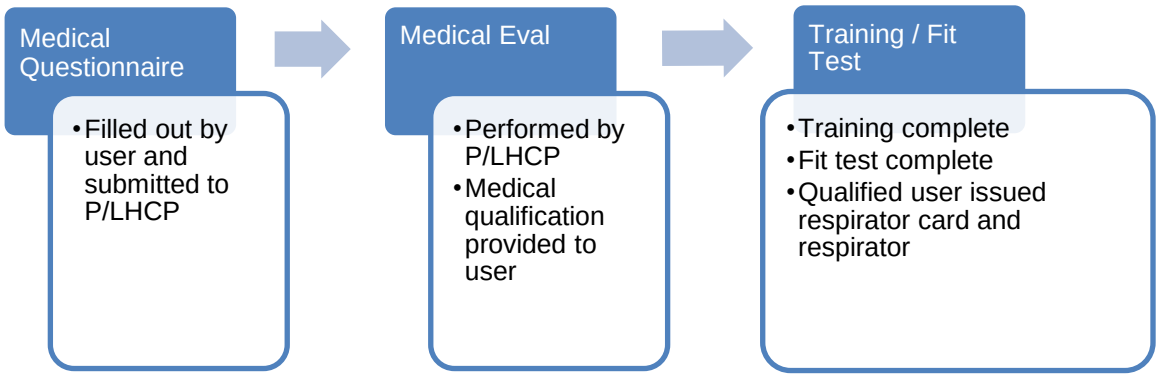
The P/LHCP determines the medical fitness of the employee and recommends whether or not the employee is medically qualified to wear a respirator. The P/LHCP's assessment and recommendation(s) are documented on the M&O Contractor Employee Health Evaluation, which includes:

- Any limitations on respirator use related to the employee's medical condition, or the workplace conditions in which the respirator will be used (This information shall be communicated by the person who receives the report to the supervisor of the employee);
- The need, if any, for follow-up medical evaluations;
- Whether or not the employee is medically able to use the respirator;
- A statement for non-qualified employees who receive a temporary or permanent medical restriction to read: "Not medically qualified for work assignments requiring use of a respirator"; and
- A statement that the employee is provided with a copy of the P/LHCP's written recommendations.

Additional medical evaluations are made if:

- An employee reports medical signs or symptoms related to the ability to use a respirator;
- A P/LHCP, supervisor, or Safety & Health professional informs the M&O Contractor that an employee needs to be reevaluated;
- Information gathered or observations made during fit-testing and program evaluation, indicates a need for employee reevaluation; or
- A change occurs in workplace conditions (physical work effort, protective clothing, or temperature) that may result in a substantial increase in the physiological burden placed on an employee.

Figure 39-5. Medical Evaluation Flow



39.4. FIT TESTING

Anyone required to wear a positive or negative pressure tight-fitting facepiece respirator must be fit tested. Fit tests must be conducted with the same type (make, model, and size) of respirator to be worn for the assigned task.

Respirator Used for Fit Test = Respirator Used for Task

Respirator wearers are fit tested:

- prior to initial use, and at least annually thereafter;
- whenever a different respirator size, style, model, or make is to be used; and
- if the employee's physical condition has significantly changed.

A quantitative (QNFT) or qualitative (QLFT) fit test method with an approved OSHA-accepted protocol shall be used. The current QNFT protocol and equipment used at the SPR sites are described in AAA9020.871, Respirator Fit Testing Guidance.

Designated fit test administrators at each site conduct the fit test and keep a record of the fit testing results. If fit testing cannot be completed on site, or the site chooses, then the respirator wearer is sent to a designated clinic for testing.

Upon completion of a successful fit test, the respirator wearer is issued a Respirator Identification Card (RIC) by the Fit Test Administrator. If administered by the M&O Contractor, the SPR Respirator Identification Card is issued.

Employees are issued a respirator:

- Upon presentation of a current Respirator Identification Card;
- Only for the respirator(s) specified on the Respirator Identification Card; and
- Only by those authorized to issue a respirator / respirator system as designated by the site director (examples include Site Safety, Fire Protection Specialist, Maintenance, Operations).

If a respirator wearer cannot pass a QNFT using the assigned respirator, or after passing a QNFT and initial use of the respirator it is determined that the fit is unacceptable, then the respirator wearer shall be given the opportunity to select a different facepiece and/or respirator and be retested.

39.5. PROPER RESPIRATOR USE – GENERAL USE PRACTICES

Each time a respirator is put on, the wearer must be able to rely on and have the highest level of confidence in the equipment being used. In order to ensure that effective protection is achieved, certain factors regarding use, inspection, cleaning, storage (and maintenance) must be addressed.

39.5.1. General Use Practices

- Seal Check: The tight-fitting facepiece respirator must make a tight seal with the wearer's face. If it does not, contaminated air can leak through gaps and directly expose the wearer. Each time the respirator is put on for use, the wearer needs to conduct a seal check.

NOTE
The manufacturer's recommended methods should be followed, but if none are provided, then the program administrator and/or site safety and fire protection support determines the best seal check protocol which is included during training.

- Facial Hair: Facial hair must not come between the sealing surface of the tight-fitting facepiece and the face or interfere with valve function. This is the most common obstacle to preventing a tight seal. If there is enough room for a hair in the seal between the skin and the respirator, there is also room for contaminants to enter (see the size comparisons in Figure 39-5). Figure 39-6 illustrates acceptable and non-acceptable facial hair designs that impact the seal and effective protection of the respirator.

Figure 39-6. Comparison of Human Hair and Air Contaminant Sizes

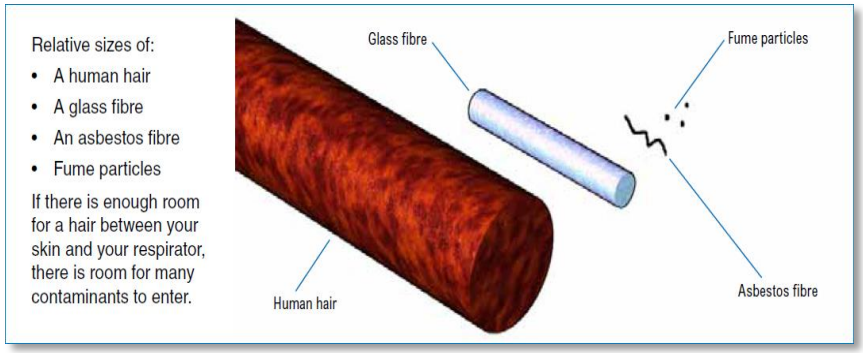
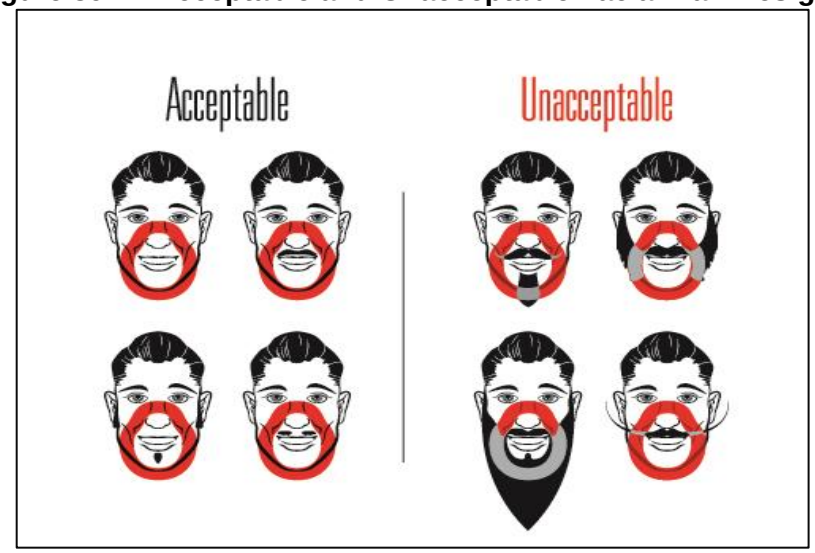


Figure 39-7. Acceptable and Unacceptable Facial Hair Designs



- Prescription Lenses: When an employee must wear corrective glasses as part of the facepiece, the facepiece insert and glasses will be provided.

- Other Protective Lenses / Shields: Glasses, goggles, face shields, welding helmets, or other personal protective devices will be made available when needed that do not interfere with the seal or function of the respirator.
- Removal of Respirators: Wearers must not remove their respirators until out of the hazardous atmosphere, and in a designated safe area.
- Airline Respirator Connections: Respirator system couplings must be incompatible with all other non-respirator system couplings. The airline respirator must have been tested by NIOSH as a system from the mask to the manifold (mask, hose, coupling).

39.5.2. Use of Air Purifying Respirators (APRs)

If an APR is used, then the following must be followed:

Cartridge and Filter Change-Out: APRs equipped with cartridges and filters must be periodically changed to ensure adequate protection. APRs using an aerosol / particulate filter (designated as N100, R100, or P100) can indicate that filters need to be changed when there is a noticeable increase in breathing resistance. Vapor and gas removing cartridges contain a chemical sorbent that can become saturated and result in breakthrough without a noticeable increase in breathing resistance.

A change-out schedule must be established as part of the work planning process for the activity and conditions for which the respirator will be used. If an end of service life (ESLI) designation is not provided by the cartridge manufacturer, then the cartridge change-out schedule must be determined and take into consideration the:

- Contaminants the respirator is to protect against;
- Concentrations of the contaminants in the work area;
- Frequency of use such as full shift or partial, or one time use only or routine;
- Temperature, humidity, and air flow through the cartridge or canister; and the
- Manufacturer's recommendations.

This determination will be made by the New Orleans IH Group with input from Site Safety as part of the work planning processes.

39.5.3. Use of Supplied Air Respirators (SARs) and Breathing Air Quality Requirements

Supplied airline respirators and SCBAs must have supplied air that meets the following Grade D breathing air minimum requirements:

- Oxygen content (v/v): 19.5% – 23.5%;
- Carbon dioxide content: 1000 ppm (or 0.1%) or less;
- Carbon monoxide content: 10 ppm or less;
- Hydrocarbon (condensed) content: 5 mg/m3 or less;
- Water: concentration to be below dew point when the air is released into the facepiece; and
- Lack of noticeable odor.

If an air compressor system is used to supply air from an uncontaminated area to the user, the system must be designed and built for the purpose of providing breathable air.

If cylinders are used to supply breathing air to respirators, the following requirements must be met:

- Cylinders are tested and maintained as prescribed in the Shipping Container Specific Regulation of the Department of Transportation (DOT) 49 CFR 173 and 178;
- Cylinders of purchased breathing air have a certificate of analysis from the supplier that the breathing air meets the requirement for Type 1 – Grade D breathing air (as specified above and in ANSI/CGA G-7.1-1989); and
- The moisture content in the cylinder does not exceed a dew point of -50°F (-45.6º C) at 1 atmosphere pressure.

Supplied air line respirator systems shall be set up and used according to the manufacturer, and documented on the Supplied Air Pre-Job Checklist (AAA9020.846).

A “Bottle Watch” person shall be assigned to oversee the supplied air line respirator system. This person shall have no other duties assigned while on bottle watch duty.

39.5.4. SCBAs Used for Emergency Response and Rescue Situations

If SCBAs are used for emergency purposes the following requirements shall be met:

- Consistent SCBA System: One specific type, make, and model of positive-pressure demand SCBA facepiece / system will be used for the SPR ERT. Due to the nature of the work and logistics management of this equipment, it is imperative that a consistent SCBA system be used for emergency response and rescue.
- Designated Use: SCBAs designated for emergency response and rescue use will be kept separate and not be used for Operations and Maintenance activities, and vice versa.
- Readiness: Emergency Response Team (ERT) members must be ready (medically qualified, fit-tested, and clean-shaven) to wear a SCBA at any time.
- Seal Checks: User seal checks for emergency situations will be ensured as part of the PPE and “buddy system” checks prior to entering the response area.
- Speech Transmission: Methods of electronically transmitting and amplifying speech through the respirator will be provided when speech transmission is necessary.
- Inspection: SCBAs shall be inspected at least monthly, in accordance with manufacturer recommendations, and following the Operational Readiness Checklist for SCBAs. They will also be checked for proper function before and after each use.
- Cleaning: SCBAs shall be cleaned and disinfected after each use according to Emergency Response procedures and in accordance with manufacturer recommendations.
- Maintenance and Storage: SCBAs shall be quickly accessible at all times, and the storage bracket or container in which they are stored will be clearly marked and maintained. SCBAs shall be stored according to Emergency Response procedures and in accordance with manufacturer recommendations.

39.5.5. SPR Respirator Use Matrix

The SPR Respirator Use Matrix (Table 39-1.) lists the Similar Exposure Groups (SEGs) who are currently required to use a respirator. Routine tasks and emergency situations are defined for each SEG, with the corresponding type of respirator required for each task. This matrix will be reviewed at least on an annual basis, and updated as needed.

The main activities where respirators are worn include:

- Routine – as required for use in day-to-day operations and maintenance activities, including subcontractor work;
- Confined Space Entry – as required by permit and based upon oxygen and toxicity measurements;
- Emergency and/or Rescue – as required for emergency response to a spill, gas or vapor release, fire, or personal injury, and may include rescue of impacted personnel;
- Escape – use is for escape purposes only; and
- Voluntary – use is only allowed for the lowest level of air purifying respirators in conditions that do not require a respirator.

39.5.6. Changing Conditions and Leaving a Respirator-Required Area

Appropriate surveillance of the work area conditions and degree of exposure or stress that may impact respirator use must be maintained. When there is a chance that the conditions are being impacted, then the respirator user must leave the area and address the changing conditions with the supervisor. The employee must not remove the respirator while in the hazardous environment.

Examples of conditions that may impact the respirator use and cause the employee to leave the respirator-required area:

- To wash their faces and respirator facepiece as necessary to prevent eye or skin irritation associated with respirator use.
- If vapor or gas breakthrough is detected, or an increase in breathing resistance or leakage of the facepiece is noticed.
- To replace the respirator or filter, cartridge or canister components.
- Unusual discomfort or symptoms of illness while wearing the respirator.
- The ESLI warns the user of the approach of the end of adequate respiratory protection.

39.5.7. Voluntary Use

Employees who voluntarily wear a respirator when the use is not required must read, sign, and comply with AAA9020.752, Voluntary Respirator User Information.

The M&O may provide a filtering facepiece respirator at the request of the employee if it is determined that such respirator use in itself will not create a hazard. Employees may not use their own respirators.

39.6. IMMEDIATELY DANGEROUS TO LIFE AND HEALTH (IDLH) ATMOSPHERES

Activities, work tasks, or conditions that are determined and designated as IDLH, the following apply:

- Where the employee exposure cannot be identified or reasonably estimated, the atmosphere shall be considered to be IDLH until the exposure determination changes.
- Oxygen-deficient and oxygen-enriched atmospheres shall be considered IDLH.

Only the following types of respirators are allowed for use in IDLH atmospheres:

- A full face-piece pressure demand SCBA with a minimum service life of thirty minutes;
- A combination full face-piece pressure demand SAR with auxiliary self-contained air supply; or
- A respirator specifically certified for escape from an IDLH atmosphere.

IDLH entry conditions must be identified and included as part of the work planning processes. Planning must include the appropriate level of response and rescue (responders and equipment) required in case of an emergency. Planning will be such that standby employees will be trained and equipped to provide effective emergency rescue; and will be positioned in areas unlikely to be affected by the hazardous atmosphere, such as being positioned at the nearest fresh air base.

Communications (visual, voice, or signal line) must be maintained between the employee(s) in the IDLH atmosphere and the employees located outside the IDLH atmosphere.

When employees enter an IDLH atmosphere, the Site Director must be notified. The Confined Space Rescue Team or the contractor response team must be stationed at the location along with the rescue equipment.

39.7. INSPECTION, CARE, and STORAGE

To maintain in good working order, respirators are to be regularly inspected, cleaned, and properly stored.

39.7.1. Cleaning and Disinfecting

- Personnel who issue respirators will ensure that wearers are provided with clean and disinfected respirators.
- Respirator facepieces issued for the exclusive use of an employee shall be cleaned and disinfected by the user as often as necessary to be maintained in a sanitary condition, and according to OSHA 1910.134, Appendix B-2, Respirator Cleaning Procedures. These procedures are general in nature, and the M&O contractor as an alternative may use the cleaning recommendations provided by the manufacturer of the respirators used by employees, provided such procedures are as effective as those listed in Appendix B- 2. Equivalent effectiveness simply means that the procedures used must accomplish the objectives set forth in Appendix B-2, i.e., must ensure that the respirator is properly cleaned and disinfected in a manner that prevents damage to the respirator and does not cause harm to the user.
- Respirators used in fit testing and training shall be cleaned and disinfected after each use.

- After cleaning and disinfecting, each respirator shall be inspected to determine if it works properly, needs replacement parts, or needs repair. If the respirator is found to be defective it should be repaired, discarded, or removed from service.

39.7.2. Storage

- Employees issued respirators for continuous or frequent use may store the respirator facepiece in the user's department.
- Respirators shall be stored to:
  - Protect them from damage, contamination, dust, sunlight, heat, extreme cold, excessive moisture, or damaging chemicals.
  - Prevent deformation of the facepiece and exhalation valve.

39.7.3. Inspection

- Any respirator used should be inspected by the wearer prior to use.
- Non-Emergency, ERT, and emergency escape-only respirators will be inspected according to the applicable Operational Readiness Checklists and schedule.
- Emergency escape-only respirators shall be inspected before being carried into the workplace by the user.

39.7.4. Part Replacement and Repair

NIOSH certification/approval is based upon using the same parts, hoses and connections with which the respirator was tested. Using a different hose or connection piece not only invalidates the NIOSH approval, it can severely compromise the protective capabilities of the respirator system. Approval information can be found at the NIOSH website, or in the manufacturer's technical specifications.

- Any repairs beyond normal replacement of filters, valves, or straps must be made by an approved repair vendor as specified by the manufacturer.
- Normal replacement repairs will be done only by those qualified to issue respirators and trained in proper respirator assembly and correction of possible respirator malfunctions and defects.
- Reducing and admission valves, regulators, and alarms on SCBAs and/or supplied air respirator systems shall be adjusted or repaired only by the manufacturer or a technician trained by the manufacturer.

39.8 TRAINING

39.8.1. Initial and Re-Training

All M&O employees receive initial training on respiratory hazards and protection as part of basic safety awareness orientation training.

Each employee required to wear a respirator as part of their job description and task assignment will receive company/site specific training and be able to demonstrate knowledge which will include:

- The need for respiratory protection.

- The nature, extent, and effects of respiratory hazards to which the person may be exposed.
- Which engineering controls are in place or are in progress (if any). Why a particular type of respirator has been selected for a specific respiratory hazard.
- The operation, capabilities, and limitations of the respirator selected.
- When to change the aerosol particulate filter and/or gas/vapor cartridge.
- How improper fit, use, or maintenance can compromise the protective effect of a respirator.
- How to use the respirator effectively in emergency situations, including situations in which the respirator malfunctions.
- How to inspect, don, check the seal, use, and remove the respirator.
- Procedures for the maintenance and storage of the respirator to be worn.
- How to recognize medical signs and symptoms that may limit or prevent effective use of a respirator.

  Note: Additional Emergency Response Team (ERT) specific training on respirator use for emergency response, rescue, and fire protection will be conducted as per AAA9004.1 SPR Emergency Response Organization Plan and SEEP4300. This includes initial qualification training and annual refresher training.

Retraining / refresher training shall be administered annually, and if the following situations occur:

- Changes in the job description or task assignment that may impact respiratory protection.
- Changes in the workplace and/or the type of respirator that renders the previous training obsolete.
- Changes in potential exposure – a new hazard is expected, new equipment presents a negative or positive change in exposure, or new controls have been installed.
- When a safety procedure has failed, or when it is observed that an employee's knowledge or use of the respirator indicates that the employee has not retained the requisite understanding or skill.
- Any other situation that arises in which retraining appears necessary to ensure safe respirator use.

39.8.2. Other Training Requirements

- Personnel who issue respirators will be trained to ensure that the correct respirator is issued.
- Personnel assigned to clean, maintain, and inspect respirators will be trained.
- Personnel who are designated to conduct fit testing will be trained.

39.9. PROGRAM EVALUATION

The overall Respiratory Protection Program shall be periodically reviewed by the program administrator, the New Orleans IH group, and supporting administrators as applicable to ensure it is being properly implemented. Respirator users will regularly be consulted to ensure they are using respirators properly, and to access employees' feedback on program effectiveness and identify any problems. This will include:

- Conducting an annual review of the written program for any updates, changes, or corrections that may need to be made.
- Including program elements for assessment during the annual site Organizational Assessments (OAs).
- Consulting with respirator users and asking for feedback and input on the selection, use, and maintenance of respirators, at least as part of the annual fit-testing, and as proposed changes are made to equipment and procedures.

39.10 RECORDKEEPING

Recordkeeping shall be in accordance with the appropriate federal standards and records schedule, as applicable.

Medical Evaluation Qualification Records – shall be retained for required respirator users by Human Capital.

Fit-Test Records – shall be retained for required respirator users until the next fit test is administered, after which they will be dispositioned in accordance with the appropriate federal records schedule. Records will include the following information:

- Name and identifying information of the employee tested;
- Type of fit test performed;
- Testing agent (if any);
- Specific manufacturer, model, style, and size of respirator tested;
- Date of test; and
- Fit factor and recording of quantitative fit test results.
- Limitations and/or restrictions associated with the use of a certain respirator.

Copies of written results shall be made available upon request to affected employees and to regulatory agencies for examination. Subcontractors will maintain their own fit test records, and be able to provide fit-test records upon request by the M&O.

Training Records – shall be kept in accordance with training qualification requirements.

39.11. RESPIRATORY PROTECTION PROGRAM RESPONSIBILITIES

Personnel Using Respirators

- Complete the OSHA Respirator Medical Evaluation Questionnaire before undergoing a medical examination (initial and annually thereafter).
- Receive a medical examination before performing tasks requiring the use of a respirator (initial and annually thereafter).
- Receive respirator training and fit testing before performing tasks requiring the use of a respirator, and annually thereafter.

- Obtain and retain a Respirator Identification Card before performing tasks requiring the use of a respirator, and annually thereafter.
- Obtain the appropriate respirator by presenting the Respirator Identification Card to personnel issuing the respirator.
- Inspect the respirator before each use.
- Have no facial hair that impedes the seal of the respirator.
- Check the seal of the respirator to the face before entering a respirator-required atmosphere.
- Use the required respirator according to the training received.
- Notify your supervisor in the event of illness or unusual discomfort while wearing the respirator, stop work, leave the respirator-required area, and remove the respirator.
- In the event of facial irritation stop work, leave the respirator-required area, remove the respirator, and wash your face and respirator facepiece.
- Return the respirator to issuer for repair or replacement if any of the following conditions occur:
    - Leakage of the air contaminant into the respirator (often detected by odor or irritation)
    - Increase in breathing resistance
    - Damage to the respirator
    - End-of-service life indicator exceeded, or per the established change schedule, or
    - Other respirator malfunctions.
- Clean and disinfect the respirator after each use.
- Notify your supervisor, the Site Safety Specialist, or program administrator when changes in processes or materials may result in changed exposure conditions.
- Maintain the respirator in its original condition without modification or addition of decals, stickers, logos, or symbols.

Supervisors

- Ensure that all employees who require respiratory protection pass an annual pulmonary function test and fit test qualifying them for respirator use. Assist the Medical Services focal point in providing PLHCP with necessary information. Ensure that each employee is issued a Respirator Identification Card indicating that he or she has received training and has been fit tested annually.
- Restrict employees from performing tasks requiring respiratory protection when the employee is not medically able to wear the respirator or to perform the assigned task.
- Notify the Site Safety Specialist when changes in processes or materials may result in changed exposure conditions. This will include both known and suspected changes in exposure conditions.
- Ensure that respirator fit tests are repeated before the employee performs tasks requiring respiratory protection if the following conditions exist:
    - Employee physical changes that could affect respirator fit.

  - A satisfactory user seal check has not been achieved.
- Inform the Site Safety Specialist of any product deficiencies.
- Ensure respirator storage is controlled and respirators are maintained and issued in accordance with the requirements of this section.

Maintenance Manager

- Ensure that cylinders, air compressors, and ancillary equipment providing breathing air meet requirements.
- If an oil-lubricated compressor is used, ensure that it is equipped with a carbon monoxide alarm or any equally effective alternative approved by Safety.
- Where carbon monoxide alarms are used on breathing air systems, ensure that they are calibrated monthly and records kept according to the identified requirements.
- Provide a remote alarm or other means of warning if the use of an alarm at the compressor will not effectively warn the respirator wearer of a carbon monoxide problem.
- Provide NIOSH approved hoses and couplings for air-line respirators that are incompatible with outlets for other gas systems.
- Ensure that breathing air cylinders are marked according to the requirements specified.

New Orleans Industrial Hygiene

- Identify and evaluate all operations requiring the use of respiratory protection and all modifications to operations that may result in changed exposure conditions.
- Remove the requirement for respiratory protection after the hazard has been permanently abated (engineered out, for example), and monitoring data verifies / supports this change.
- Support Training and Development in maintaining the Respiratory Protection Training Program.
- Review training requirements and determine if they are being met.
- Request Engineering Design to provide determination of feasibility of engineering controls when exposure monitoring indicates TLV®s/PELs/OELs are exceeded.
- Solicit comments and information from sites regarding respiratory protection.
- Review regulatory requirements and recommended guidelines and communicate changes to sites.

Human Capital Medical Services

- Provide the physician(s) with a copy of the M&O's written respiratory protection program, and give notification when a change occurs in workplace conditions that may result in a substantial increase in the physiological burden.

Site Human Capital Focal Point

- Ensure that all employees who use respiratory protection receive an annual pulmonary function test to determine whether they are medically qualified for respirator use.
- Provide a Respirator Identification Card to employees who pass the medical evaluation for respirator use and successfully complete respirator training and fit testing.

- Provide information to the physician on the respirator, type of work, and workplace conditions as determined by the supervisor.
- Provide the physician with the following information:
  - A copy of the completed medical questionnaire (OSF02-0021).
  - The type and weight of the respirator to be used by the employee.
  - The duration and frequency of respirator use.
  - The expected physical work effort.
  - Additional protective clothing and equipment to be worn.
  - Temperature and humidity extremes that may be encountered.
- Ensure that a follow-up medical examination is provided to any employee who gives a positive response to any question among 1-8 Part A Section 2 of the questionnaire (OSF02-0021), or whose initial medical examination demonstrates the need for a follow-up medical examination.

Site Training Coordinators

- Implement respirator training.
- Retain documentation of employee respirator training, including fit-test.
- Respond to requests from organizations for respiratory protection training.
- Notify the supervisor of upcoming expiration date of training and fit-test.

Warehouse/Property / Tool Room Personnel

- Maintain an adequate supply of respiratory equipment as identified by the M&O Supervisor or Site Safety Specialist.
- Ensure that respirators in inventory are properly maintained while in storage.
- Inform the M&O Site Safety Specialist of any reported product deficiencies.

Maintenance and Operations

- Ensure that each respirator stored for emergency or rescue use is inspected and maintained per Operational Readiness Cards (ORC) or Operations Requirements Checklist (ORC).

Tool Room Operator (if assigned to issue respirators)

- Issue required respiratory protective devices to those employees with a current, valid Respirator Identification Card. Use a log book to document the date, employee's name, type of respirator issued, and inspection before use.

Fit-Test Administrator

- Conduct fit testing as required: whether at the storage sites, done by a company-contracted facility, or by IH in New Orleans.

39.12. TABLES

Table 39-1. SPR Respirator Use Matrix

SEG	Task	Contaminant	Respirator Category				
			APR	SAR*	Escape	SCBA	CBRN
Operations	Line Breaking / Pigging	VOCs, Benzene, H_2S		✓		✓	
	Caverns Behind Degas at WH	H_2S			✓		
	Waste Water Treatment	Biologicals	✓				
	Tank Gauge Check	TBD					
	Sampling	TBD					
Maintenance	Line Breaking / Pigging	VOCs, Benzene, H_2S		✓		✓	
	Abrasive Blasting	Metals/Silica/Dust		✓			
	Painting	Formaldehyde, VOCs	✓	✓			
	Caverns Behind Degas at WH	H_2S			✓		
	Tank Entry	VOCs, Benzene, H_2S		✓		✓	
	Welding (Stainless Steel)	Metal Fumes, Gases, Vapors	✓	✓			
ERT/FP/ Rescue	ERT/FP: Firefighting and Safe Zone Definition	Smoke, Chemicals				✓	
	Rescue: Tank or Area Entry	Chemicals				✓	
Degas	Plant Entry: Visitor	H_2S			✓		
	Operator: Rounds	H_2S			✓		
	Operator / Maintenance: Line Break / Filter Change	VOCs, Benzene, H_2S, Amine		✓		✓	
Work Over	Caverns Behind Degas at WH	H_2S			✓		
	Frac Tank	TBD					
Pro-Force	Within reach at all times	H_2S, CBRN					✓

APR: Air Purifying Respirator - could use a half-face or full-face tight-fitting face piece; could also be a Powered APR (PAPR) with a loose-fitting hood
SAR: Supplied Air Line Respirator - could use a tight-fitting face piece, or a loose fitting hood such as for blasting
*SAR: Supplied Air Line respirator typically includes an escape cylinder as part of the system.
SCBA: Self-Contained Breathing Apparatus
CBRN: Chemical, Biological, Radiological and Nuclear
TBD: To Be Determined ERT: Emergency Response Team FP: Fire Protection

40. SAFETY AND HEALTH ASSESSMENTS AND INSPECTIONS

PURPOSE

This section applies to internal and external safety and health assessments and inspections.

SCOPE

This section includes the following major sections:

- OSHA Compliance Inspections
- VPP OSHA Recertification Evaluations and Self-Assessments
- Other Safety and Health Assessments and Inspections
- Responsibilities

APPLICATION

This section applies to M&O employees.

40.1. OSHA COMPLIANCE INSPECTIONS

OSHA has the right to inspect the workplace, including:

- Entering without delay, and at all reasonable times, any plant, establishment, or construction site or other areas to inspect, investigate and evaluate conditions, structures, machines, apparatuses, devices, equipment and material.
- Questioning or entering into a discussion with any employee, owner, employer or agent.

Upon completion of an inspection, the compliance officer will conduct a closing conference with the Site Director and summarize their findings.

It is the policy of the M&O to immediately correct violations cited by an OSHA Compliance Officer, whenever possible. In all cases immediate action is directed to mitigate the hazards.

NOTE
An unannounced compliance inspection by OSHA is unlikely because the SPR storage sites are all VPP Star facilities. By being a participant in the VPP, the M&O enters an alliance with OSHA which normally precludes unannounced inspections. VPP participation invites OSHA to inspect the sites at 3-5 year intervals.

40.2. VPP OSHA RECERTIFICATION EVALUATIONS AND SELF-ASSESSMENTS

40.2.1. Recertification Assessments

OSHA VPP conducts scheduled recertification inspections on a 3-5 year basis for each of the SPR facilities participating in OSHA VPP. These recertification inspections include a wall-to-wall physical inspection of the site for hazards, interviews with site personnel, and a thorough review of documents affecting health and safety in the workplace, including written safety programs and procedures and Process Safety Management compliance. During recertification, the site is required to answer ten new PSM questions supplied by the auditors.

40.2.2. Annual Self-Assessments

Each participating VPP site is required to complete an annual self-assessment and submit it to OSHA by February 15 each year. Format and checklist supplied by OSHA. Additionally, all PSM sites respond to 20 or more questions documenting PSM compliance and submit the answers with the assessment.

40.3. OTHER SAFETY AND HEALTH ASSESSMENTS AND INSPECTIONS

This subsection establishes an internal, independent S&H Assessment and Inspection Program; it will provide M&O management with a means of evaluating its safety and health programs. These inspections shall include all facilities or work areas, as well as policy and procedural compliance, and will be site specific.

- Each month based on the results of the internal inspections, supervisors shall be notified as to any modifications or improvements needed in their scope of responsibility.
- The entire site must be inspected at least once per quarter.
- Supervisors will inspect their operating area at least once a week and provide feedback to their employees.

40.3.1. Inspections and Assessments

Safety inspections and assessments are a principal means of identifying likely accident causes. One of the best ways for management to demonstrate to all employees its interest and sincerity in preventing accidents is to proactively find and promptly correct unsafe conditions in the workplace.

- Site Safety Specialists are required by VPP to inspect the entire site at least once per quarter.
- Supervisors will conduct a safety and health inspection of their work area once a week.
- For other targeted inspections the checklists contained in the appendix may be used to record conditions in the workplace or as a guide in preparing site-specific checklists.
- Also, work areas should be inspected daily before work starts, after a move, and during construction, as well as during normal operations. Inspections should not be limited to a search for unsafe conditions but should include observations to detect unsafe practices.
- Inspections should be planned and regular, with the frequency determined according to the purpose of the inspection.
- Once each year, each SPR facility will be assessed and inspected by professionals from New Orleans Safety and Health during Organizational Assessments (OA). These inspections will be conducted in accordance with the policies and procedures in the Organizational Assessment Procedure established by the department of Contractor and Quality Assurance.
- Another inspection of each SPR facility, an On-site Management Review, will be completed by DOE S&H on an annual basis in accordance with procedures established by DOE.
- Tasks that are covered by a standard, code, Maintenance Requirement Card (MRC), Operations Requirement Card (ORC), or other document will be inspected according to those criteria.

40.4. RESPONSIBILITIES

Site Directors

- Ensure that hazards identified through safety inspections, appraisals, and assessments are promptly abated.
- Assign an actionee to be responsible for the recommended corrective action.
- Ensure that all site personnel cooperate fully with DOE appraisal team and M&O assessment team members and other external auditors.
- Provide a timely response to the issues and findings that result from S&H appraisals and assessments.
- Ensure that identified safety deficiencies that can be corrected by work order are given proper priority in the site's work order system.
- Ensure that safety deficiencies that cannot be corrected by work order are forwarded to the Site Safety Management Council (SSMC)
- Review findings of assessments and appraisals during SSMC meetings.
- Ensure that annual VPP self-evaluations and PSM questions are submitted to OSHA VPP by February 15 of each year.
- Schedule and support OSHA VPP with their recertification assessments.
- Ensure that an OSHA compliance audit, if requested, is conducted cooperatively.

Site Supervisors

- Conduct a walk-through inspection of their work areas once a week.
- Report identified hazards to the Site Safety Council that cannot be corrected immediately.
- If the hazard can be resolved with completion of a workorder, initiate the workorder.

Site Safety Specialist and Associate

- Conduct a safety walkthrough at least monthly to ensure compliance with M&O policies, DOE orders, OSHA regulations, and federal, state, and local codes and regulations. Such walkthroughs will be scheduled in order to cover all site-related facilities at least quarterly. This is a VPP requirement.
- Review and assist in the abatement of findings found during assessments and appraisals.
- Perform random inspection of work areas to assist in identifying hazards and controls needed for the hazards and safe work permit compliance.
- Inspect areas where subcontractors or contractors are working at least weekly. Inspect daily if confined space or excavation is involved.
- Provide assistance in investigating occupational safety and health concerns and recommending actions to correct the problem.
- Investigate concerns alleging working conditions involving unsafe activities, and if concerns are valid and work has not been stopped, stop it immediately and address the issue.

- Forward identified hazards to the SSMC if they require more than a work order to correct or if the work order corrective actions are not completed within 30 days of the site director's approval.
- Ensure the availability of employee concern forms.
- Include the security contractor's daily work activities during inspections.
- Include subcontractor's work areas in daily inspections.
- If confined space entries are being made, inspect the work area and verify the permit conditions daily.

APM, Environmental Safety and Health

- Ensure that inspections of M&O activities are conducted in accordance with this subsection so that S&H programs and procedures are enforced and effective.
- Ensure that functional appraisals conducted by DOE Strategic Petroleum Reserve Project Management Office staff relating to S&H issues are supported with timely responses to their findings.
- Ensure that issues arising during inspections, appraisals, and assessments receive management's attention.
- Ensure that a safety and industrial hygiene Organization Assessment (OA) is conducted at each site at least annually to ensure compliance with M&O policies, DOE orders, OSHA regulations, and federal, state, and local codes and policies.
- Ensure that subcontractor's work areas are included in the annual OA.
- Ensure that internal reviews of site S&H procedures are conducted yearly at a minimum.

Employees

- Report safety concerns and identified hazards to a supervisor, the site safety specialist, or a safety monitor.
- Take interim corrective action to control or mitigate a hazard immediately if it is within their power to do so.

Safety and Health Director

- Provide procedures for employees to report safety and health concerns.
- Review and act upon occupational safety and health concerns submitted.
- Ensure that identified hazards reported to the S&H department or identified by the department have planned corrective actions.
- Regularly update the status of corrective actions for which S&H has the primary responsibility.
- Establish inspection requirements for the S&H programs.

Contractors and Subcontractors

- Inspect their work area daily for housekeeping and hazards.
- Provide corrective action plans for those safety hazards identified during inspection of their worksite, if they cannot be corrected or eliminated immediately.

- Stop work immediately if directed to do so.

41. SAFETY TAG, SIGN, AND BARRICADE REQUIREMENTS

PURPOSE

This section establishes the requirements for various types, setup, maintenance, and uses of safety barricades, signs, and tags.

SCOPE

This section includes the following major sections:

- General Requirements
- Types and Uses of Accident Prevention Tags
- Types and Uses of Signs
- Barricades
- Training Requirements
- Responsibilities

APPLICATION

This section applies to work activities and employees under the control of the M&O and its subcontractors.

41.1. GENERAL REQUIREMENTS

Employee failure to heed safety signs, tags, or barriers will result in appropriate disciplinary action.

When locking or tagging out equipment for servicing or maintenance, refer to the Logout/Tagout section of the APM.

Accident prevention tags and signs are used to identify hazardous conditions and provide a message to employees concerning hazardous conditions, equipment, or operations that are out of the ordinary, unexpected, or not readily apparent.

Tags or signs must be used until the identified hazard is eliminated or the hazardous operation is completed.

Tags do not have to be used where signs, guarding, or other positive means of protection are used.

When tagging scaffolding see Section 43 for specific requirements.

Barricade tape will be accompanied with signs or tags to clearly communicate the hazard and include the following:

- Person who placed the barricade tape
- Purpose or reason for the barricade (the hazard[s])
- Date placed

Accident prevention tags will be removed by the person, or supervisor of the person, who placed it only after the condition that prompted their placement is resolved.

Barricade tape and signs should be removed by the person, or supervisor of the person, who placed it as soon as the hazard is eliminated.

The following colors and color combinations are used for safety markings:

- Red – Designates fire protection and extinguishing equipment, “DANGER” signs/tags, and “STOP” buttons or emergency controls.
- Orange – Designates an intermediate level of hazard and parts of equipment that may cut, crush, or otherwise injure. Street and highway construction and maintenance signs have a black legend on an orange background.
- Yellow or Yellow Black Combinations – Designates caution for hazards such as striking against, tripping, falling, or bumping, and “CAUTION” tags.
- Green – Designates “SAFETY” and the location of safety equipment other than fire protection equipment.
- Blue – Designates informational signs and bulletin boards.
- Black/White/Yellow – Designates traffic or housekeeping markings.

41.2. TYPES AND USES OF ACCIDENT PREVENTION TAGS

Accident prevention tags will be used as a temporary means to warn employees of defective tools or equipment which create a hazard to the user.

41.2.1. Types Tags and Tag Criteria

General Tag Criteria

- Tags shall contain a signal word and a major message. The signal word shall be either **“Danger”**, Warning, **“Caution”**, **“Notice”**, or **“Out of Order”**. The major message shall indicate the specific hazardous condition or the instruction to be communicated to the employee.
- The signal word shall be readable at a minimum distance of 5 feet or such greater distance as warranted by the hazard.
- The tag’s major message shall be presented in printed or type written text.
- The major message must be accurate in fact, contain sufficient detail, and be written in concise, plain English understandable to all employees who may be exposed to the identified hazard. All employees shall be informed as to the meaning of the various tags used throughout the workplace and what special precautions are necessary.

Danger Tags

- These tags are white, printed with **“DANGER”** on both sides, and used for unsafe equipment tagout.
- Accident prevention tags that are white with the word **“DANGER”** in white letters on a red oval within a black box with blacking lettering will only be used for tagout of unsafe equipment.

- Accident prevention Danger tags are ONLY to be used in situations when an *immediate hazard* presents a threat of death or serious injury to employees.
- Lockout/Tagout Danger tags are only to be used for locking out unsafe equipment as required during maintenance and servicing of equipment in accordance with APM Section 29.

Caution Tags

- These tags are yellow, printed with **"CAUTION"** on both sides, and will be restricted to those situations in which a component or system is functional, but some precaution or item of information is necessary before operation. Caution tags are not required if other means of addressing the precautions are in place such as JHAs or fluid movement procedures.
- Caution tags are ONLY to be used in **minor** hazard situations where a non-immediate or potential hazard or unsafe practice presents a lesser threat of employee injury.
- Caution tags will not be used for personal protection or in place of a more appropriate administrative action.
- Figure 41-1 and 41-2 shows examples of caution and danger tags. There is also a different type of danger tag used for lockout/tagout in APM Section 29.

NOTE
All tags used shall conform to 1910.145 (specification for accident prevention signs and tags).

41.2.2. Tagging Criteria for Unsafe Equipment

Any person finding or identifying a potentially hazardous or unsafe piece of equipment or operating condition shall:

- Shut down and isolate the problem if qualified, or notify the applicable department to do so.
- Obtain the appropriate tag from Operations and Maintenance and tag the equipment or problem. Figure 41-2 is used for tagging out unsafe equipment.
- Sign and date the tag as indicated.
- State the problem and any relevant information concerning correction of the problem, or both.
- Ensure the tag is written so that exposure to weather conditions or wet or damp locations will not cause the tags to deteriorate or the message on the tags to become illegible.
- Affix the tag as close as safely possible to the respective hazard by the use of cable ties to prevent its loss or unintentional removal, ensuring the tag is readily apparent to any individual prior to operation of the tagged device.
- Notify the immediate supervisor and shift supervisor.
- The shift supervisor will enter the tag information in the caution or danger tag log. The employee will stay with the Shift Supervisor until the log is filled out, review the entry for accuracy and sign the entry. (Note: This is for tags used to flag out equipment or warn of additional hazard controls needed to operate the equipment. This is not the lock out/tag out log.)

- Tags shall not be removed until the hazard has been abated or corrected and signed off by the department supervisor correcting the problem. The tag will be brought to the Shift Supervisor. The Shift Supervisor will be notified when a tag is removed and the equipment is placed back in service. A representative for the department authorizing the removal of the tag will sign the log to document the authorized removal of the tag.
- All danger and caution tags will be reviewed periodically to verify their continued need and applicability.

41.3. TYPES AND USES OF SIGNS

General Sign Criteria

- Danger Signs: Indicate[s] a hazardous situation which, if not avoided, will result in death or serious injury.
  - The signal word "DANGER" is to be limited to the most extreme situations. DANGER [signs] shall not be used for property damage hazards unless personal injury risk appropriate to these levels is also involved.
  - Danger signs shall have a predominantly red upper panel with black outlined borders and a white lower panel for additional lettering.
  - The colors red, black, and white shall be those of opaque glossy as specified in ANSI Z535.1.
- Warning Signs: Indicate[s] a hazardous situation which, if not avoided, could result in death or serious injury.
  - Warning signs shall not be used for property damage hazards unless personal injury risk appropriate to this level is also involved.
  - The colors are orange and black shall be those of opaque glossy as specified in ANSI Z535.1
- Caution Signs: Indicate[s] a hazardous situation which, if not avoided, could result in minor or moderate injury.
  - Caution signs without a safety alert symbol may be used to alert against unsafe practices that can result in property damage only.
  - Caution signs shall be predominantly yellow with a black upper panel and borders and the word “caution” written in yellow on the upper panel. Any letters used against the yellow background shall be black.
  - The colors shall be those of opaque glossy samples as specified in Table 1 of ANSI Z535.
- Safety Instruction Signs:
  - Safety instruction signs must be used where there is a need for general instructions and suggestions about safety measures.
  - The standard color of the background must be white; and the panel, green with white letters.

- Any letters used against the white background must be black. Some examples of these signs can be seen in Figure 41-3.

41.4. BARRICADES

Barricades are required around openings in excavations, floors, walls, or roof areas; edges of platforms; and certain types of overhead work.

Warning Barricades

- Warning barricades offer no physical protection, but serve to alert personnel in the area that a hazard is present.
- Warning barricades must be set back 6 feet minimum from the hazard.
- If 6 feet is not feasible, a protective barricade should be used.
- If the hazard is a potential fall of 4 feet or more, the warning barricade must be set back at least 6 feet— preferably 15 feet

Protective Barricades

- Protective barricades not only warn of a hazard, but provide physical isolation or protection from the hazard.
- Examples include guardrails or cables set at the proper height around an opening or edge. Another example is anchored railroad ties to prevent driving into a culvert.
- Protective barricades must be designed to meet their intended purpose.
- If the barricade is to prevent personnel from walking into a floor hole, it must meet all requirements for a guardrail (top and mid rails and toeboard designed to resist a 200 pound force.
- A swinging entrance gate through the railing or an offset so employees cannot walk directly into the opening must be provided.

Note
Fall protection requirements are discussed further in APM Section 21.

Barricade Tape

Barricade tape will be of a color or combination of colors that convey the appropriate level of hazard.

- Yellow/Black Barricade Tape: This type of barricade tape serves as a caution to indicate to employees that a potential hazard exists. Employees may enter without permission from erector of this tape. This barricade tape is used for, but not limited to, the following:
  - Excavation 1 to 4 feet in depth
  - Identification of trip hazards and low hanging objects
  - Material storage on the site
- Red Barricade Tape: This type of barricade tape indicates DANGER and that a potential serious hazard may be present. No employee, other than those assigned to work inside a

RED barricade, may enter without first obtaining permission from the person in charge of the tape. This barricade tape is used for, but is not limited to, the following:

- Excavations 4 feet or more in depth
- Overhead work
- Live electrical components
- Scaffold under construction
- Around swing radius of equipment with a rotating superstructure

- Magenta (Purple)/Yellow Tape: This barricade tape is used to indicate DANGER—RADIATION and that possible exposure may be present. This barricade tape is considered an equal to red, in that no employees are allowed to enter this area without first obtaining permission from the erector of the tape. This color is representative of x ray work being performed.
  - Signs must also be posted to protect areas where radiation operations are in progress.
- Tape will be erected to enclose the specific area to be protected only. Passageways must not be blocked
- Tape will be erected in a secure and neat manner that will maintain a height of between 40 and 45 inches from the floor or ground surface.

41.5. TRAINING REQUIREMENTS

All employees that enter areas where warning signs and tags are used must be informed of the following in the general safety briefing:

- That danger signs and tags indicate danger, and the special precautions that are necessary.
- That caution signs and tags indicate a possible hazard against which proper precautions shall be taken.

41.6. RESPONSIBILITIES

Site Director

- Ensure barricades, signs, and tags used on the site meet the requirements in this section.
- Replace signs that are faded and do not meet ANSI Z535.
- Has overall authority to determine when signage or tag usage is required.

Operations

- When a tag is used, enter this in the danger or caution tag log and review danger and caution tags periodically, with the responsible department to verify their continued need and applicability.

Supervisors/Foreman

- Take action to red tag all equipment that presents a hazard.
- Review with employees the procedures to follow when equipment is red tagged out.

- Ensure that hazards that require barricades, tags, and signs are posted.
- Notify the Shift Supervisor when tags are put in place and removed.
- Sign log to show authorization for the removal of the tag.
- Perform reviews of the program with Operations to verify the continued need and applicability of the tags.

Site Safety Specialist

- Ensure areas that require hazard warning are posted with signs.
- Monitor the usage of tags and signs

Employees

- If a potentially hazardous or unsafe piece of equipment or operating condition is identified, discontinue operation, tag out, and notify the supervisor.
- Get with the Shift Supervisor and provide him with the information to fill out the log.
- Sign the log verifying accuracy of the entry and shift.
- Do not remove tags on equipment unless the hazard has been abated or corrected.

New Orleans Safety and Health

- Assess tag and sign usage at the sites
- Review requested tags and signs to the site sent from New Orleans Graphics department

New Orleans Graphics

- When new tags and signs are being ordered, notify New Orleans Safety to verify they meet OSHA requirements.

Figure 41-1. Caution Tags

Figure 41-2. Danger Tags

Figure 41-3. Miscellaneous Tags

Basic Stock (Background)	Safety Colors (Ink)	Copy Specification (Letters)
White	Red	Do Not Operate
White	Black and Red	Danger
Yellow	Black	Caution
White	Black	Out of Order Do Not Use

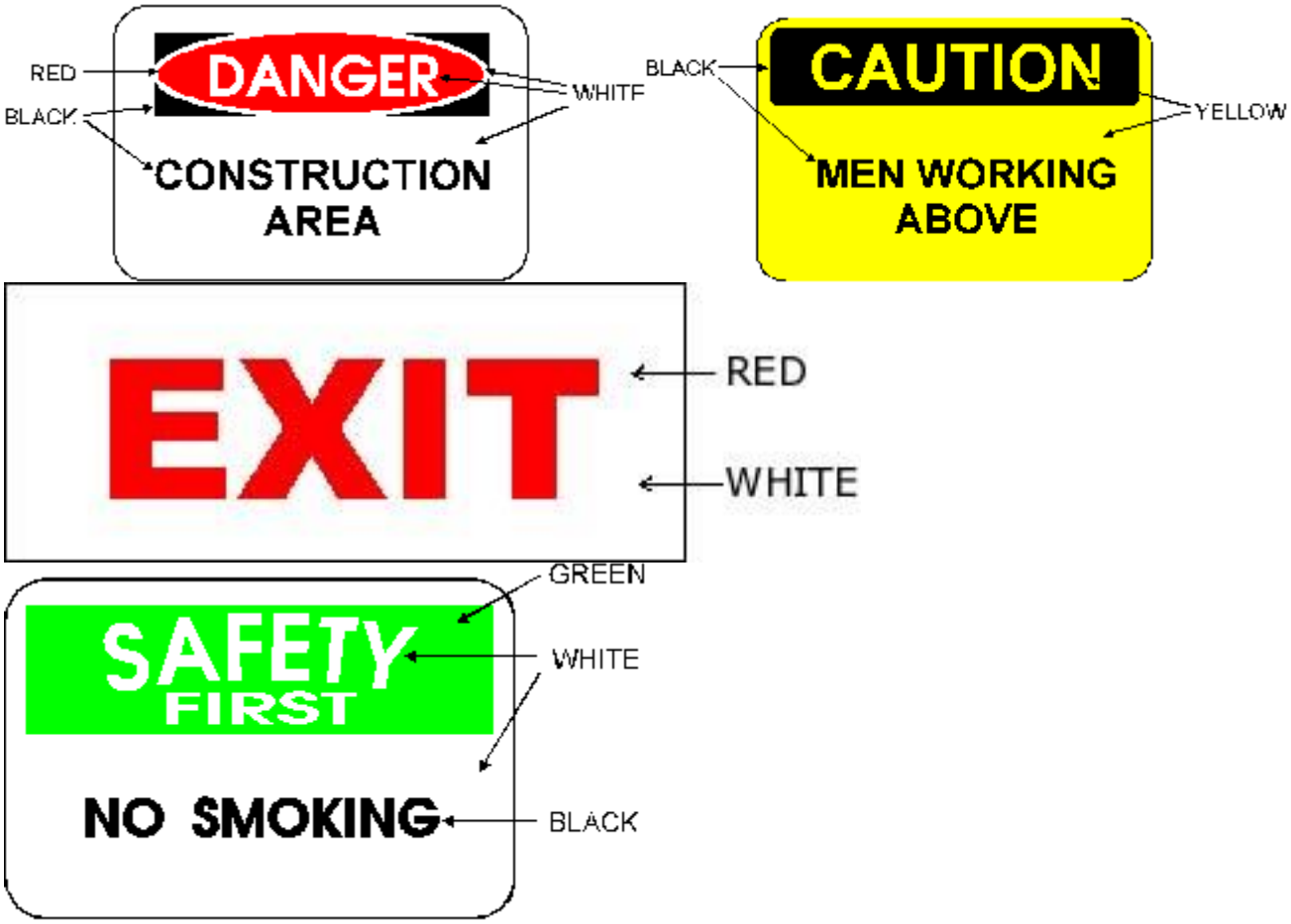


Figure 41-4. OSHA Sign Standards and Examples

42. ABRASIVE BLASTING

PURPOSE

This section provides requirements for protecting employees engaged in abrasive blasting operations.

SCOPE

This section includes the following major sections:

- General
- Exposure and Assessment Monitoring
- Training
- Approved Abrasive Blast Medias
- Responsibilities

APPLICATION

This section applies to work activities and employees under the control of the M&O and its subcontractors.

42.1. GENERAL

Abrasive blasting involves forcefully projecting a stream of abrasive particles onto a surface, usually with compressed air or steam. Tasks performed by abrasive blasters include the cleaning of, and removing paint from, exchangers, pipes, pipe racks, storage tanks, and other metal surfaces.

All feasible administrative and engineering controls will be utilized for this program. However, when such controls are not feasible, we will use protective equipment or other protective measures to keep the exposure of employees to air contaminates within the limits prescribed in Appendix A of 29 CFR 1926.55. All equipment and technical measures used to achieve compliance will first be approved for each particular use by a competent Industrial hygienist.

42.2. EXPOSURE AND ASSESSMENT MONITORING

- Bulk samples of blast media are analyzed for possible exposure concerns before the product is used. If acceptable, air monitoring is performed to confirm that media meets specified requirements. When performing these initial evaluation tasks, blast hoods are required.
- Air sampling shall be performed to verify worker exposures are within controls when media is used.
- When blasting on the SPR, a NIOSH-approved blast hood and air supply lines are required.
- When data is collected, it must be retained to document any worker exposure (or lack thereof).
- For additional information regarding exposure monitoring, see section 26 of the APM.

42.2. TRAINING

Before conducting abrasive blasting operations, the following training shall be conducted:

- Hazards associated with the particular make and model of the abrasive blasting and protective equipment.
- Hazards of the abrasives utilized.
- General hazards that apply to the operation of all abrasive blasting operations.
- Contractors/subcontractors will require personnel trained in blasting.
- When work is to be performed by M&O employees, training is On-the-Job (OJT) and review of the Job Hazard Analysis for the task.

42.3. APPROVED ABRASIVE BLAST MEDIA

- Only approved blast media may be used. M&O IH approves media after analyzing bulk samples and performing controlled air monitoring.
- The current approved medias are red garnet from Australia and copper slag from Spain.
- Crystalline silica is not allowed to be used on the SPR.
- Additional media may be proposed but must be tested and approved by M&O before use.

NOTE
Questions and concerns regarding approved blasting media shall be directed to M&O Industrial Hygienists. Only approved medias shall be used.

42.4. RESPONSIBILITIES

S&H Director

- Ensure the requirements of this standard practice remain current with applicable regulatory directives.

ES&H Manager, Site Safety Specialists and Representatives

- Oversee site personnel to ensure proper exposure monitoring is conducted and that all procedures are followed.
- Perform inspections as needed.

Supervisors

- Ensure that elements of this policy are being followed by conducting inspections, reviews, spot-checks, and other follow-up actions.
- Ensure air sampling is performed to verify worker exposures are within controls when blast media is used
- Conduct or arrange for inspections in their area of responsibility.
- Ensure workers are aware of possible hazards associated with abrasive blasting.
- Initiate corrective action for deficient items noted during inspections.

Employees

- Follow the requirements of this abrasive blasting procedure.

43. SCAFFOLDING

PURPOSE

This section establishes the requirements for design, erection, inspection, and use of scaffolds including training requirements.

SCOPE

This section includes the following major sections:

- General Requirements
- Scaffold Erection
- Scaffold Inspection and Use
- Training and Supervision
- Requirements for Specific Types of Scaffolds

APPLICATION

This section applies to work activities and employees under the control of the M&O and its subcontractors.

DEFINITIONS

Competent Person – One who is capable of identifying existing and predictable hazards in the surroundings or working conditions which are unsanitary, hazardous, or dangerous to employees, and who has authorization to take prompt corrective measures to eliminate them.

Guardrail - A barrier secured to uprights and erected along the exposed sides and ends of platforms to prevent falls.

Qualified Person - One who, by possession of a recognized degree, certificate, or professional standing, or who by extensive knowledge, training, and experience, has successfully demonstrated his/her ability to solve or resolve problems related to the subject matter, the work, or the project.

Scaffold - A temporary elevated platform (supported or suspended) and its supporting structure (including points of anchorage) used for supporting employees, materials, or both.

43.1. GENERAL REQUIREMENTS

Prior to starting work, operations involving the erection and dismantling of scaffolding shall be assessed using a Job Hazard Analysis (JHA) prior to starting work. A JHA is required for this and other Life Critical operations to ensure that all hazards associated with the work are identified, the likelihood and severity are understood, and control measures are defined that will effectively reduce the risk.

43.1.1. Design

Qualified Persons shall plan, design, or modify scaffold systems. Special job needs (configuration, location of access, material handling) shall be communicated to the Qualified Person preparing design specifications for a scaffold system.

A registered professional engineer, designated as a Qualified Person, shall design tube and coupler and tubular-welded frame scaffolds if it is over 125 feet in height, pole scaffolds over 60 feet in height, and all outrigger beam scaffolds and their components.

43.1.2. Competent Person

Competent Persons are designated to:

- Direct scaffold selection and erection/dismantling
- Inspect scaffolds
- Train scaffold erectors, inspectors, and maintenance/repair persons
- Resolve issues

Designation of Competent and Qualified Persons must be documented in accordance with APM Section 2.

43.1.3. Inclement Weather

Scaffold designs should also take into account the location and likelihood of inclement weather and wind loadings in exposed areas.

Employees shall not work on scaffolds during storms or high winds.

Employees shall not work on scaffolds which are covered with ice or snow, unless all ice or snow is removed and planking sanded to prevent slipping.

All scaffolds should have a recorded inspection by a Competent Person after any weather that is likely to have affected the structural strength and stability of the scaffold (such as high winds and heavy rain).

43.2. SCAFFOLD ERECTION

Scaffolds shall be constructed, modified, and altered only with knowledge of the maximum intended load and in accordance with the design criteria and the manufacturer's recommendations. Refer to Form AAA9020.848, Scaffold Erection Checklist –for scaffold erection criteria.

Scaffolds shall be constructed so that the structure and its components are capable of supporting, without failure, their own weight and at least 4 times the maximum intended load.

EXAMPLE
4 employees @ 300 lb. each = 1,200 lb. + 100 lb. of tools = 1,300 lb. maximum intended load x 4 = 5,200 lb.

Scaffold components and materials must be sufficiently robust and durable to withstand normal working conditions. Materials shall be free from any impurities and defects, which may affect their satisfactory use. Components and material shall be inspected before use, ensuring that wood scaffold planks (when used) are scaffold-grade lumber or the equivalent, as recognized by approved grading rules for the species of wood used.

Scaffold components from different manufacturers or composed of dissimilar materials shall not be inter mixed or modified without approval from the Competent Person / designer.

The following figure may be used as information for minimum and maximum permissible spans for 2 inches by 10 inches or wider wood planks:

Figure 43-1. Material

	Full Thickness Undressed Lumber			Nominal Thickness Lumber[1]	
Working load (p.s.f.)	25	50	75	25	50
Permissible span (ft.)	10	8	6	8	6
[1]Nominal thickness lumber not recommended for heavy-duty use.					

NOTE
Fabricated planks and platforms may be used in lieu of solid sawn wood planks. Maximum spans for such units are according to manufacturer's recommendations for the intended use/load.

Guardrail systems and components shall be of sufficient strength to withstand 200 lbs. force applied in any direction at any point without failure.

Top rails on the scaffolding must be 42 inches above the work platform.

Mid-rails, when required, shall be located approximately midway between the guardrail and platform, and secured to the uprights erected along the exposed sides and ends of platforms.

When a cross point of cross bracing is used, it must be between 20 and 30 inches above the work platform.

No part of any scaffold can be closer than the "working distance" identified in APM Section 15, Electrical Safe Work Practices.

The scaffold must be plumb and level; supported scaffold poles, legs, posts, frames, and uprights shall bear on base plates and mud sills or base plates and other adequate foundations such as concrete slab flooring.

Where leveling of a scaffold is necessary, screw jacks or other equivalent stable means shall be used.

When erecting or dismantling scaffolds, personal fall protection shall be worn at all times.

Scaffold components may only be used for tie-off if manufacturers have designed them for that use. A safe system of work with handrails shall be implemented to reduce the requirement to use harnesses.

Scaffolds must be placed as close to the work as possible. If fall protection is provided by the structure on which the work is being performed (such as a building or wall), no more than 9 inches shall be allowed between the scaffold platform and the structure.

Each platform on all working levels of scaffolds shall be fully planked or decked between the front uprights and the guardrail supports.

Each platform unit shall be installed so that the space between adjacent units and the space between the platform and the uprights is reduced to the smallest gap possible and no more than 1 inch wide except where it can be demonstrated that a wider space is necessary.

43.2.1. Access

When scaffold platforms are more than 2 feet above or below a point of access, portable ladders, attachable ladders, stair towers, ramps, walkways, integral prefabricated scaffold access, or direct access from another scaffold, structure, personnel hoist, or similar surface must be used.

Safe access for use by erectors should be included as early as possible in the erection process and removed as late as possible during dismantling, removing the need for erectors to climb the scaffold structure.

Wherever practicable, scaffolds should incorporate a staircase or ladder bay. Where possible, a system of working should be adopted, , that enables the erectors to work progressively away from and back towards their means of access and egress. This will avoid any unnecessary climbing of the structure between levels / lifts.

When specifying access and egress to and from scaffolding, the following hierarchy shall be followed:

- Staircases
- Ladder access bays with single or multiple levels
- Internal ladder access with protected ladder trap
- External ladder using a safety gate.

Gates, or other methods approved by the manufacturer or Qualified Person, shall be used to provide a safe transition from the access point to the scaffold platform and to maintain the integrity of the scaffold’s guardrail system.

Stairway-type ladders:

- Shall be positioned such that their bottom step is not more than 24 inches above the scaffold supporting level.
- Shall be provided with rest platforms at 12 foot maximum vertical intervals.

- Shall have a minimum step width of 16 inches except that mobile scaffolds stairway-type ladders have a minimum step width of 11 1/2 inches.
- Shall have slip-resistant treads on steps and landings.
- Shall provide a stair rail consisting of a top rail and a midrail on each side of each scaffold stairway.
- Shall have a top rail of each stair-rail system capable of serving as a handrail, unless a separate handrail is provided.
- Handrails and top rails that serve as handrails shall provide an adequate handhold for employees grasping them to avoid falling.
- Stair-rail systems and handrails shall be surfaced to prevent injury to employees from punctures or lacerations and to prevent snagging of clothing.
- The ends of stair-rail systems and handrails shall be constructed so that they do not constitute a projection hazard.
- Handrails and top rails that are used as handrails shall be at least 3 inches from other objects.
- Stair rails shall not be less than 28 inches or more than 37 inches from the upper surface of the stair rail to the surface of the tread, in line with the face of the riser at the forward edge of the tread.
- A landing platform at least 18 inches wide by at least 18 inches long shall be provided at each level.
- Each scaffold stairway shall be at least 18 inches between stair rails.
- Stairways shall be installed between 40 degrees and 60 degrees from horizontal.
- Guardrails meeting requirements shall be provided on the open sides and ends of each landing.
- Riser heights shall be uniform, within 1/4 inch for each flight of stairs.
- Tread depth shall be uniform, within 1/4 inch for each flight of stairs.

Ramps and walkways 4 feet or more above lower levels must have guardrail systems.

- No ramp or walkway shall be inclined more than a slope of 3 horizontal to 1 vertical (3:1) (20 degrees above horizontal).
- If the slope of a ramp or a walkway is steeper than 8 horizontal to 1 vertical (8:1), the ramp or walkway shall have cleats not more than 14 inches apart that are securely fastened to the planks to provide footing.

Steps and rungs of ladder and stairway-type access shall line up vertically with each other between rest platforms.

Direct access to or from another surface shall be used only when the scaffold is not more than 1 inch horizontally and not more than 24 inches vertically from the other surface.

Ladder Access

- Must be specifically designed and constructed for use as ladder rungs.

- Must have a rung length of at least 8 inches
- Must be uniformly spaced within each frame section.
- Must have rest platforms at 35-foot maximum intervals on all supported scaffolds more than 35 feet high.
- Must have a maximum space between rungs of 12 inches.
- Must extend a minimum of 3 feet above the height of the platform.
- Shoulder spacing from the side of the ladder to the deck should be 6 inches.

Scaffold areas shall be marked or posted with warning flags or barriers where vehicular traffic is present.

43.2.2. Scaffold Tags

A completed scaffold status tag shall be attached near the access point of any scaffold being used, erected, or dismantled, as follows:

- **Red Tag –** KEEP OFF/DO NOT USE – prohibits use of the scaffold, as the unit is undergoing some stage of erection, alteration, or dismantling.
- **Yellow Tag –** SPECIAL CONDITIONS/ADDITIONAL CONTROLS – indicates special safety measures for use of the scaffold; examples include PFAS or head protection.
- **Green Tag** – SCAFFOLD IS ERECTED TO CODE/APPROVED FOR USE – indicates that the scaffold is complete, meets erection requirements, and is safe to use for its intended purpose.

Missing Tags – Any scaffold missing its tag because of wind, bad weather, or other conditions shall be considered Red Tagged (incomplete) and cannot be used until it has been inspected by a Competent Person.

All modifications made to existing scaffolds must be re-inspected and retagged by the Competent Person. A new tag must be placed on the scaffold or platform prior to use.

The scaffold must be dismantled shortly after being notified that the work requiring the scaffold is complete.

43.2.3. Fall Protection during Erection, Dismantling and Altering Scaffolding

During the erection, dismantling and alteration of scaffolding, the erector shall minimize the use of fall arrest in favor of a fall prevention system. Erectors shall create a ‘Safe Zone’ using a fall prevention system as a priority when working at height with a minimum of:

- A fully planked and correctly supported level / platform without gaps where someone could fall; and
- A single main guardrail not less than 36 inches or more than 42 inches high (above the platform) where there is a risk of a fall.

Creating a Safe Zone does not completely eliminate the risk of a fall for all scaffolding operations. Personal fall protection equipment shall still be used.

When working without a fully boarded level/platform or without a single guardrail protection, the erectors shall remain tied off /clipped onto a suitable anchor point.

43.2.4. Falling Object Protections

In addition to wearing hard hats, each employee on a scaffold shall be provided with additional protection from falling hand tools, debris, and other small objects through the installation of toeboards, screens, or guardrail systems, or through the erection of debris nets, catch platforms, or canopy structures that contain or deflect the falling objects.

Where there is danger of tools, material, or equipment falling from a scaffold and striking employees below, the following applicable provisions shall be applied:

- A toe board shall be erected along the edge of all working platforms. Toe boards shall be:
  - Capable of withstanding, without failure, a force of at least 50 pounds applied in any downward or horizontal direction at any point along the toeboard.
  - At least 3 1/2 inches high from the top edge of the toeboard to the level of the walking/working surface. Toeboards shall be securely fastened in place at the outermost edge of the platform and have no more than 1/4 inch clearance above the walking/working surface. Toeboards shall be solid or with openings not over 1 inch in the greatest dimension.
- The area below the scaffold where objects can fall shall be barricaded, and employees shall not be permitted to enter the hazard area.
- Paneling or screening shall be extended from the toe board or platform to the top of the guardrail where tools, materials, or equipment are piled to a height higher than the top edge of the toe board.
- A guardrail system with openings small enough to prevent passage of potential falling objects shall be erected over persons below.

43.3. SCAFFOLD INSPECTION AND USE

43.3.1. Inspection

The Competent Person shall inspect scaffolds (and their components, including gin wheels/safety pulleys) to be used before the start of each work shift, and after any event that could affect the structural integrity of the equipment. Results of inspections must be documented on the M&O Scaffold Inspection Tag (or subcontractor's equivalent); the tag shall remain affixed to the scaffold.

Scaffold users shall ensure the scaffold is inspected before it is used, on each work shift, or if something may have affected the structure, and:

- Does not block exits, egress, paths, fire alarms, and fire suppression systems.
- Is erected at a safe distance from power lines.
- Ladders, stairs, ramps, etc. provide safe methods for accessing the scaffold.
- Is plumb and level, and resting on stable footing and a firm foundation and has not been undermined (including base plates on supported scaffolds).

- Diagonal cross bracing is used to support the scaffold's legs.
- All required guys, ties, or bracing is installed to maintain the scaffold's stability.
- Working level platforms are fully planked between guardrails, and secured to prevent movement.
- Scaffold platforms are at least 18 inches wide.
- Indoor scaffolds are made of fire-retardant wood or other suitable materials.
- The scaffold's platform is free of debris and slipping/tripping hazards.
- Guardrails are firmly in place on all open sides/ends, where required.
- Toe boards, screening, area barricades, or canopies are installed to provide adequate protection against falling objects.

43.3.2. Scaffold User Responsibilities

Scaffold users shall:

- Use scaffolds only for their intended purpose.
- Work from Yellow- or Green-tagged scaffolds only. Comply with special conditions or the additional controls noted on the access tag. Do not modify or remove a scaffold system, component, or status tag. Notify supervision immediately if a scaffold is damaged, weakened, or otherwise deficient.
- Do not use unstable objects or makeshift devices to increase the working height of the scaffolds.
- Not straddle, stand on, or work outside the guardrail.
- Use mobile scaffolds only on firm, level surfaces. Lock the casters or wheels before using mobile scaffolds.
- Not "ride" on scaffold while it is being moved.
- Remove or secure tools or materials before moving or relocating a scaffold.
- Use designated access means to descend or ascend a scaffold (stairs, attached ladder, or specially designed end frames). Do not climb cross-bracing or side rails for access.
- Keep only the tools and materials necessary to perform the task on the platform. Control slipping and tripping hazards by removing or securing tools or materials.
- Use fall protection systems (guardrail systems or personal fall arrest systems) when working 4 feet or more above a lower level.
- Not position themselves, or use tools or equipment, where there is a possibility of contacting an energized overhead line. Contact the electrical utilities organization having jurisdiction for additional requirements if any portion of a worker's body, tools, or materials may come within 20 feet of an energized line.
- Not load scaffolds and scaffold components in excess of their maximum intended loads or rated capacities, whichever is less.
- Not allow debris to accumulate on platforms.

43.4. TRAINING & SUPERVISON

A Competent Person shall provide training on erection, maintenance, inspection, use, and dismantling of scaffolds as outlined below. Training must be documented.

Supervision should ensure that appropriate levels of competent supervision are provided considering the nature of the work and the competence of the erectors involved. Inexperienced erectors require a higher degree of supervision and direction than experienced and trained erectors.

43.4.1. Erectors and Inspectors

Scaffold erectors and maintenance/repair persons shall be trained specifically in the following areas, as applicable:

- Nature of potential scaffold hazards (such as falls, falling objects)
- Procedure for erecting, maintaining, inspecting, and dismantling scaffolds; associated fall hazards, and falling object protection systems
- Design criteria and load carrying capacities
- Use of fall protection and fall protection systems (erecting, maintaining, and disassembling)
- Other pertinent requirements

43.4.2. Users

Scaffold users shall be trained in hazard recognition and control measures associated with the type of scaffold being used, including the following:

- Nature of potential scaffold hazards (such as falls, falling objects, electrical etc.)
- Pre-use inspection criteria
- Maximum intended load and load carrying capacities
- Other pertinent requirements

Employees, who erect, dismantle, or use scaffolds shall be retrained when necessary to ensure their proficiency and provide updated information on hazards or changes.

43.5. REQUIREMENTS FOR SPECIFIC TYPES OF SCAFFOLDS

Applicable OSHA requirements should be reviewed before scaffold erection, and erections plans should be made specific to each set of requirements for each type of scaffold. If a specific type of scaffold is not addressed in this section, safety requirements shall be addressed in accordance with 29 CFR 1910.28 or 29 CFR 1926 Subpart L.

Personnel performing work on the SPR should refer to applicable OSHA General Industry standards first; however, if general industry standards do not exist, the M&O applies the relevant OSHA Construction standards.

44. SUBCONTRACTOR SAFETY RELATIONS

PURPOSE

This section establishes the minimum requirements for Safety and Health management and interaction between the M&O and subcontractors.

SCOPE

This section includes the following major sections:

- General
- Processing Purchase Requests for Subcontracts
- Subcontract Safety and Health Requirements
- Preliminary Hazard Review (PHR)
- Subcontractor Safety and Health Interaction
- Responsibilities

APPLICATION

This procedure applies to subcontracted work activities and personnel under the control of the M&O, subcontractors and lower-tier subcontractors.

44.1. GENERAL

The safety and health program for subcontractors ensures that SPR, OSHA, and appropriate national consensus safety and health regulations, requirements, and standards are being implemented and managed. The process for subcontractor safety protects the SPR, its employees, subcontractors and their employees, from known and predictable hazards during the subcontractor's work performance.

The subcontractor's process begins during the M&O's preparation of the scope of work definition and ends at the completion and acceptance of subcontracted work. This process includes compliance requirements, selection of subcontractors who have demonstrated good safety and health performance, management of subcontracted work by both the M&O and subcontractors, and performance evaluations during and after the subcontracted work.

44.2. PROCESSING PURCHASE REQUESTS FOR SUBCONTRACTS

All Purchase Requisition(s) (PRs) for on-site services (service and construction) require a "Preliminary Hazards Review (PHR)" to accompany the PR through the approval phase and to be delivered to Procurement with the PR. On-site services means tasks performed (service or construction) that require access to a SPR work location and performance of physical work, including remote locations where SPR work takes place. Tasks performed in the parking lot are considered on-site services. The process for developing a PHR is listed in Section 44.4.

44.3. SUBCONTRACT SAFETY AND HEALTH REQUIREMENTS

Safety and health requirements for M&O service and construction subcontracts have been developed and reside in Safety for their use in supporting Procurement with preparing solicitations.

The requirements have been developed in “boilerplate” form for use in subcontracting for construction and services, and include special provisions found necessary for the SPR.

These requirements are identified below, along with an explanation as to how they are to be applied to subcontracts using the graded approach and based on the nature of the work.

44.3.1. Subcontract Language

The subcontractor safety and health language “boilerplate” is separated into 4 levels. The level of subcontract language that applies to each subcontract shall be determined by New Orleans Safety in SAP upon approval of the PR.

Level I - The Level I subcontract safety language is used for subcontracts that have little to no exposure to the field environment. The following are examples of Level I subcontracts where this language typically applies:

- Visitors/Delivery
  - Visitors – Personnel invited to enter the sites who are escorted by an employee or contractor to make observations or engage in meetings.
  - Delivery – Personnel entering the site for the sole purpose of making deliveries of materials/equipment to M&O or subcontractors. Delivery personnel do not perform work on SPR property.
- Engineer/Technical/Consultant (Office Only) - Personnel who are contracted for office work. Reaching the office may require unescorted presence on the site, but activities in the field are required to be escorted and include minimal exposure to hazards.

Level I subcontractors performing work on-site shall be escorted by an M&O employee who is familiar with the anticipated hazards associated with the work and the respective control measures for the work area (i.e., safety glasses, hearing protection, hard hat, and protective footwear). Level I subcontractors are not required to have the Basic Orientation Plus training.

Level II - The Level II subcontract safety language is used for subcontracts that may require minor processes, or are subcontracted to perform field work with minimal use of tools and equipment. Exposure to site elements may be expected and/or routine and may occasionally expose employees to Life Critical operations. Level II subcontractors are required to have the Basic Orientation Plus training and view the “Active Force Protection” video. Exemptions from the Basic Orientation Plus requirement may only be approved by the Subcontract Administrator (SCA).

The following are examples of Level II subcontracts where this language typically applies:

- Equipment technicians/supervisors
- Vendor representatives that do not qualify as Level I subcontractors
- Telephone repair
- Quality/Safety inspectors

Level III - The Level III subcontract safety language is used for short-term subcontracts (typically less than 6 months in duration) where construction, service, or maintenance work may expose employees

to Life Critical operations (see section 44.4.1.). Level III subcontracts require written programs and competent persons. Level III subcontractors are required to have the Basic Orientation Plus training and view the "Active Force Protection" video. Exemptions from the Basic Orientation Plus requirement may only be approved by the Subcontract Administrator (SCA).

Level IV - The Level IV subcontract safety language is used for subcontracts where construction, service, or maintenance work may likely expose employees to Life Critical operations (see section 44.4.1.), where subcontractor and /or sub-tier employees are working at multiple locations on a site under a single contract, major demolition projects, or large repetitive maintenance contracts used to supplement the regular M&O site forces (Emergency Pipeline, Emergency Electrical, etc.). Level IV subcontractors are required to have the Basic Orientation Plus training and view the "Active Force Protection" video.

Level IV subcontracts require submittal of a Project Specific Safety and Health Plan. New Orleans Safety reviews and approves the Project Specific Safety and Health Plan prior to work being performed using the Safety and Health Plan Checklist (Form AAA9020.686).

Protective Force Safety Subcontract
Safety and Health Requirements for the Security subcontractor are specified in their subcontract and their procedures, which are reviewed and approved by the M&O.

Sections of the APM that apply to the Security contractor have been determined and are specified in their Safety Program Plan.

44.3.2. Basic Orientation Plus Program

- Level I subcontractors are not required to have the Basic Orientation Plus training.
- All Level II-IV subcontractor and lower tier employees will be required to complete a Basic Safety Training Course through one of the local approved Association of Reciprocal Safety Councils, Inc. (ARSC).
- The Basic Orientation Plus Program training is good for one year and must be renewed annually to keep current status. Employees will be given a photo-ID card as training verification. A copy of this card must be maintained by the employer for all employees performing work on the SPR. Prior to employees entering the SPR, a copy of the card shall be provided to the SMTR. Information and locations can be found at http://arsc.net/orientation.php

  Note: Subcontractors are permitted to have the PEC Basic Orientation safety awareness course, in lieu of Basic Orientation Plus. The PEC Basic Orientation includes both SafeGulf and SafeLandUSA. Information and locations can be found at http://www.pecsafety.com/basic/

44.3.4. Special Provisions

Special provisions "boilerplates" may be added to the subcontractor safety and health language. Special provisions are selected in SAP by New Orleans Safety following a review of the PHR and SOW. Special provisions are intended to serve as an "in addition to" the normal subcontract language to address specific hazards not otherwise identified in the Level I-IV subcontract safety language.

The following Special Provisions may apply:

- Special Provisions for Enhanced Drug Testing Program
- Special Provisions for Cranes and Rigging
- Special Provisions for Diving for Service / Construction
- Special Provisions for Drilling and Drilling Services
- Special Provisions for Leased Workover Rig
- Special Provisions for Degas Plant

44.3.5. Flow-down of Requirements to Subcontractors

During New Orleans Safety's review, the most current version of the applicable APM sections, safety "boilerplate" language, and special safety provisions are inserted to the PR in SAP. These requirements are determined based on the scope of work to be performed and information provided on the PHR. If additional requirements are necessary because they were not included or addressed in the original subcontract, the SMTR shall notify the Subcontract Administrator (SCA) immediately that a change is needed.

44.4. PRELIMINARY HAZARDS REVIEW

44.4.1. PHR Overview

The Preliminary Hazards Review Form (AAA9020.715) is issued as part of the bid package to communicate potential environmental, safety and health (ES&H) hazards to prospective bidders. This checklist contains information obtained during preliminary planning for this project/task and may not address all hazards. The PHR is intended as a "safety starting point."

For non-Construction Management-led tasks, the PHR shall be completed and signed by the SMTR, Site Safety, and the Site ES&H Manager to ensure the following are addressed during the procurement phase of the subcontract:

- General description of work to be performed; and
- General conditions of work.
- Determination of whether or not the work is for material and/or equipment, on-site services, or off-site services;
- The estimated length of the project/task;
- The estimated number of subcontractor personnel;
- Government furnished equipment and services;
- Anticipated Life Critical Activities;
    - Work at Height > 4'
    - Material Handling (with machinery)
    - Trenching/Excavation

  - Motorized Heavy Equipment
  - Confined Space
  - Electrical Work
  - Motor Vehicle Operation (off-road/offsite)
  - Cranes & Rigging (ordinary & critical lifts)
  - Hazardous Energy Control (LOTO)
- Other potential hazards or hazardous activities;
- The anticipated permits/plans that the subcontractor will need to perform the task, including critical lifts (DOE-STD-1090-2011), and entry to an SPR Permit Required Confined Space;
- Identification of equipment that is anticipated to complete the project/task;
- The competent/qualified/authorized persons that are anticipated to complete the project/task;
- Anticipated training required;
- The minimum PPE requirements for the site;
- Any additional PPE/Protective Devices/Controls anticipated;
- Identification of applicable sections of the APM that the subcontractor shall follow;
- Any environmental submittal requirements; and
- Any additional information that needs to clarify conditions of task being performed.

The Construction Management Procedures Manual (ASI6410.2) dictates the PHR process and requirements for all CM-led projects, which are separate of this section.

44.4.2. PHR Preparation

The PHR is mandatory for all on-site services and construction tasks, where the physical presence of subcontractor personnel is required at an SPR work location. The PHR must be completed, signed, and attached to the Purchase Requisition (PR). The PHR's intent is to relay the level of ES&H risk identified to all personnel reviewing the PR, as well as provide New Orleans ES&H accurate information to ensure that the appropriate ES&H requirements are included in the subcontract. The PHR is also provided to the subcontractor during the bid process to relay known or potential hazards involved with the task.

The PHR shall be completed by the SMTR with assistance from Site ES&H (or NOLA ES&H for Construction Management-led tasks) where the work is being performed. The SMTR and ES&H must be familiar with, or have a basic understanding of the work being performed, as well as the hazards associated. Proper completion of the PHR requires the SMTR and ES&H to perform a joint review or walk-around of the area the work is to be performed. The signatures on the form reflect that the SMTR and ES&H all have a basic understanding of the work being performed.

The PHR shall be limited to tasks performed by and equipment utilized by the subcontractor or their sub-tier subcontractors in the execution of the work. Tasks performed by the M&O using M&O controlled equipment should not be included in the PHR. For example, the M&O may be required to operate a forklift to unload the subcontractors materials or equipment on an SPR job site; in this

situation the forklift and associated operation of the forklift by M&O personnel would not be included in the PHR, or clearly noted they are included for information only and are not part of the subcontractors PHR.

In order for a PR for on-site services to be approved by New Orleans ES&H, the PHR must be attached, complete, and signed by the SMTR, Site Safety, and the Site ES&H Manager. In the event the Site ES&H Manager is unavailable, the SMTR shall seek assistance from New Orleans Environmental for signature.

In order for a PR for Construction Management-led tasks to be approved by New Orleans ES&H, the PHR must be attached, complete, and signed by the SMTR, New Orleans Project Safety, New Orleans Environmental, and the Project Engineer.

If the PR is a Basic Ordering Agreement (BOA), the preparer shall consult with New Orleans ES&H for assistance in preparing the PHR since the work location may not be identified.

44.5. SUBCONTRACTOR SAFETY AND HEALTH INTERACTION

44.5.1. Pre-Bid Meeting

A pre-bid meeting is recommended for all Level III – IV tasks. The pre-bid meeting is used to communicate known or potential hazards and to discuss safety requirements associated with the project/task. Copies of the completed PHR shall be transmitted by the Subcontract Administrator (SCA) to bidders unable to attend the pre-bid meeting.

44.5.2. Submittal Requirements

The subcontractor's safety program, depending on the level of "boilerplate" subcontract language and special provisions, require various submittals following subcontract award. Additional elements, based on the nature of the work (service, construction, diving, drilling, etc.) and the severity of the potential hazards, may be added through subcontract additional safety and health requirements incorporated into the subcontract.

Submittal registers, located in each "boilerplate" and special provision(s), identifies the submittals required, when they are required, and who approves the submittal.

NOTE
It is the SMTR's responsibility to read and understand the applicable "boilerplate" language, and to ensure that all necessary safety submittals have been reviewed and approved by the appropriate M&O personnel prior to the start of work.

Adoption of APM Policies and Procedures
The SMTR shall ensure that prior to performing any on-site services, and in accordance with the safety requirements outlined in the applicable contract "boilerplate" and special provisions, the subcontractor:

- Adopts the Accident Prevention Manual (policies, practices, forms, and processes), using the form attached to the subcontract, or

- Develop its own written program/procedures (including requisite and applicable forms) and submit to New Orleans Safety for review and approval before starting work. In the event that a subcontractor elects to provide its own safety and health program/procedures, it must be at least equivalent to the APM requirements and shall be maintained at all times during performance of the work.

NOTE
If policies, practices, forms, and processes do not exist in the APM or another M&O procedure to address hazards associated with a subcontractor's work, the SMTR shall ensure that a written program is submitted, reviewed, and approved by New Orleans S&H.

44.5.3. Pre-Job/Pre-Construction Meeting

A pre-job meeting is recommended for Level III and IV tasks. The pre-job meeting is held with the subcontractor's first-line management and their sub-tier subcontractors prior to the start of work activities. Safety requirements, submittals, emergency contacts, etc., shall be reviewed. The subcontractor(s) shall provide the M&O with the following prior to commencement of on-site work, as applicable:

- A copy of an acceptable mobilization JHA.
- A list of designated Competent Persons (if applicable) on the Competent/Qualified Person Form (AAA9020.692).
- A list of M&O APM procedures to which subcontractor/sub-tier subcontractor employees will be trained.
- A list of "key supervisors" identified as the designated safety and health representatives for the subcontractor (if applicable).
- Copies of safety training for all employees (if applicable).
- Any support equipment (See APM Section 32)

44.5.4. Responsibility and Accountability

Each "boilerplate" and special provision subcontract language listed above has specific submittal requirements. It is the responsibility of the SMTR to ensure applicable submittals contained in these "boilerplates" and special provisions are received, reviewed, and approved as applicable.

The SMTR serves as the M&O's eyes and ears in the field to ensure subcontractors are following safe work practices in accordance with applicable sections of the APM, procurement documents, OSHA Standards, and consensus standards, which are made part of the resulting subcontract.

Before commencement of on-site work, the SMTR shall coordinate with Site Safety to ensure they understand their responsibilities for safety oversight and the safety procedures the subcontractors shall follow.

All personnel share concurrent responsibility and authority to exercise stop work authority.

44.5.5. Subcontractor Education in Workplace Hazards

Upon initially beginning on-site work, **all** subcontractor employees shall review the SPR orientation video and receive an orientation presented by the M&O covering the following:

- Hazards of the workplace,
- The labeling system used by the M&O contractor,
- The location of SDS for the hazardous chemicals used by the M&O contractor, and
- Any unusual or temporary conditions that could impact their work.
- It is the responsibility of the SMTR to provide this briefing (or have it provided by site SMEs) and ensures the above items are covered and documented.

44.6. RESPONSIBILITIES

SMTR

- Coordinate with site and/or New Orleans ES&H to perform and sign the PHR.
- Upload completed and signed PHR into SAP for onsite services.
- Manage subcontractor S&H in accordance with this procedure.
- Manage subcontractor's S&H submittals in accordance with contractual requirements, delegations of responsibility from Procurement, and departmental management procedures.
- Coordinate/Agree to the issuance of Safe Work Permits to subcontractors.
- Provide reports and information to site directors and various departments as required by contract provisions.
- Ensure subcontractors view and understand "The Active Force of Protection" video, and sign the ES&H Video Confirmation Form as applicable.
- Ensure subcontractors know and understand that all accidents, injuries, potential hazards, and near misses -- no matter how minor -- must be reported immediately to the control room operator
- Ensure subcontractors are aware of APM requirements where applicable to the work they are performing and of any changes that may be published during the period of performance.
- Coordinate safety meetings with subcontractor personnel;
- Inspect equipment and review the subcontractor's work control documents and practices (equipment manuals and labels) in accordance with APM Section 32.
- Obtain evidence that all equipment has undergone inspections in accordance with operating manuals. (Requires technical SME)
- Obtain evidence prior to the start of work on the Competent/Qualified Person Form (AAA9020.692) that subcontract employees assigned competent and/or qualified person duties are qualified.
- Verify that daily walkthrough inspections are conducted.

- Obtain documentation of all required safety inspections (identified per contract).
- Maintain SDSs for all chemicals present for subcontract.
- Obtain work hours and vehicle usage reports monthly for onsite services.
- In executing the above responsibilities, the SMTR may delegate actions to subject matter experts or safety oversight personnel. Such delegation is authorized as long as the requirements for documentation and records retention are met.

Site Safety

- Assist with the performance of and sign the PHR to be attached to the PR for subcontract work.
- Support the SMTR as the safety SME.
- Document and track all occupational hazards identified by a subcontractor during the period of the subcontract.

ES&H Manager

- Assist with the performance of and sign the PHR to be attached to the PR for subcontract work.
- Support the SMTR as the environmental SME.
- Document and track all environmental hazards identified by a subcontractor during the period of the subcontract.

Procurement

- Conclude subcontractor safety performance evaluations through the SPEAR process and advise subcontractors who are no longer considered “responsible.”
- Incorporates boilerplates into subcontract documents including the scope of safety required.

Site Director

- Issue Safe Work Permits to subcontractors through the SMTRs.
- Monitor subcontractors’ work performance and advise the SMTR of corrective actions required of subcontractors.
- Cancel Safe Work Permits to any subcontractors who do not comply with the S&H requirements until the problem(s) is resolved.

New Orleans Safety

- Review and approve PHRs for summary/scopes of work and assign applicable boilerplate language.
- Perform reviews of subcontractors’ compliance with subcontract safety and health requirements and provisions.
- Review and approve M&O subcontractor's safety professionals' qualifications and the project safety and health plans.
- Assess the M&O SMTR’s subcontractor oversight through organizational assessments and audits.

New Orleans Environmental

- Review purchase requisition documentation including but not limited to texts, scopes of work, and other attachments to ensure the applicable environmental submittals are identified on the PHR.
- Provide assistance to SMTRs, Site Environmental Personnel, and purchase requisitioners to identify applicable environmental submittals.

45. VEHICLE SAFETY PROGRAM

PURPOSE

This program establishes safe operating practices for vehicles and bicycles; operators' responsibilities; and the requirements for investigating, reporting, and recording vehicle accidents while traveling on government or company business.

SCOPE

This practice includes the following major sections:

- General Requirements
- Vehicle Operator Requirements
- Vehicle Safety Procedures
- Operational Environment
- Vehicle Inspections and Maintenance
- Reporting Vehicle Accidents
- Post Accident Corrective Actions
- Commercial Driver's License
- Bicycle Safety
- Responsibilities

APPLICATION

This section applies to personnel who operate vehicles and bicycles on the SPR and while traveling on company business.

DEFINITIONS

Aggressive Driving – Driving in a selfish, bold or pushy manner, without regard for the rights or safety of other users of the road.

Distracted Driving – Diversion of the driver's attention from the task of operating a vehicle by activities, objects or events inside or outside the vehicle, or by factors such as emotional stress or preoccupation.

Drug and Alcohol Free Workplace (ASR3700.24) - The M&O procedure that applies all M&O employees to maintaining a drug and alcohol free workplace.

Handheld Electronic Device – Any portable electronic device that can be used for voice communications, applications operation or data transfer.

Vehicle – For reporting purposes of this section, a vehicle is defined as "any mechanically or electrically powered device, not operated on rails or water or moved by human power upon, which any person or property may be transported". Cargo and/or attachments (trailers, etc.) to a vehicle are considered part of the vehicle. This includes GSA vehicles, rentals cars, POVs operated on behalf of the organization, the mobile command center, site fire trucks, high-water trucks, site vacuum trucks, and other mobile support equipment used in a similar capacity.

45.1. GENERAL REQUIREMENTS

M&O management is concerned for the health and well-being of drivers throughout the organization. It is expected that drivers comply with all aspects of the M&O vehicle safety program, as well as obey laws and regulations as they relate to vehicle operations.

45.2. VEHICLE OPERATOR REQUIREMENTS

When traveling by automobile, the following should be considered:

- Vehicle operators must have a valid driver's license appropriate for the vehicle and associated certifications.
- Vehicle operators must comply with established and accepted safe procedures, including this section and the following statutory requirements:
  - State motor vehicle laws, including having a valid state driver's license in their possession.
  - U.S. Department of Transportation regulations requirements as applicable.
- Drivers must be knowledgeable of traffic rules and regulations.
- The driver's authorization to operate company vehicles or their personal vehicle for company business may be revoked by management if the driving records disclose the following.
  - The state motor vehicle driver license is revoked, suspended, withdrawn or denied.
  - Operators of company vehicles must notify their immediate supervisor upon suspension or revocation of their driver's licenses.
  - Operating outside the limitations of a restricted license.
  - A conviction for driving a motor vehicle under the influence of alcohol or drugs.
  - Other concerns/violations at the discretion of the site management.
- No one is allowed to operate any vehicle/equipment while under the influence of drugs or alcohol. The use of a prescribed or over-the-counter drugs or medications that warns the user that it "may cause DROWSINESS," and/or "USE CARE when operating a vehicle or dangerous machinery," is prohibited. Employees are responsible for notifying their supervisor that such a drug/medication is being taken.

45.3. VEHICLE SAFETY PROCEDURES

- When a GSA vehicle is used, the driver's information should be noted on the utilization record located on a clipboard in each vehicle. Documentation is required each time that vehicle is used.
- Perform and document a walk around inspection of vehicle/equipment prior to use.
- All vehicle occupants will use seat belts. Seat belts must be adjusted and used properly to protect the occupants. Users should consult the vehicle manual on the proper method of use and adjustment.
- Personnel riding in a bus will not be required to wear a seatbelt unless one is provided.

- Riding in the bed of a pickup is forbidden unless it is equipped with seats and seatbelts.
- Before backing, check the area around your vehicle, use your mirror, and look over your shoulder for obstacles and pedestrians.
- Drive defensively and keep your eyes on other drivers: expect them to do the unexpected.
- Keep your eyes on the road and be prepared to react quickly. Watch for pedestrians, potholes, debris, bicyclists, motorcycles, animals, and other obstacles.
- Check rear and side mirrors for oncoming traffic. Learn your mirrors' blind spots so you know when to turn your head and check.
- Use special care when driving near large trucks. The stopping distance they require and their turning radius is much greater than most passenger cars.
- Be especially cautious when driving an unfamiliar vehicle. Drive with extra caution until you get used to the handling, especially in rain or wind.

NOTE
Locate the controls for the heater, a/c, lights, windshield wipers, emergency brake and flashers, and adjust mirrors and seat before you start driving an unfamiliar vehicle.

- Be aware of changes in traffic and road conditions. Slow down when you see brake lights and keep a safe distance between your vehicle and the vehicles ahead of you. Follow the three-second rule.
- Be aware of changing weather conditions and adjust your driving habits accordingly.
- Comply with posted speed limits. On site, if the speed limit is not posted, drivers shall assume a 20 mph limit.
- Do not engage in aggressive driving.
- When parking a vehicle on a storage site, follow the site parking policy and leave your key in the ignition in case of emergency.

NOTE
To prevent unauthorized operation, keys should not be left in support equipment which requires qualification and or training to operate.

- Unattended vehicles/equipment shall not be left running.
- Stay outside of the vehicle when fueling. Data indicates that exiting, entering, and exiting the vehicle again while fueling can produce a static charge that may serve as an ignition source.
- Do not smoke when fueling the vehicle or if in the vicinity of the fuel pumps, fuel storage, or similar areas.

WARNING
Using a cell phone when fueling a vehicle can result in fire and/or explosion. The cell phone (turned on, with or without use) can produce an ignition source.

- Although not allowed at any of the sites, Smoking, alcohol and cell phone use while operating a vehicle/equipment vehicle is prohibited.

- If you are taking medication, know the side effects and how your driving ability could be affected. Do not operate a vehicle until you know how your body reacts.
- Report all accidents immediately.

45.4. OPERATIONAL ENVIRONMENT

Drivers/operators will not pick up hitchhikers or unknown motorists whose vehicles are disabled; notify authorities or call for assistance when it is convenient to stop.

Driver/operators will not wear any device that restricts or impairs hearing or vision.

Drivers will minimize distractions that may impact their ability to safely operate the vehicle. This includes, but is not limited to distractions from:

- Mobile electronic devices
- Eating and drinking
- Vehicle features such as entertainment, climate, navigation systems, etc.
- Events and objects outside the vehicle

When backing and the view is not obstructed, drivers shall either use a ground guide or spotter, or perform a walk around inspection, and should honk the horn twice before backing to alert pedestrians and others of anticipated movement.

Driver/operators will not load any vehicle in a manner that obscures the driver's view or that interferes with operating the vehicle safely; ensure that vehicles with obstructed views to the rear are fitted with side view mirrors; do not operate vehicles with materials on the dashboard. All traffic signs, laws, rules, and regulations must be obeyed.

WARNING

Be aware that your driving ability may be affected when you are taking prescription or over-the-counter medication packaged with a warning that it can cause drowsiness or affect your ability to operate machinery. If there is any doubt contact your physician or pharmacist.

In remote locations, such as offsite pipelines, a JHA shall be conducted. As applicable, the following elements should be considered:

- Road Construction
- Traffic conditions
- Road Surface
- Weather

In cases where employees will be expected to drive for extended periods of time (>6 hours) on official business, driving fatigue shall be evaluated and controlled. In order to avoid driving fatigue, SPR sites and offices shall consider the following:

- Work Schedule
- Breaks and long hour driving avoidance

- Driving at night
- Flexible alternatives to manage fatigue, such as overnight stay
- Rest before driving
- Educating drivers about early signs of fatigue and effective strategies to manage fatigue.

45.4.1. Handheld Electronic Devices

Do not use a cell phone or other communication device, handheld or hands-free, while driving a moving vehicle. Pull over to make your call or answer a call.

CAUTION
Driving with one hand is hazardous – however, greater hazard is the driver's inattention when involved in a phone call while operating a vehicle.

Text messaging, sending/receiving/reading email, web browsing, and use of mobile applications is prohibited while operating a vehicle/equipment.

45.5. VEHICLE INSPECTIONS AND MAINTENANCE

Before using a vehicle/equipment, the driver/operator shall perform a 360 walk around inspection to check for the following:

- Obstructions (such as posts, fire hydrants, and holes)
- Top and side clearances
- Body and glass damage
- Tire inflation
- Obvious mechanical defects
- People
- Animals

Before operating a vehicle/equipment, the driver/operator will make sure it is mechanically sound and properly equipped for safety; check for fluid leaks, lights, tires and tools, dashboard controls, brakes, and wipers to make sure they are in good working condition and adjusted for your convenient/emergency use.

After inspection, all items found shall be noted on a discrepancy sheet (for vehicles) or on the pre-operational checklist (for equipment). All items that could affect the safe operation of the vehicle/equipment are required to be corrected before use.

If a vehicle is not drivable, please return keys and receive another vehicle. If damage is not recorded prior to operating the vehicle, when damage is found, it will be considered the responsibility of the last driver to use the vehicle unless an investigation concludes differently.

Inattention to details and surroundings creates habits which can cause accidents. The driver is responsible to ensure that the path is clear before proceeding, especially when backing.

45.6. REPORTING VEHICLE ACCIDENTS

All vehicle accidents regardless of severity shall follow the reporting procedures in APM Section 38 in addition to the requirements listed below.

Step 1.

Sites, immediately report all vehicle accidents to the Control Room Operator (CRO) regardless of severity.

New Orleans and Stennis, report all vehicle accidents to the New Orleans OCC (504) 734-4380.

Step 2.

Sites: The Control Room Operator (CRO) shall notify the employee's supervisor, the Site Safety Specialist, the Site Director, the NO OCC, the DOE SSR, and the New Orleans Transportation Specialist (504-734-4241).

New Orleans and Stennis: The New Orleans OCC shall notify the employee's supervisor, New Orleans Safety, the New Orleans Transportation Specialist (504-734-4241).

All accidents regardless of estimated damage costs shall be reported by the supervisor to Site Safety using the following forms:

- For GSA Vehicles / Vehicle Operations Manual (AAA8003.7):
  - Injury/Illness/Incident Report (AAA9020.680) – see APM Section 38
  - A Standard Form 91 (SF-91), Motor Vehicle Accident Report
  - A Standard Form 94 (SF-94), Statement of Witness. A SF-94 can be used in lieu of the Witness Statement in part (c) of the Injury/Illness/Incident Report (AAA.9020.680).
  - SF-91and SF-94 forms are available in the glove compartment of each GSA vehicle.
  - A Property Survey Report (OSF83-0031), in accordance with the Property Management Manual (AAA7003.7).
  - A Vehicle Accident Causal Analysis (AAA9020.653) for all vehicle accidents must be submitted by Site Safety to New Orleans Safety. This applies to the Security subcontractor as well as the M&O contractor and their subcontractors.

NOTE
For GSA vehicles, the supervisor shall notify the M&O Legal Department.

- For all other vehicles:
  - Injury/Illness/Incident Report (AAA9020.680) – see APM Section 38
  - A Property Survey Report (OSF83-0031), in accordance with the Property Management Manual (AAA7003.7), excluding POVs used operated on behalf of the organization.
  - A Vehicle Accident Causal Analysis (AAA9020.653) for all vehicle accidents must be submitted by Site Safety to New Orleans Safety. This applies to the Security subcontractor as well as the M&O contractor and their subcontractors.

Step 3.

All M&O and M&O supervised subcontractor employee vehicle operators involved in a vehicle accident shall be drug and alcohol tested in accordance with M&O's "Drug and Alcohol Free Workplace procedure" (ASR3700.24). The vehicle operator's supervisor shall arrange for the driver to be transported for drug and alcohol testing.

45.7. POST-ACCIDENT CORRECTIVE ACTIONS

The Site Director shall evaluate operator performance after an accident.

The corrective actions below may apply if an operator experiences an accident that is judged to be preventable. Accidents will be judged on a case-by-case basis before corrective actions are initiated.

- Disciplinary action, such as verbal and written warnings
- Refresher training in ESSH0170, Defensive Driving
- Time off without pay

In accordance with APM Section 5 (Line Control Safety Program) employees will be subject to disciplinary action for committing an unsafe act, which may include termination of employment.

All disciplinary actions must comply with the M&O Disciplinary Action Procedure (ASR3700.27).

45.8. COMMERCIAL DRIVER'S LICENSE (CDL)

The Commercial Motor Vehicle Safety Act of 1986 requires each driver of commercial motor vehicles (CMVs) to have in their possession the Commercial Drivers License (CDL) as issued by the State Department of Motor Vehicles. The site maintenance manager has the overall responsibility for ensuring that individuals driving these types of vehicles possess a CDL.

A CDL is required to operate any of the following vehicles in commerce:

- A single vehicle having a gross vehicle weight rating (GVWR) in excess of 26,000 pounds
- A trailer with a GVWR of more than 10,000 pounds if the combination weight rating is more than 26,000 pounds
- A vehicle designed to transport more than 15 persons (including the driver)
- Any size vehicle used in the transportation of hazardous materials that require the vehicle to be placarded in accordance with 49 CFR, Part 172, Subpart F.

The requirement to possess a CDL does not apply while operating a vehicle on-site (inside site fences). This should not be construed to permit usage of certain types of motor vehicles by personnel not otherwise possessing the required knowledge and skills to operate such equipment.

45.9. BICYCLE SAFETY

This section identifies the "Rules of The Road," common causes of bicycle accidents and the actions to be taken to minimize the risk of injury when using bicycles on the SPR.

The information below is a list of requirements and precautions for riding a bicycle on the SPR and does not address all possible situations that may have the potential to cause injury while operating a bicycle. Therefore, the rider should exercise good judgment to use other precautions as necessary for conditions that may be encountered.

45.9.1. General Requirements

- All users of bicycles on the SPR will receive training on the contents of this procedure prior to bicycle use.
- Prior to riding the bicycle the user must perform a safety check. Verify that all bicycle components are securely attached, guards are in place, the chain is sufficiently adjusted and that brakes are operable. If the bicycle is determined to be safe the user may proceed. If the bicycle is determined to be unsafe the user should initiate a work request for necessary repair(s) and place a “Danger -Do Not Operate” tag, which may be obtained from Operations or Maintenance, on the bicycle.
- Ensure proper air pressure in tires according to tire manufacturer recommendations.
- Ensure the chain is secured and seat/handle bars are at proper heights to maintain control of bicycle.

45.9.2. Rules of The Road

- Ride on the right side of the road with the traffic flow, not against it;
- Obey traffic signs and signals;
- Use correct hand signals;
- Stop at all intersections and crosswalks, both marked and unmarked;
- Stop and look both ways before entering a street;
- Yield the right-of-way to pedestrians and vehicles
- Operate bicycles at safe speeds, on established roadways, well pad entrances and parking areas.
- Never stand on pedals when riding bicycles.
- Avoid slippery or wet surfaces, loose gravel, sand or shell, keeping eyes on path and paying attention to road conditions.
- Do not allow passengers on bicycles.
- Keep two hands on the handlebars except when giving signals.
- Items carried/transported on bicycles shall be secured in a basket or other device designed for that purpose.
- Do not carry large, heavy or awkward items on the bicycle.
- Do not carry materials that could, if spilled, cause injury/illness or adverse impact to the environment.

45.10. RESPONSIBILITIES

M&O APM of Operations and Maintenance

- Make the final decision as to fault and/or recommended disciplinary action for M&O employees and supervised subcontractors.

Site Directors

- Ensure compliance when reporting and recording any accident, injury, or property damage involving a vehicle.
- Ensure employees involved in vehicle accidents take the required drug and alcohol tests specified in this section.
- Determine disciplinary actions to be taken.
- Review vehicle accidents during the monthly Site Safety Management Council Meeting.

Supervisor

- Provide completed vehicle accident report forms to Site Safety.
- Notify the M&O Legal Department for accidents involving GSA vehicles
- Ensure vehicle operators involved in accidents are drug and alcohol tested in accordance with ASR3700.24.

Vehicle Operator

- Operators of company vehicles must notify their immediate supervisor upon suspension or revocation of their driver's licenses.
- Follow all vehicle operator requirements in this section.
- Report all vehicle accidents to the Site CRO or OCC.

Witness

- Complete SF-94 or part (c) of the Injury/Illness/Incident Report (AAA.9020.680).

Control Room Operator

- For site vehicle accidents, notify the employee's supervisor, the Site Safety Specialist, the Site Director, the NO OCC, the DOE SSR, and the New Orleans Transportation Specialist (504-734-4241).

OCC

- For New Orleans and Stennis vehicle accidents, notify the employee's supervisor, New Orleans Safety, the New Orleans Transportation Specialist (504-734-4241).

Site Safety

- Notify New Orleans S&H as soon as possible after the accident.
- Assist the supervisor with the completion of required forms/reports upon request.
- Send the original SF-91 and SF-94 reports to the New Orleans Transportation Specialist.
- Send copies of required forms/reports to New Orleans Safety and Health within five working days.

46. WELDING, CUTTING, AND BRAZING SAFETY PROGRAM

PURPOSE

This section prescribes how the SPR complies with federal and state regulations concerning welding, cutting, and brazing operations.

SCOPE

This section includes the following major sections:

- Introduction
- PPE / Eye And Face Protection Requirements
- Precautions for Welding/Cutting Operations
- Arc Welding
- Gas Cylinders
- Responsibilities

APPLICATION

This section applies to work activities and employees under the control of the M&O and its subcontractors.

46.1. INTRODUCTION

If overlapping or conflicting safety requirements exist where SPR employees are engaged in operations not controlled by the SPR or at other locations, the more stringent requirements will apply.

NOTE
Unless brazing is specifically mentioned, the requirements for welding also apply to brazing.

46.2. PPE/ EYE AND FACE PROTECTION REQUIREMENTS

- Helmets, goggles, face shields, protective booths, and similar items will be provided for employee protection against radiation, fumes, and molten splatter associated with welding, cutting, and brazing.
- Approved eye and face protection will be worn whenever working within welding areas. (Examples of eye and face protection are displayed in figures at end of this section.)

NOTE
Welders shall only wear welding helmets or hard helmets meeting ANSI/AWS Z49 with the appropriate filter installed (for visible radiation protection) when performing welding or cutting in hard hat areas (see section 36).

- Welding tasks will have a documented hazard assessment and a PPE assessment to identify the proper personal protective equipment (PPE) needed to control the hazards.

- All welders and gas operations workers shall use filtered, tinted lenses for protection against glare and radiant-energy light.

WARNING
Direct observation of radiation emitted from welding/cutting operations without appropriate eye and face protection can cause severe injury and is prohibited.

46.3. GENERAL HAZARDS

The following hazards are involved when welding, cutting, and brazing:

- Fire from sparks and spatter
- Asphyxiation
- Electric shock
- Inhaling toxic fumes and gases
- Eye injuries from heat rays
- Impact from a compressed cylinder from which the valve has broken off.
- Explosions and fires from reactions

46.4. PRECAUTIONS FOR WELDING/CUTTING OPERATIONS

In order to avoid the hazards listed above, all personnel are to follow the precautions below in carrying out their work.

NOTE
The requirements listed in this section apply to welding and cutting operations using methods considered as hot work.

46.4.1. Fire and Explosion

Welding sparks can fly up to 35 feet, and spatter can bounce on the floor and fall through openings.

Cutting or welding shall be permitted only in areas that are or have been made fire safe and for which a hot work permit has been issued.

When work cannot be moved practically, the area will be made safe by removing combustibles or protecting them from ignition sources.

The following hazard controls may be used to minimize the danger:

- Perform welding on floors that are fire resistant.
- Use a combustible gas indicator to determine whether flammable gases or vapors are present.

- Remove combustible and flammable material from the area before starting the job and cover items that can't be moved with fire-resistant material.
- Make sure the area has adequate ventilation.
- Stay at least 35 feet from combustible materials.
- Do not cut or weld on piping, containers, or tanks unless they have been cleaned and/or purged and the atmosphere tested.
- Keep the welding area clear of trash and debris.
- Keep cylinders away from sparks and spatter.

NOTE
There may be times when welding can only be done with sprinkler systems out of operation or otherwise unavailable. Appropriate fire protection measures will be taken during this time as defined by the Fire Protection Specialist and the hot work permit.

46.4.2. Fire Watch

A fire watch shall be required whenever welding or cutting is conducted in locations where minor fires might develop or where the following exist:

- Appreciable combustible materials in the building construction or contents are closer than 35 feet to the point of operation
- Appreciable combustibles are more than 35 feet away but are easily ignited by sparks
- A wall or floor opening within a 35-foot radius exposes combustible material in adjacent areas, including confined space walls or floors
- Combustible materials are adjacent to the opposite side of metal partitions, walls, ceilings, or roofs and are likely to be ignited by conduction or radiation.

More than one fire watch shall be required if combustible materials that could be ignited by the hot work operation cannot be directly observed by the initial fire watch.

NOTE
Fire watchers shall have fire extinguishing equipment readily available and be trained in its use. They shall know how to sound an alarm in the event of a fire. They shall watch for fires in all exposed areas, try to extinguish them only when it is obviously within the capacity of the equipment available, or, if not, sound the alarm and evacuate the area. A fire watch shall be maintained for at least one half hour after welding or cutting is completed to detect and extinguish potential smoldering fires.

46.4.3. Inhalation

Welding operations can create hazardous fumes and gases. Use the following controls to help prevent inhalation of hazardous substances.

- Review the SDS for the metals, coatings, welding gases, and welding rods to determine the proper respiratory protection.

- Use proper ventilation and respiratory protection.
- Place fans to the side to blow fumes away from you.
- Don't get too close to an arc welder's arc.
- Leave the area immediately and get help if you feel sick.

46.4.4. Handling

Arc welders are electric, so you must follow basic electrical safety practices to prevent shock or electrocution. The following precautions shall be utilized for arc welders:

> **NOTE**
> Refer to APM Section 55 for storage and handling requirements of gas cylinders used for welding, cutting, and brazing.

- Use the correct cable size and ensure that insulation is in good shape.
- Turn off power before touching electrical parts.
- Ground what you are welding with a separate electrical connection.
- Don't wear metal jewelry that could become a conductor.
- Don't weld in the rain where you could become a conductor.

46.4.5. Protective Clothing

Approved protective clothing shall:

- Be of safe design and construction for welding/cutting operations,
- Be nonirritating to the skin and be made of non-asbestos material,
- Not produce offensive odors under normal use,
- Be approved by the user regarding comfort
- Be clean with no grease or oil that could be flammable,
- Include long-sleeved shirts; collars and cuffs shall be buttoned,
- Include high top shoes, with pants legs over them to keep sparks out,
- Not have cuffs or open pockets that could catch sparks,
- Include flame-resistant head covers.

Employees should avoid flammable hair preparations.

Protective equipment will be maintained in a sanitary and reliable condition.

Additionally, for arc welders:

- Clothes shall be made of materials heavy enough to protect against ultraviolet rays,
- Welder's gloves shall be dry to protect against shock and electrocution,
- Eye and face protection will be used by the welder and helper.

Protective clothing will be provided to the employee as required to accomplish work assignments.

NOTE
"FRC is required for firewatch and personnel working in the area of welding and burning activity."

NOTE
Appropriate protective clothing required for any welding/cutting operation will vary with the size, nature, and location of the work to be performed.

If employees provide their own protective clothing, supervisors will ensure that it meets SPR requirements, including proper maintenance and sanitation.

Employees working directly with or near a welding/cutting arc will wear flame-resistant protective clothing, such as welding leathers, coveralls, or thick, long-sleeved shirts and heavy pants.

Employees welding/cutting will wear SPR-approved welding gloves.

NOTE
Be aware that adding protective clothing will add to heat stress.

To prevent burns, heat radiation, or contact with weld spatter, employees must observe the following OSHA requirements:

- Oxyfuel welders must wear OSHA approved impact- and heat-resistant goggles or eye protection and, in many cases, nonflammable helmets,
- Arc welders shall wear helmets and OSHA approved eye protection that resist heat, fire, impact, and electricity.

46.4.6. Welding or Cutting on Containers

No welding, cutting, or other hot work will be performed on used drums, barrels, tanks, or other containers until they are purged and cleaned thoroughly to ensure that no flammable materials or substances (such as greases, tars, or acids) are present that may produce flammable or toxic vapors when subjected to heat. Any pipelines or connections to the drum or vessel will be disconnected or blanked. When vessels cannot be cleaned adequately, or testing reveals any lower explosive limit (LEL), inert gas may be used.

Before preheating, cutting, or welding, all hollow spaces, cavities, or containers will be vented to permit the escape of air or gases. If gas testing does not indicate less than 10 percent LEL, purging with inert gas is required.

WARNING
Inert gases present their own hazards, such as asphyxiation and should be used with caution.

46.4.7. Torch Valves

- When gas welding or cutting, torch valves will be closed and the gas supply to the torch positively shut off at some point outside the confined area whenever the torch will not be used for a substantial period of time, such as during lunch hour or overnight.
- Where practical, the torch and hose will also be removed from the confined space if it is not in use.
- All torches shall have a flashback control.

46.4.8. Welding Cable

- Welders shall place welding cable, welding hose, and other equipment so that it is clear of passageways, walkways, ladders, and stairways.
- Welding cable shall be inspected daily, especially at connection points and stress areas, and it shall be replaced if cracked, damaged, or poorly spliced.

46.4.9. Work in Confined Spaces

Work in confined spaces will be done according to Section 10 of this manual.

46.4.10. Contamination

The following three factors govern the amount of contamination to which welders may be exposed during arc and gas welding and must be considered when determining ventilation:

- The dimensions of the space in which welding is to be done (with special regard to the height of the ceiling).
- The number of welders.
- The possible rate of development of hazardous fumes, gases, or dust, according to the metals and welding techniques involved.

Local exhaust or general ventilating systems will be used and arranged to keep the amount of toxic fumes, gases, or dusts below the maximum allowable concentration.

46.4.11. Screens

- When welding in a space entirely screened on all sides, the screens will be arranged so that no serious restriction of ventilation exists.
- Screens should be mounted so that they are about 2 feet above the floor unless the work is performed at so low a level that the screen must be extended nearer to the floor to protect nearby workers from the glare.
- All screens must be made of non-reflective material.

46.4.12. Precautionary Labels

The SDS' of the welding materials must be reviewed and appropriate controls must be in place before welding, due to a number of potentially hazardous materials contained in fluxes, coatings, coverings, and the filler metals used, which may be released to the atmosphere during welding and cutting.

46.5. ARC WELDING

46.5.1. Application of Arc Welding Equipment

Unusual service conditions may exist, and in such circumstances, machines shall be specially designed to safely meet the service requirements.

Chief among these are environmental conditions which include exposure to:

- Unusually corrosive fumes or excessive dust
- Steam or excessive humidity
- Excessive oil vapor and/or flammable gases
- Abnormal vibration or shock
- Weather and/or unusual seacoast or shipboard conditions

For arc welding under wet conditions or warm surroundings where perspiration is a factor, the use of reliable automatic controls for reducing no-load voltage is recommended to reduce the shock hazard.

46.5.2. Operations

Training: Employees assigned to operate or maintain arc welding equipment shall be familiar with the requirements of performing gas-shielded arc welding and with the Recommended Safe Practices for Gas-Shielded Arc Welding, A6.1-1966, American Welding Society.

Machine hookup:

- Before starting operations, all machine connections shall be checked to ensure that they are properly made.
- The work lead shall be firmly attached to the work; magnetic work clamps shall be free of adherent metal particles of spatter on contact surfaces.
- Coiled welding cable shall be spread out before use to avoid serious overheating and damage to insulation.

Grounding: Grounding of the welding machine frame shall be checked with special attention given to safety ground connections of portable machines.

Leaks: No leaks of cooling water, shielding gas, or engine fuel shall be present.

Switches: Proper switching equipment for shutting down the machine shall be provided.

Manufacturer's instructions: Manufacturers’ printed rules and instructions covering equipment operation shall be strictly followed.

Electrode holders: When not in use, electrode holders shall be placed so that they cannot make electrical contact with persons, conductive objects, fuel, or compressed gas tanks.

46.5.3. Maintenance

The operator shall report any equipment defect or safety hazard to his supervisor. The use of the equipment shall be discontinued until its safety has been ensured, and any repairs shall be made only by qualified personnel.

Machines that have become wet shall be thoroughly dried and tested before being used.

Cables with damaged insulation or exposed bare conductors shall be replaced. Lengths of work and electrode cables shall be joined by the use of connecting means specifically intended for the purpose with insulation adequate for the service conditions.

46.5.4. Protection against Electric Shock

Although open-circuit voltages on standard arc-welding units are not high compared to those of other processes, they are still a potential hazard. Normally, the work setup is such that the work is grounded, and unless care is exercised, the welder or operator can easily become grounded.

- Cables with splices within 10 feet of the holder shall not be used.
- The welder shall not coil or loop welding electrode cable around parts of his or her body.
- Electrical tapes used on splices must equal the strength of the original insulation.

The voltage between the electrode holder and the ground, during the "off" arc or "no-load" period, is the open circuit voltage.

The welder or welding operator shall be insulated from both the work and the metal electrode and holder.

- The bare metal part of an electrode or electrode holder shall never be permitted to touch the operator's bare skin or wet clothing.
- Consistent use of well-insulated electrode holders and cables, dry clothing on the hands and body, and insulation from ground shall be used to prevent contact.

CAUTION
Pacemaker wearers should check with the manufacturer or a medical professional regarding welding operations if they must be in an area where welding is being performed.

Some specific precautions for prevention of electric shock include the following:

- Cover or arrange cables to prevent contact with falling sparks in confined places.
- Ground the frames of welding units, portable or stationary, in accordance with the National Electrical Code, NFPA 70:
  - A primary cable containing an extra conductor, one end of which is attached to the frame of the welding unit, can be used with a small welding unit,
  - This ground connection can be carried back to the permanently grounded connection in the receptacle of the power supply by the proper polarized plug.

- Arrange receptacles of power cables for portable welding units so that it is impossible to remove the plug without opening the power supply switch, or use plugs and receptacles that have been approved to break full-load circuits of the unit.
- If a cable (either work lead or electrode lead) becomes worn, exposing bare conductors, it may be repaired if the insulation repair on work lead cables is equivalent in insulation to the original cable covering.
- Keep welding cables dry and free of grease and oil to prevent premature breakdown of the insulation.
- Suspend cables on substantial overhead supports if the cables must be run some distance from the welding unit.
- Protect cables that must be laid on the floor or ground so that they will not present a tripping hazard or become damaged or entangled.
- Take special care to keep welding cables away from the power supply cables or high-tension wires.
- Ground fault circuit interrupters (GFCIs) are required for arc welders generating alternating current (AC) for power equipment.

46.5.5. Design

A controller integrally mounted in an electric-motor-driven welder:

- shall have capacity for carrying rated motor current,
- shall be capable of making and interrupting stalled rotor current of the motor, and
- may serve as the running overcurrent device if provided with the number of overcurrent units.

Control apparatus will be enclosed on all types of arc welding machines.

Input power terminals, tap change devices, and live metal parts connected to input circuits shall be completely enclosed and accessible only by the use of tools.

Terminals for welding leads shall be protected from accidental electrical contact with personnel or with metal objects such as vehicles and crane hooks.

- Protection may be obtained by use of:
  - dead-front receptacles for plug connections,
  - recessed openings with non-removable hinged covers, or
  - heavy insulating sleeving, taping, or other equivalent electrical and mechanical protection.
- If a welding lead terminal that is intended to be used exclusively for connection to the work is connected to the grounded enclosure, it must be connected by a conductor at least two American Wire Gauge (AWG) sizes smaller than the grounding conductor and the terminal marked to indicate that it is grounded.

No connections for portable control devices such as pushbuttons to be carried by the operator will be connected to an AC circuit of higher than 120 volts.

Exposed metal parts of portable control devices operating on circuits above 50 volts will be grounded by a grounding conductor in the control cable.

Auto transformers or AC reactors shall not be used to draw welding current directly from an AC power source exceeding 80 volts.

46.5.6. Installation of Arc Welding Equipment

The manufacturer's instructions shall be followed for proper installation of arc welding equipment.

46.5.7. Noise Generated by Welding Operations

Hearing protection shall be worn when noise from welding operations exceeds 85 dBA.

46.6. GAS CYLINDERS

For safe material handling procedures while performing welding, cutting, and brazing operations, refer to Section 55 of this manual.

46.7. RESPONSIBILITIES

Welding Task Supervisor/Other Supervisors

- Ensure that employees performing welding and cutting operations are suitably trained (within two months of employment start date) in the use of approved protective clothing designed for such operations.
- Ensure that all contractors are advised about flammable materials or hazardous conditions of which they may not be aware.
- Determine combustible materials and hazardous areas present or likely to be present in the work location.
- Protect combustibles from ignition:
  - Move the work to a location free from dangerous combustibles.
  - Move combustibles to a safe distance from the work If the work cannot be moved, or shield them against ignition.
  - Schedule cutting and welding so that site operations that might expose combustibles to ignition are not started during cutting or welding.
- Secure a hot work permit for the cutting or welding operations from the designated management representative. (See Welding and Cutting Checklist, AAA7012.8.)
- Determine that the cutter or welder has secured local area supervisory approval by operations that conditions are safe before going ahead.
- Determine that fire protection and extinguishing equipment are properly located and in safe operating order at the work location.
- Ensure trained employee firewatchers are assigned and available at the workplace.

- Review the JHA/AHA for the tasks to be performed with employees who will be performing the work and make sure they understand the required PPE and safety precautions to be taken for each task.
- Inspect employee work areas daily and make sure employees are wearing proper PPE.

Employees

- Use the Welding and Cutting Checklist (AAA7012.8) before starting work each day.
- Wear approved eye and face protection whenever performing work involving eye and face hazards, or when temporarily or permanently assigned to work within welding areas. Eye and face protection requirements in welding/cutting areas are for minimal protection only.
- Wear required PPE at all times when working within a welding/cutting area and actual welding/cutting operations are not underway.
- Inspect filter lenses and cover plates for cracks, pits, scratches, air bubbles, or waves upon receipt and periodically thereafter and ensure that filter lenses bear permanent markings that identify their manufacturer, shade, and "Z87" marking.
- Use protective clothing, as described in this section, for welding/cutting operations, and maintain protective clothing in a sanitary and reliable condition.
- Wear approved welding gloves and clothing when working directly with a welding/cutting operation.

Firewatchers

- Have fire extinguishing equipment readily available, be trained in its use, and be able to sound an alarm in the event of a fire.
- Watch for fires in all exposed areas. Try to extinguish them only when doing so is obviously within the capacity of the available equipment and/or sound the alarm.
- Maintain a fire watch for at least a half hour after completion of welding or cutting operations to detect and extinguish possible smoldering fires.
- Before cutting or welding. Inspect the work area with the area supervisor responsible for authorizing the cutting and welding operations.
- Designate precautions to be followed using the safe work permit system.
- Ensure that where combustible materials such as paper clippings, wood shavings, or other combustibles are on the floor, the floor is swept clean for a radius of 35 feet around the welding area.
- Ensure combustible floors are kept wet, covered with damp sand, or protected by fire-resistant shields. Ensure that, where floors have been wet down, personnel operating arc welding or cutting equipment are protected from possible shock.
- Do not permit welding or cutting in the following situations:
    - In areas not authorized by management
    - In sprinklered buildings while such protection is impaired.
    - In the presence of explosive atmospheres (mixtures of flammable gases, vapors, liquids, or dusts with air), or explosive atmospheres that may develop inside uncleaned or

improperly prepared tanks or equipment that have previously contained such materials, or that may develop in areas with an accumulation of combustible dusts.

Site Safety Specialist

- Conduct training for eye and face protection and clothing associated with welding/cutting operations.
- Refer to APM Section 36 for definitions of qualified eye and face protective equipment and clothing as it relates to radiation hazards.
- Review Purchase Requests to ensure no cadmium-containing welding rods are procured.

New Orleans Industrial Hygiene Department

- Review purchase requests to ensure that the least hazardous welding rods available are procured.

47. WORKOVER AND WIRE LINE RIG SAFETY

PURPOSE

This section establishes procedures for drilling, wire line, and workover activities.

SCOPE

This section includes the following major sections:

- General Requirements
- Equipment Requirements
- Operations Near Power Lines
- Responsibilities

APPLICATION

This section applies to work activities and employees under the control of the M&O and its subcontractors.

47.1. GENERAL REQUIREMENTS

Prior to the rig starting work at a new location, a safety inspection by a team led by the Site Director accompanied by a site safety specialist, workover safety analyst, workover field manager and/or supervisor, site cavern engineer/designee and other designated personnel shall be conducted.

- The DOE Senior Site Representative (SSR) shall be invited to accompany this team.
- This inspection shall be performed subsequent to the daily safety walkthrough of the rig by the workover safety analyst and workover manager or their designees as currently prescribed in ASI7000 (Well Workover Manual) and this section of the APM.
- This inspection will take place after all equipment is in place and before any workover begins on a cavern, but shall be conducted so as to allow sufficient time for deficiencies to be corrected prior to the scheduled start of operations. This inspection shall be documented on the Pre-start Checklist of Workover Operations (AAA7012.13).

NOTE
Any hazards identified shall be eliminated, controlled, or mitigated appropriately prior to the start of workover operations.

Subcontract labor and services support personnel for workover operations must demonstrate a minimum of one year of experience appropriate to the task and type of operations they are scheduled to perform for the SPR.

- The subcontractor will be required to validate that all personnel presented to the SPR for operational duties meet these requirements.
- Evidence of training, experience and a certification of their qualifications by the subcontractor shall be presented to the Subcontracting Management Technical Representative (SMTR) in writing for approval.

- If subcontractors present individuals that do not meet the requirements they will not be allowed to work and the decision process will be elevated to the Director of Cavern Integrity.

Daily rig safety inspections by the Workover Safety Analyst and Workover Rig Supervisor shall be conducted in accordance with the Well Workover Manual (ASI7000.15) and this section.

The workover safety analyst using the Daily Workover Safety Checklist (AAA7012.14) shall conduct a minimum of three daily safety inspections and provide copies to the Site Director, Site Safety Specialist, and New Orleans Safety.

- The first inspection shall be conducted prior to the initiation of daily workover operations. Discrepancies found during the inspections shall be noted on checklist.
- If operations are shut down for the day or if the crew is rigging down, the workover safety analyst shall annotate on the checklist that the crew is rigging down/shut, and inspection is not needed.

47.1.1. Medical and First Aid

Communications (two-way radio, etc.) shall be available and in working condition at or very near the well site when work is in progress.

The workover manager and workover safety analyst shall review the medical response section of the Emergency Response Procedure (ERP) for the host site. The workover manager shall ensure that all workover employees understand the procedures. All injuries/illnesses/incidents shall be reported to the site control room immediately in accordance with APM Section 38.

- Phone numbers and radio call signs for the site control room and key personnel will be posted in the rig change room.
- All workover crew personnel at the well site shall be informed about and understand the procedures for contacting the site control room.
- This ERP, or a portion of the ERP to be carried out by onsite employees, shall be available at the site for inspection in the rig change room.
- In the event that an injury/illness occurs during workover operations, the workover safety analyst and workover manager shall implement the investigation procedures outlined in Section 38 of this manual.

47.1.2. Emergency Planning, Employee Training and Education

Employees shall be aware of emergency procedures that are to be followed in the event of fire/explosion, hydrogen sulfide release, severe weather, facility emergencies, oil spills, security, and other possible emergencies, including medical.

Emergency response procedures for the site shall be reviewed with the workover crew before workover begins and the review will be documented on the initial JHA or Pre-job Briefing Form.

When working around the posted areas of the degas plant, the workover crew shall be trained on what actions to be taken in the event of a release of H_2S.

The rig operator and tool pusher are to have current International Association of Drilling Contractors (IADC) well control certification. When the well is open, at least one person on location must have a well control certification.

The workover crew shall have the required training to perform workover operations as specified in their contract. Proof of this training will be verified by workover rig manager and tracked on location by the workover safety analyst.

47.1.3. Personal Protective Equipment (PPE)

A Job Hazard Analysis (JHA) shall be completed for all tasks to be performed in accordance with section 27 of the Accident Prevention Manual (APM). Additionally, all employees shall be aware of the hazards associated with workover and wireline and trained on the proper methods of use, inspection, and care of equipment.

Workover personnel shall ensure the entry to the general work area is posted with PPE requirements.

All personnel entering a workover or wireline location shall, at a minimum, wear fire resistant clothing (FRC), a hard hat, safety glasses, hearing protection (when equipment is running) and safety shoes. See section 36 personal protective equipment (PPE) for additional guidance and minimum PPE requirements.

NOTE
All visitors/observers shall wear required personal protective equipment. Visitors not directly involved in the work shall not be within the immediate workover area (inside of the guy wires) unless escorted. The rig supervisor, workover safety analyst or driller shall suspend rig operations if he or she deems a visitor is a distraction to personnel working on the rig or are putting themselves at risk.

Visitors are responsible for acquiring and wearing all required PPE. Visitors shall not enter the workover or wireline location without checking in with the workover supervisor or the workover safety analyst.

NOTE
Escape packs are to be used by the rig crew and other personnel at posted areas in and around the degas plant.

47.1.4. Housekeeping

Work areas shall be kept free of slipping and tripping hazards. Loose materials, equipment, or tools not immediately required for the job shall be removed from the work area and properly stored. See Section 22 of the APM for additional information regarding housekeeping.

When working in a cavern cellar, no loose equipment or materials shall be in or close to the cellar except those in use or about to be used. Entry into the well cellar will be controlled by the confined space entry permit process (Section 10 of the APM).

47.1.5. Emergency Escape

On all rigs, the derrick or mast shall have a means of escape (Geronimo line) available for use before the derrick or mast is manned for running or tripping pipe.

- The means of escape (equipment, plan) shall be at the rig location.
- The means of escape shall be rigged and secured to provide a safe and readily accessible escape route from the derrick man's working platform.
- When a stabbing board is to be used, a means of escape and written approved rescue plan shall be provided before operations commence that require a crewmember to be on the stabbing board.

The emergency escape route shall be kept clear of obstructions and arranged to carry the crewmember away from the well and the work floor.

The workover supervisor shall ensure that the tension on the Geronimo line will permit a safe landing for the person using it.

- Geronimo lines shall have independent anchors, separate from those being used by the rig.

Prior to working on the stabbing board or climbing the mast there shall be an M&O approved, written rescue plan (i.e. equipment and trained personnel). The plan will be provided to NO S&H and Emergency Management for review. The Confined Space Program Coordinator (CSPC) approves the plan. Upon approval of the written rescue plan, the Rescue Team shall perform a simulated rescue to demonstrate proficiency of their plan. This demonstration shall be performed when the rig changes caverns, or any time there is a change to the written plan. Personnel trained in rescue shall be immediately available during operations using the stabbing board.

47.1.6. Man Hoisting Equipment

The driller or operator of the hoisting equipment controls shall maintain visual contact with the employee at all times while the employee is riding up and down.

- All equipment shall be inspected and determined to be in working order prior to using it to lift personnel.
- The hoisting equipment must be Man-Rated, or designed for human use.
- The hoisting equipment must be brought to a full stop at the working platforms to permit the person to attach his or her harness to the lanyard available at the working level, before releasing the lanyard from the hoisting equipment. The reverse procedure shall be used when the person is preparing to descend.

SPR employees or subcontractor personnel shall not be permitted to ride the traveling block, elevators, or other hoisting equipment except in emergency situations.

CAUTION
Hoisting equipment not designed to lift persons can only be used for emergency situations if the equipment has been certified for that use by the manufacturer.

47.1.7. Derrick or Mast Ladders

All fixed ladders over 20 feet in length mounted to a derrick or mast shall be equipped with a climbing safety device and shall be inspected by the person climbing the ladder prior to use.

Where a climbing assist device is used together with an automatic control descent device, such an arrangement shall be acceptable as a ladder safety device.

Climbing assist systems that do not have a means to limit the maximum descent of the person to 4 feet, or to automatically arrest the person's fall shall **not** be acceptable as a ladder safety device.

Climbing assist systems shall be inspected by a qualified employee and determined to be in working order prior to use.

47.1.8. Atmospheric Hazards.

The workover manager shall consult the Workover Safety Analyst or NOLA Industrial Hygienist who shall determine what hazards must be monitored and the monitoring requirements.

- Examples for surveillance areas to be monitored include, but are not limited to: the drilling floor around the borehole, mud settling tanks, frac tanks, and the crude oil holding tanks during workover.

Atmospheric monitoring shall be performed by the workover safety analyst, the site safety specialist, or NOLA Industrial Hygienist.

- Initial atmospheric testing shall be performed in accordance with APM section 35.
- Benzene shall be monitored by the workover safety analyst upon the initial opening of the crude oil well and periodically throughout the performance of the workover when the wellhead is open and in accordance with APM Section 49.

Emergency Response Team members who must reenter the danger area shall wear an approved positive-pressure respirator (SCBA) while they remain in the danger area. They shall perform monitoring to ensure that hazard has been mitigated.

Crickets (personal H_2S monitors) shall be worn on location by all workers and anyone else entering the work area.

47.1.9. Handling and Racking Tubular Goods

All Tubular goods will be handled in accordance with API RP 5C1, "Care of Casing and Tubing" for SPR operations.

Drill pipe and casing shall be placed on steel pipe racks or wooden sills.

Storage racks shall be designed to withstand the maximum anticipated load of racked pipe, casing, and other intended loads.

- The load capacity of the steel pipe racks will be marked.
- Wooden sills do not require load capacity markings.

- Storage steel pipe racks or wooden sills shall be equipped or fitted with means to prevent casing and other tubular material from accidentally rolling off the rack.
- Standing on, walking on, or being between the steel pipe racks or wooden sills and a load of casing or drill pipe during loading, unloading, and transferring operations shall not be permitted unless additional controls are in place.
- A V-door on the rig is used to move some material onto the workover rig. After casing, drill pipe or similar material is removed from the V-door the opening will be closed.
- The V-door will remain closed when not in use.
- Tubular goods lifted into a vertical position in the derrick/mast or moved from a vertical position to the V-door shall be lifted or moved using double latching elevators or elevators designed to handle the specific type of casing pipe that is being moved.

47.1.10. Illumination for Night Work

There are currently no lights installed on the workover rigs being used on the SPR. Although night operations are not encouraged, should night operations be required the following lighting requirements shall apply.

- The lighting on the derrick floor shall be at least 5 foot-candles at all work areas.
- Portable light plants shall be approved for use in the area classification or located at least 50 feet from the wellhead to control possible sources of ignition.
- The lighting on the derrick man's working platform, work areas around mud pumps, and catwalks shall be at least 5 foot-candles.
- The lighting at the mud tanks, stairway, and other working areas shall be at least 2 foot-candles.

47.1.11. Raising or Lowering Derrick or Mast and Rig-up Operations

Prior to commencing rig-up operations, the Workover Manager shall plan the arrangement of all equipment and outbuildings to minimize hazardous conditions.

Workover operations may not commence until the rig has been erected according to manufacturer's specifications and inspected by workover supervisory and safety personnel.

- The inspection shall be documented and recorded on rig up checklist (figure 3-1 of ASI7000.15).
- Inspection checklists will be maintained at the site where the workover is performed for the duration of that specific workover.

During rig-up operations, the blowout preventer (BOP) opening in the work platform floor shall be covered and remain covered until the BOP is ready to be moved into place.

Employees shall not be allowed under a derrick or mast being raised or lowered.

Workover supervisory personnel shall visually inspect the condition of the mast base, base plate, and the raising and lowering mechanism of the mast before operations commence.

- Any problems or defects shall be corrected before raising or lowering the rig mast unless the rig mast has to be lowered to repair the defect.

- The inspection shall be documented on the SPR Workover Rig Daily Safety Checklist (AAA7012.14).
- This checklist shall be maintained at the site for the duration of that specific workover.

Prior to raising or lowering any mast, all tools and materials shall be secured to or removed from the mast.

Personnel shall not ride the work platform deck while it is being lifted in place by the mobile crane.

- A manlift or secured ladder will be used to lock pins in place to secure the platform deck to the deck legs.

47.1.12. Handling Drilling Fluids and Chemicals

When personnel are required to handle chemicals that may irritate or be injurious to skin or eyes, they shall wear required personal protective equipment as specified on the Safety Data Sheet (SDS). See APM Section 39 for respiratory protection requirements.

Eye wash equipment, with at least a 15 minute supply of potable water, shall be readily available at work area when a hazardous chemical is used that may be injurious to employees' eyes.

- Eye wash equipment will be inspected daily as identified on the Workover Rig Daily Safety Checklist (AAA7012.14) and monthly in accordance with ANSI/SEA Z358.1-2014.
- Water delivered by eye wash shall be tepid (suitable range is 60 to 100 degree F).

When well acidization is in progress an emergency shower for quick drenching of the body shall be readily available within the work area for immediate emergency use.

All rig supplies and materials shall be inspected before entering the sites. All chemicals brought onto the site shall be approved by NOLA ES&H and placed on the Qualified Product List (QPL) prior to use. Safety Data Sheets (SDS) shall be present for all chemicals carried onto any SPR site and copies of the SDSs shall be maintained on location. The workover crew shall review the SDSs for those chemicals that they will be using prior to beginning work.

47.1.13. Fire Prevention and Protection

The workover rig shall be equipped with at least four fire extinguishers, each having a minimum rating of 40 B: C. The fire extinguishers shall be distributed in those areas where Class B hazards may be or are present.
At least one fire extinguisher with a minimum rating of 2A shall be available on the rig.

- This Class A fire protection may be provided by a fire extinguisher with the appropriate rating for A:B and C in lieu of providing an additional extinguisher.
- This requirement may be satisfied on operational SPR sites by the placement of B:C extinguishers on the rig, keeping a 150-pound dry chemical extinguisher on the well pad, and by ensuring that the well and fire water system is operative.

Flammable liquids shall not be stored within 50 feet of the wellhead, except for fuel in the tanks of workover operating equipment.

NOTE
The entry and use of spark producing devices in Class 1 areas shall be controlled by the safe work permit process for hot work in accordance with APM Section 35.

47.1.14. Scaffolding

All M&O personnel, subcontractors and their lower-tier subcontract personnel shall follow the SPR procedures identified in APM Section 43.

47.2. EQUIPMENT REQUIREMENTS

47.2.1. General Requirements

Openings in the work platform floor shall be covered when not occupied by spherical preventers and bowls, pipe, or other equipment.

Guardrails shall be provided along the rig walkways, stairs, and work platforms.

WARNING
Any work done 4 feet and above without a guardrail will require fall protection unless use of the fall protection equipment creates a greater hazard.

Employees shall comply with the M&O lockout/tagout system as specified in section 29 of the APM.

Workover equipment and procedures shall conform to OSHA 29 CFR 1910 (General Industry) standards first, and utilize OSHA 29 CFR 1926 (Constructions) standards if a general industry standard does not exist.

Machinery may not be operated without all guards in proper position and in safe condition except during repair or maintenance work or necessary testing that cannot be conducted with the guards installed.

Hoisting and rigging components shall be inspected and maintained in accordance with APM Section 13 and 52.

WARNING
If wind speeds reach 25 MPH (sustained), all hoisting and rigging operations supporting workover and wireline shall cease.

All pressure hoses shall be restrained with suitable tie-downs/whip checks in accordance with APM Section 55.

Rig floor and stairs used on rig shall be inspected daily.

An annual inspection of the rig floor and stairs shall be done by registered engineer.

47.2.2. Substructures, Masts, and Guying

Mast platforms above the rig floor shall be constructed and maintained to withstand all loads that may be placed on them.

Tools, parts, and other materials shall not be kept in the derrick or mast above the rig floor unless needed for immediate use; means shall be taken to prevent them from falling.

CAUTION
For their own personal safety and that of the rig crew persons not involved in the workover process shall not be on the rig floor, driller's platform, beneath piping loads, or in the immediate area around the rig when the workover is in progress.

Fall protection requirements shall be in accordance with APM Section 21.

All masts shall have a permanently mounted name plate on them that displays:

- the manufacturer's name and address,
- serial number,
- height in feet,
- maximum static hook load, with guy lines if applicable, in pounds, for stated number of lines to traveling block,
- maximum wind resistance in knots, with guy lines if applicable, with maximum setback,
- Manufacturer's guying diagram - for structures as applicable, and the manufacturer's load distribution diagram.

All rigs operated on the SPR shall be inspected by a qualified inspector annually, or as soon as work in progress is completed. An inspection report shall document in detail the findings for the visual inspection as captured by the person performing the inspection. This inspection report shall be sealed by a Registered Professional Engineer, preferably one with a degree in structural engineering. The Registered Professional Engineer shall provide written certification that the mast is capable of sustaining the manufacturer's load rating as displayed on the permanently mounted identification plate. It will also certify that the work platform is suitable for continual use. This must include:

- Written certification that the rig has been inspected within the 12 months prior to the equipment's arrival on a site.
- Contractors providing rental or leased rigs shall provide written certification that the mast, or work platform has not been modified, altered, or damaged in any way from any source since date of the inspection.

If the mast, or work platform is damaged to the extent its safe use cannot be assured, it shall not be used until it has been repaired, replaced, inspected and approved for use by Original Equipment Manufacturer (OEM) or another certified/qualified vender.

NOTE
Minor repairs of floor grating, handrails, or stairs may be performed by site maintenance personnel without a third party engineer inspection. Repairs to the mast shall **only** be performed by OEM.

A qualified engineer shall design and prepare the scope of work for any major repairs that are required. The repairs shall be performed and then inspected and approved by:

- A professional engineer, or
- Manufacturer or a third party inspection service placed under contract by New Orleans Procurement before returning the rig to service.

If the mast has been damaged, the mast may not be used unless an engineer inspects damage and certifies that it is safe to use. This inspection shall be documented.

Masts that require use of external guy lines to ensure stability shall have them in place immediately following the raising of the mast or as provided for by the manufacturer's procedures.

The guying system for the mast shall be constructed in accordance with the pattern displayed on the mounted plate.

- Guy lines and auxiliary devices shall be inspected prior to each rig-up and shall be capable of withstanding all loads anticipated in normal service.

47.2.3. Drawworks

The drum of the drawworks shall be guarded or located in such a way as to prevent employees from falling into the drum or lines.

Moving parts of the drawworks machinery may not be lubricated or adjusted while in operation. If lubrication is needed equipment lockout will be performed in accordance with section 29 of the APM.

The shutdown switch or controls for drawworks shall be readily identifiable and easily accessible in the event of an emergency.

The drawworks shall be visually inspected daily to ensure all guards are in place and that the wire rope is spooled correctly.

The brakes and brake linkage shall be visually inspected daily for condition and operation. Any defects detected shall be corrected or adjustments needed shall be made before use.

When the operator in charge of the drawworks leaves the immediate area of the control panel, he or she shall secure the brake unless the drawworks is equipped with an automatic feed control.

47.2.4. Drill Pipe, Casing, and Tubing Slips and Tongs

The slip handles for drill pipe, casing, and tubing shall be properly sized to avoid pinch points for the hands.

All tongs shall be securely attached to the mast/derrick or to the backup post and anchored by a wire rope line or stiff arm having a minimum breaking strength greater than the breaking strength of the pulling cable or chain.

Safety lines for the hydraulic tong unit shall be short enough so that the hydraulic tongs cannot rotate far enough to strike employees working on the side opposite the safety line. Safety lines shall have a minimum breaking strength greater than the force of the make-up torque.

All fittings and connections shall have at least the minimum breaking strength of the cable, wire rope, or stiff arm to which they are attached. Knots shall not be used to fasten cable or wire rope lines.

A hydraulic tong pressure system shall be equipped with a safety relief valve and the operating pressure of the safety relief valve shall never be higher than the maximum working pressure for which the tong pressure system is designed.

CAUTION
Using the tongs is one of the most hazardous operations on the rig based on past accident experience. All employees shall be made aware of the hazards associated with the use of manual and power tongs.

When working hydraulic tong heads, the pressure inside the system shall be completely relieved before starting repair or other work.

47.2.5. Wire Ropes, Chains and Hooks

All wire ropes, slings, chains, and hooks in use shall:

- Meet the requirements of DOE Hoisting and Rigging Manual (DOE-STD-1090-2011)
- In accordance with APM Section 13 and 52.

47.2.6. Traveling Blocks, Crown Blocks, Hooks, and Elevators

Traveling blocks, crown blocks, and related equipment shall not be subjected to any load in excess of the manufacturer's rated capacities.

Adequate clearance shall be maintained between the traveling block and any platform in the derrick or mast to prevent the traveling block from making contact with the platform(s).

The hook assembly shall be equipped with a safety latch or other device to prevent accidental release of the load to be hoisted or lowered.

Crown block assemblies shall be secured in place.

- This applies to gudgeon caps to prevent the sheaves from jumping out of bearings and falling to the rig floor.
- Where bumper blocks are attached to the underside of crown beams, a wire rope safety line or other arrangement shall be fastened along their full length and attached to the derrick at both ends of the bumper block.

Traveling blocks shall be equipped with securely attached sheave guards.

An upward-travel-limiting device shall be installed on every mast hoisting system. The upward travel limiting device shall disengage the power to the hoisting drum and apply the brakes to prevent the traveling blocks from contacting the crown block assembly.

Rig must be shut off and secured while the crown block is being lubricated. Crown lubrication should be done when mast is laid over whenever possible.

The hoisting line shall not be removed from the drum until the traveling block is laid on the derrick or mast floor, or suspended by a separate cable or chain of sufficient strength to support the load.

Elevators shall be used for all movement of casing or drill pipe.

Casing elevators shall be equipped with a positive latching and locking device designed to prevent casing from being accidentally or prematurely disengaged. Only double latch elevators with a safety cable or elevators designed to handle the specific pipe being lifted are allowed.

Elevators shall be visually inspected prior to a trip or pull in accordance with ASI7000.15 (Well Workover Manual) and/or Work Instruction (WI-013) Inspection Of Rental Casing And Drill Pipe Handling Tools.

47.2.7. Weight Indicators

Every workover rig used on SPR projects shall be equipped with a weight indicator in operating condition.

- It shall be calibrated annually or as soon as practical thereafter but not more than thirteen months after and a calibration record kept at the job site.; more frequently if needed or as recommended by the manufacturer.

The weight indicator shall be mounted so that the display can easily be read by the operator standing at the brake position.

If the weight indicator is installed at a position 6 feet or more above the rig floor, the weight indicator shall be physically secured to the derrick or mast, and a separate safety line or chain shall also be installed.

47.2.8. Foundations and Anchors

Foundations shall be capable of safely distributing the gross weight of the derrick or mast under maximum anticipated hook load and setback load as well as all other loads imposed during raising and lowering the structure.

Foundation pads shall be graded and adequately drained.

All installed ground anchors, permanent or temporary, shall meet the pull-out resistance requirements for service conditions.

The M&O contractor shall establish or have available a documented anchor pull test program for all permanent ground anchors to ensure that they are safe for use. Reference ASI7000.15 Addendum D for additional guidance.

Permanent anchors shall be pull tested before workover begins if testing has not been completed within the previous 24 months.

- If damage or deterioration is apparent on inspection and is such that safe use is in question, a documented pull test shall be performed in the presence of the workover rig supervisor or his designee.

The anchor spacing used shall be in accordance with the guying pattern specifications on the permanent mounted plate on the derrick or mast, or by other arrangement that ensures the stability of the rig. Also ensure that there is a separate anchor for the geronimo line.

47.2.9. Blowout Prevention Equipment

Blowout prevention equipment shall be provided and used for all workover operations, with the exception of brine disposal wells when specified in the workover procedure.

Accumulators used in SPR applications shall have sufficient capacity to close, open, and reclose all BOPs in the stack without recharging. Accumulators shall not be removed from a BOP being used as part of the assembly to shut in a well.

All pipe fittings, valves, and unions placed on or connected to the well control system shall have a working pressure capability that exceeds the anticipated well surface pressures.

The choke and kill lines shall be anchored, tied, or otherwise secured to prevent whipping resulting from pressure surges.

All ram-type BOPs or related equipment shall be tested before being placed in service. Annular-type BOPs shall be tested in accordance with the approved workover plan prior to use.

When wells are shut-in for the night, both a ram and an annular type BOP shall be used with regular pressure monitoring prior to starting a workover and while workover operations are in progress. Site Operations shall relieve the cavern wellhead pressure, to zero pounds per square inch as measured at the surface. “The cavern pressure shall be relieved, as practicable, to 0 psi measured at the surface.” This will require 24 hour a day monitoring by Operations.

While in service, blowout prevention equipment shall be visually inspected daily. A preventer operating test shall be performed at least daily on all the blowout prevention equipment except the blind rams, which shall be tested only on each round trip. BOPs need not be tested more than once each working day.

Where blowout prevention equipment is installed, all employees on the rig shall be able to properly operate the BOP system.

- At least one person who is certified in blowout prevention and well control procedures shall be on the well site when the well is open.
- New employees shall be trained in the operation of the BOP system before they are given responsibility for operating the system.
- This training shall be documented and records maintained by the SMTR.

Blowout prevention and related equipment shall be maintained in serviceable condition. When repairs or other work must be performed to the blowout prevention equipment, drilling and well servicing operations must stop and the well must be secured until the blowout prevention equipment is returned to service.

47.2.10. Support Equipment

All users of support equipment for workover operations are responsible for adhering to the applicable maintenance/inspection procedures and are expected to be aware of the day-to-day requirements for support equipment and shall have been trained in their operation.

Instances may arise when workover personnel may need to use site support equipment such as forklifts, manlifts, cranes, and other tools to accomplish specific tasks. In the event that site support equipment is needed, the workover safety analyst and workover manager shall verify the qualifications of the operator and coordinate with the appropriate site personnel to ensure training specific to the equipment is performed and documented prior to use.

NOTE
The use of site support equipment by workover personnel may be permitted if personnel are trained in accordance with the equipment specific OEM Equipment Manual, Accident Prevention Manual, MRCs, Preoperational Inspection Checklist, and Support Equipment Training Plan.

47.2.10.1. Crane and Rigging Operations

All crane and rigging operations must follow the requirements set forth in APM Section 13 and the DOE Hoisting and Rigging Manual (DOE-STD-1090-2011).

- All cranes shall have an operational anti-two block device.
- All cranes shall be inspected by a qualified crane inspector before being allowed on the site and cranes shall be inspected daily before being operated. The inspection checklists kept on file by operator.
- All rigging equipment used for workover must have an annual inspection.
- Site lifting and rigging equipment must be inspected and documented daily prior to use by workover safety analyst or qualified rigger. A copy of the inspection will be kept on site.
- Rigging equipment that is damaged shall be taken out-of-service and disposed of.

47.2.10.2. Forklift Operations

Forklift shall be inspected and operated in accordance with APM Section 51.

47.2.10.3. Moving the Rig

All movements of the workover rig to offsite locations require a driver with a Commercial Driver's License (CDL). See APM Section 45 for additional requirements.

- The requirement to possess a CDL does not apply while operating the rig on-site (inside site fences).

47.3. OPERATION NEAR POWER LINES

47.3.1. Clearances

Enough clearance shall be provided between power lines and the boom, derrick, or mast so that physical contact cannot be made. Derricks or masts shall not be operated in close proximity to, under, over, by, or near power lines unless:

- Either the electrical distribution and transmission lines have been de-energized and visibly grounded at the point of work, or

- Insulating barriers, not a part of or an attachment to the derrick or mast, have been erected to prevent contact with the lines as specified below;
  - For lines rated 50kv (kilovolts) or below, minimum clearance between the lines and any part of the derrick or load shall be 10 feet.
  - For lines rated more than 50kv minimum clearance between the lines and any part of the derrick or load shall be 10 feet plus 0.4 inch for each 1kv over 50kv, or twice the length of the line insulator but never less than 10 feet.
  - In transit with no load and boom folded and/or lowered, the clearance shall be a minimum of 4 feet vertically and 10 feet horizontally.
- Materials stored near or under an electrical distribution line are maintained at the following clearance:
  - Lines rated 50kv or less, 10 feet plus maximum dimension of materials stored.
  - Lines rated 50kv or more, 10 feet plus 0.4 inch for each kv over 50kv plus maximum dimension of material stored.

47.4. SPECIAL SERVICE OPERATIONS REQUIREMENTS

47.4.1. Cementing

The pump discharge line shall be tested to the pressure prescribed in the service contractor's operating procedures.

- The testing shall occur prior to the pump being put in use.
- Pre-operation testing shall be noted on the cementing report maintained at the site.

The cementing service supervisor will ensure that all valves in the discharge lines are open before allowing pumping operations to begin.

Pump operators or their designees shall remain at their operating position while the pump is in operation.

Cementing pressure shall not exceed the target pressure identified in the cementing program or the maximum safe working pressure of the equipment used for cementing.

The lead-off connection to the cementing head shall be secured.

The valve and any sections of cementing line left after completion of cementing operations shall be secured to prevent whipping when pressure is bled off.

47.4.2. Wireline Services

All wireline trucks shall be inspected before entering the sites and all chemicals brought on site shall be on the Qualified Product List (QPL) as approved.

Placement and handling of wireline services units:

- The mobile service unit shall be chocked.

  - A minimum of two chocks shall be used, one behind each rear wheel toward the wellhead.
- Portable or skid-mounted wireline services units shall be secured to prevent movement of the unit when a load is taken on the lines.
- A wireline service unit shall be located in such a manner that it does not interfere with the entrance or exit of employees from that unit or other service units.
- When handling a wireline that will recoil when released, the loose end shall be secured.

If a gin pole is used (telescoping and single post), it shall be attached to the wellhead or wellhead configuration to prevent movement when the load is being handled.

- Devices used to attach the gin pole to the wellhead or wellhead configuration shall be of such size and strength as to support the anticipated loads to be handled.

Rope fall (block and tackle)

- Blocks and nonmetallic rope shall be of such size and strength as to support the anticipated load to be handled with a safety factor of five.
- Splices through the length of the rope shall not be permitted except where the dead end is tied off.
- Rope that has been cut, frayed, or in any way weakened shall be taken out of service and disposed of.
- Damaged or worn blocks shall not be used.
- Pins used in the makeup of sheave wheels shall be secured.

Workover Instruction WI-011 shall be followed before operations start.

If workover operations involve a radiation source section 37 (Radiation Safety for Subcontracted Services) shall be followed.

47.5. RESPONSIBILITIES

Workover Safety Analyst

- Conduct safety inspections using the SPR Workover Rig Daily Safety Checklist (AAA7012.14) in accordance with this section.
- Inspect the work area following any pause in rig work or on changing conditions that may impact personnel or equipment safety using the SPR Workover Rig Daily Safety Checklist (AAA7012.14). After the inspection discuss findings the Workover Rig Manager and mitigate the findings.
- Maintain inspection records (checklists).
- Review the medical response section of the Emergency Response Procedure (ERP) for the host site.
- Assist the Workover Manager with implementing the investigation procedures outlined in Section 38.
- Assist the SMTR with tracking and verifying workover crew training as specified in their contract.

Site Safety Specialist/ qualified designee

- Act as the Workover Safety Analyst in their absence.
- Participate in the inspection of the work area before initial operations start using the Pre-Start Checklist of Workover Rig Operations (AAA7012.13).

Manager Field Operations

- Ensure a walkthrough inspection with the site director, workover safety analyst, rig supervisor, site cavern engineer, DOE SSR (optional), and Site Safety Specialist is performed using the Pre-Start Checklist of Workover Rig Operations (AAA7012.13) and all applicable requirements are met before work begins.
- Notify appropriate personnel if changes to the approved well specific workover program are required. The New Orleans Director of the Cavern Workover Program or the APM of Cavern Integrity will be notified immediately. The site director, site cavern engineer, workover safety analyst and the DOE Senior Site Representative will be advised and a SPR Workover Rig Daily Safety Checklist (AAA7012.14) will be completed.
- Ensure that workover crew training and education is conducted frequently enough so that each employee is able to satisfactorily perform assigned duties.
- Discuss and emphasize safety management responsibilities with workover SMTRs.

Manager Field Workover

- Perform daily rig safety inspections.
- Review the medical response section of the Emergency Response Procedure (ERP) for the host site.
- Ensure an emergency action plan is in place and that site responders are briefed on their responsibilities before operations begin.
- Ensure that training is conducted frequently enough to ensure that employees are able to perform their assigned duties in a satisfactory and safe manner.
- Do not allow workover operations to commence until the rig has been erected according to manufacturer's specifications, and inspected by supervisory personnel. The Pre-Start Checklist of Workover Rig Operations shall be documented and a record maintained at the site.
- Ensure personnel visually inspect the condition of the mast base, base plate, and the raising and lowering mechanism of the mast before operations commence and that any problems or defects are corrected before raising or lowering the mast. Ensure inspection is documented and a record maintained at the site.
- Ensure that the contingency plan specific to the site is posted and that all employees at the well where the workover rig is located understand it. If the contingency plan requires special equipment (such as escape packs) ensure that those are available and the workover crew has been trained on their use.
- Discuss and document with 3rd party contractor their roles and responsibilities for safety prior to startup of operation.
- Ensure that all subcontractor employees (including third party contractors) understand and follow safety requirements in the contract and M&O safety rules.

- Ensure a prejob briefing is conducted and workover employees including subcontractor employees have been briefed on the hazards of the work site roles and responsibilities, emergency response, PPE, and permits. Verify that qualification and required training are current.
- Ensure that all lifting equipment is inspected before use.
- Perform a documented safety inspection with workover safety analyst of the cavern area using daily workover safety inspection. Ensure that all discrepancies are recorded and corrected.
- Conduct quarterly reviews with the SMTR focusing safety roles, duties and responsibilities.
- Conduct daily and random safety inspections with the workover safety analyst using the SPR Workover Rig Daily Safety Checklist (AAA7012.14) and provide copies to the Site Director and other personnel as directed.

Site Cavern Engineer

- Be the focal point for communications between the M&O and DOE site personnel and workover personnel.
- Function as the workover project coordinator for each workover being performed at his or her site and provide technical oversight.
- Coordinate wireline logging activities required by the well specific workover execution plan and ensure their timely performance.
- Act as Subcontract Manager's Technical Representative (SMTR) for wireline services. The Cavern Engineer may designate in writing a technically competent person to monitor wireline services.
- Report documented wireline results to the Workover Manager and provide other assistance as needed.
- Ensure required inspections are done on workover equipment and ensure that products brought on site are on the QPL as approved.

Employees

- Understand the site emergency procedures and perform assigned responsibilities.

Crane Operator

- Inspect crane and lifting equipment daily

SMTR

- Conduct quarterly reviews with workover supervisor with an emphasis on safety.
- Discuss with 3rd party contractor their roles and responsibilities for safety prior to startup of operation.
- Perform routine inspections of the work in progress to ensure that all safety and health requirements are being met.

48. HYDROGEN SULFIDE (H_2S)

PURPOSE

This section identifies the requirements for minimizing exposure to hydrogen sulfide (H_2S).

SCOPE

This section includes the following major sections:

- General Requirements
- Personal H_2S Monitors (Crickets)
- Industrial Hygiene Monitoring Methods
- Personal Protective Equipment
- Work Controls
- Training
- H_2S Training Requirement For The Degas Plant
- H_2S Responsibilities

APPLICATION

This section applies to work activities and employees performing work on the SPR.

Refer to **H_2S or Combustible Gas Alarm Response** (AAA9020.529) for alarm response protocols.

DEFINITIONS

Action Level (AL) – Refers to an exposure one half the allowable limit.

Threshold Limit Value – Time-Weighted Average (TLV-TWA®) – The TWA concentration for a conventional 8 hour workday and a 40 hour workweek, to which it is believed that nearly all workers may be repeatedly exposed, day after day, without adverse effect.

Threshold Limit Value – Short-Term Exposure Limit (TLV-STEL®) – The concentration to which it is believed that workers can be exposed continuously for a short period of time without suffering from irritation, chronic or irreversible tissue damage, or narcosis of a sufficient degree to increase the likelihood of accidental injury, impair self-rescue, or materially reduce work efficiency, provided that the daily TLV-TWA is not exceeded. A STEL is a 15 minute TWA exposure that should not be exceeded at any time during a workday even if the 8 hour TWA is within the TLV®-TWA.

Acceptable Ceiling Concentrations - An employee's exposure to a substance listed in Table Z-2 (CFR 1910.1000) shall not exceed at any time during an 8-hour shift the acceptable ceiling concentration limit given for the substance in the table, except for a time period, and up to a concentration not exceeding the maximum duration and concentration allowed in the column under "acceptable maximum peak above the acceptable ceiling concentration for an 8-hour shift".

48.1. GENERAL REQUIREMENTS

48.1.1. Potential Exposures

Work conducted in/around the following activities may result in potential H_2S exposure to employees:

- Drilling and workover operations (including depressurization)
- Degas Plant Operations
- Tank gauging
- Field maintenance (such as tank batteries and wells)
- Opening of process piping or systems for maintenance, repair, sampling, or isolation
- Crude petroleum
- Natural gas
- Sewers and Sewage treatment
- Utility vaults
- Vacuum Truck Operations (including Work Over)
- Frac Tank Operations (including Work Over)
- Crude oil sampling

Note: This list is not all inclusive. When in doubt conduct a risk assessment.

48.1.2. Properties and Effects

H_2S is a highly flammable, poisonous gas.

Physical Data

Color:	Clear and colorless
Odor:	Characteristic “rotten eggs” odor at low concentrations; sense of smell disappears at 150-250 parts per million (ppm)
Odor Threshold:	Less than 0.13 ppm
Explosive Limits:	4.3 - 46 percent
Boiling Point:	N/A
Vapor Pressure:	267
Vapor Density:	1.2, slightly heavier than air
Ignition Temperature:	500 °F

Acute Exposure Effects

Irritant:	Clear and colorless
Sensitization:	Characteristic “rotten eggs” odor at low concentrations; sense of smell is lost at 150-250 parts per million (ppm)
Eye Effects:	Low concentrations will generally cause irritation to the conjunctiva. Repeated exposure to low concentrations is reported to cause inflammation of the eye tissues, sensitivity to light,

	tearing, pain, and blurred vision.
Skin Effects:	May irritate the skin upon contact.
Ingestion Effects:	Ingestion is unlikely. H_2S will irritate the mucous membranes causing a burning feeling with excess salivation likely. Irritation of the gastrointestinal tract may also occur.
Inhalation Effects:	Irritation of the eyes, nose, and respiratory tract may be experience at about 50 ppm. Headaches, dizziness, nausea, or intoxication may develop above 50 ppm. Exposures above 100 ppm are considered to be immediately dangerous to life and health (IDLH). Concentrations over 1000 ppm cause immediate collapse with loss of breathing, even after inhalation of a single breath. Continuous inhalation of low concentrations may cause olfactory fatigue or paralysis of the sense of smell. Thus, detection of H_2S by its odor is not effective.

Chronic Exposure Effects

Teratogen (may cause birth defects):	Yes
Reproductive Hazard:	Yes
Mutagen (may cause damage to DNA):	No
Synergistic Effects (more toxic when mixed with other chemicals):	None Reported
Carcinogenicity:	NTP: No IARC: No OSHA: No
Medical Conditions Aggravated by Exposure:	Blood disorders

First Aid

Eyes:	Flush with clean, low-pressure water for at least 15 minutes.
Inhalation:	Remove from contaminated area immediately. Give oxygen. If not breathing, give artificial respiration.

48.1.3. Occupational Exposure Limits

The following table outlines exposure concentration limits, actions to take, and restrictions to follow after an alarm or exposure has occurred.

H_2S Concentration Information Card			
Concentration	**Enforcer**	**Action**	**Restriction**
10ppm	Self-Restriction (FFPO)	Employees will leave area and notify the Control Room and site safety. Contact ERT medical and subsequently contact Work Care if symptoms are present.	Employees can return to area once operations confirms concentration equals 0 ppm.
20ppm	OSHA (Ceiling)	All Employees will vacate the area. Exposed Employee(s) must proceed to an area with no possibility of exposure. Immediately notify the Control Room and site safety. ERT Response for medical evaluation and subsequently contact Work Care if symptoms are present.	Exposures must not exceed 20 parts per million (ppm) (ceiling) with the following exception: if no other measurable exposure occurs during the 8-hour work shift, exposures may exceed 20 ppm, but not more than 50 ppm (peak), for a single time period up to 10 minutes. Exposed Employee must not be exposed to any concentration of H2S for the remainder of their shift.
50ppm	OSHA (Max)	All Employees will vacate the area. Exposed Employee proceed to an area with no possibility of exposure. Immediately notify the Control Room . ERT Response for medical evaluation and contact Work Care if symptoms present. Notify OCC.	Exposed Employee must not be exposed to any concentration of H_2S for the remainder of their shift. Other Employees may return to area once operations confirms concentrations equal 0 ppm.
100ppm	IDLH	All Employees will vacate the area. Exposed Employee proceed to an area with no possibility of exposure. Immediately notify the Control Room and site safety. ERT Response for medical evaluation and contact Work Care if symptoms present. Notify OCC.	Exposed Employee must not be exposed to any concentration of H_2S f for the remainder of their shift. Other Employees may return to area once operations confirms concentrations equal 0 ppm.

In addition to the above limits, the following also apply:

- The TLV-STEL® is 5 ppm time weighted average over 15 minutes;
- TLV-TWA® is 1 ppm averaged over an 8-hour period.

48.1.4. M&O Program

The M&O shall inform its subcontractors/lower-tier contractors of the H_2S potential for exposure and of applicable SPR safety rules regarding exposure and controls. The M&O shall also inform other prime contractors or non-SPR employees performing work on the SPR of the potential H_2S hazards, as required by the Process Safety Management (PSM) standard.

48.2. PERSONAL H_2S MONITORS (Crickets)

Personal monitors will meet the following specifications:

- Have a digital read out, with visual, vibrational, and audible alarms. Be capable of recording and allowing retrieval of peak H_2S concentrations and have some capability for determining when that peak was recorded (date and time).
- Be capable of performing an initial self-test when turned on.

At a minimum, H_2S monitors must be used in continuous mode of operation that will alarm when the level reaches 10 ppm.

Employees using personal monitors shall:

- Ensure that the sensor grill is free from dirt and debris and is not obstructed.
- Perform a self-test, and have the monitor bump-tested and calibrated according to the manufacturer's specifications.
- Evacuate the area and notify site supervision immediately of any alarm from the personal monitor.

48.2.1 Personal H_2S Monitor Usage

The purpose of this procedure is to provide guidance for issuing, using, testing and caring for Personal H_2S Monitors (example, Gas Alert Extreme).

- Each unit will be assigned a site specific control number for accountability.
- When the task description on the Safe Work Permit (SWP) indicates that there is a reasonable possibility for exposure to crude oil, unit(s) will be issued to the personnel assigned to perform the task.
- Examples of tasks where the use of the monitor is required include, but are not limited to:
    - Oil sample collection and disposal.
    - Opening pig launcher/receivers.
    - Frac tank operations to include attaching or removing hoses that have been exposed to crude oil and climbing the stairs/ladder to inspect the hatch or sight glass.
    - Workover activities.
    - Line breaking.
    - Using the vacuum truck for crude oil.
    - Depressurization using any method other than hard piping to a stationary tank.
    - Any task that requires a crude oil line to be opened.
    - Inside the Degas facility.
    - Tank gauging.
    - Maintenance tasks with the potential of exposure to crude oil.
    - Working/walking around High Pressure Pump Pad area while the Shell pig launcher at Bayou Choctaw is open.

All employees working in the WH Degas restricted zones shall have the PPE required for that particular zone.

Personnel entering areas where FRC is required shall wear a personal H_2S monitor.

Chemists working with crude oil inside fume hoods are not required to wear a personal monitor as long as the fume hood is on and operational.

48.2.2. Procedure

- SWP initiators will identify if the task to be performed has the potential to expose employees to crude oil and check H_2S monitors in Block 13 of the SWP.
- Site designated personnel shall issue the H_2S monitor when it is specified on the SWP and the JHA for tasks that are not covered by a SWP (gauging, getting oil samples, etc.) that have the potential for H_2S exposure . H_2S monitors will be checked out from the designated department.
- The issuance of H_2S monitors will be noted by checking H_2S monitors in Block 13 (Additional Safety/PPE Requirements) of the SWP.
- Personnel who do not have a routinely assigned H_2S monitor will sign out the monitors and document this on a log. The log will note the specific control number of the monitor, the user's name and the SWP number or the work order number if there is no SWP, along with date and time. Personnel are accountable for the use, care and sign-in (return) of the monitor at the end of the work day. Employees shall report damage or problems with the monitor immediately to the Control Room and to the issuer of the equipment.
- Personnel being issued a personal H_2S monitor for the first time will be provided a required read and sign file on how to operate the monitor and how to respond to an alarm. The read file will be with the monitor log book. In order to receive the monitor the user will initial that they have read and understood the file.
- H_2S monitors should be placed on the lower bottom front hemisphere of the user's body within a radius of approximately six to nine inches from the worker's nose and mouth ("Breathing Zone").
- If the monitor alarms, affected personnel will report the event to the Control Room. The Control Room will notify Site Safety and the Operations and Maintenance Managers. Appropriate mitigation actions will be taken in accordance with AAA9020.529.
- Site Safety will notify New Orleans Safety and Health of the alarm event and provide date/time, H_2S concentration, duration of alarm, and what action has been taken.
- The Personal H_2S Monitor and the SWP will be signed back in upon completion of the task or at the end of the SWP duration.

48.2.3. Location and Use of H_2S Monitor for Protective Force

- One H_2S Monitor will be maintained for each Protective Force vehicle. The monitor shall be placed in an area away from direct sunlight and/or high heat areas.
- H_2S Monitors are used by Protection Force personnel as an early warning device in the event of an emergency or operational upset.
- If the unit alarms, the Protective Force personnel shall vacate the area in such a manner as not to expose themselves to the H_2S plume (up-wind or cross-wind).
- Protective Force personnel will adjust evacuation routes as necessary to keep themselves and other affected personnel out of the plume or area where H_2S was detected at 10 ppm or more.

- Protective Forces will report the alarm to and maintain contact with the Control Room during the emergency in order that adjusted evacuation routes can be communicated to other site personnel.

48.3. INDUSTRIAL HYGIENE MONITORING METHODS

IH monitoring methods for H_2S on the SPR include the following:

- Four gas meter
- Contracted IH lab's accredited method (may include OSHA Technical Manual or NIOSH Sampling Method)

48.3.1. Monitoring Results

Employees shall be notified of monitoring results as per APM Section 26, Industrial Hygiene Program.

48.4. PERSONAL PROTECTIVE EQUIPMENT

48.4.1. Respirators

When required appropriate respiratory protection will be selected based on the best available information.

Examples of best available information in order of preference include:

- Applicable IH monitoring results collected by the employer while conducting similar activities using similar methods
- Written recommendations from the NO IH Staff
- The following table

H_2S Concentration	Respirator	Cartridge
Unknown (such as no IH monitoring information and/or emergency response for a release)	Positive Pressure SCBA	Not applicable
Less than 10 ppm	None required	Not applicable
Greater than or equal to 10 ppm, but less than 100 ppm	Supplied air or ESCAPE ONLY	Not applicable
Greater than or equal to 100 ppm	Supplied air	Not applicable

Note: The Protective force CBRN mask is approved for escape use only.

Escape respirators will be changed after each use as part of an escape event. The escape respirator should not be used for any purpose other than escape.

48.4.2 Toxic effects of hydrogen sulfide (H_2S)

EFFECT	EXPOSURE	EST. PPM
Odor detectable by most people	Any	0.2
TLV for 8-hour exposure	8 hours	1
TLV for 15-minute exposure	15 min	5
Irritation eyes (reversible)	60 min.	20
Olfactory paralysis +	3-15 min	100
Pulmonary edema (irreversible)*	30 min	200
Potentially lethal (unconsciousness)	any	500
+ The effect is faster at higher concentrations		
* Potential lethal for the most vulnerable part of the population (5%)		

48.4.3. Additional Personal Protective Equipment

Skin Protection:	Protective gloves – Neoprene, butyl rubber, PVC, polyethylene
Other/General Protection:	Safety shoes, safety shower, eyewash “fountain”

48.5. WORK CONTROLS

48.5.1. H_2S Areas

It is assumed that there is a potential for H_2S exposure in any area where FRC is required (see site map).

48.5.2. Confined Spaces

Refer to Section 10, Confined Space Entry.

48.5.3. Sudden Discharges/Escape

When evacuating an area when there has been an H_2S release or alarm activation, observe wind direction and leave the zone of exposure quickly preferably moving up wind, or at a right angle to the wind; moving –at right angles left or right provides the least risk of exposure.

48.6. TRAINING

Training will be conducted for employees who will or may be exposed to H_2S as follows:

- Upon initial employment
- Annually
- Any time there is a change in this section
- When there is a change in or addition of a process or operation that creates the potential for exposure or increase in exposure

Training will include the following:

- Contents of the relevant standard(s)
- Area emergency alarms and evacuation routes
- Location of emergency eye wash stations and showers
- Emergency phone numbers
- Appropriate protective measurements to control H_2S exposures during normal operations and emergency situations

48.7. H_2S TRAINING REQUIREMENT FOR THE DEGAS PLANT

Prior to entering the Degas Plant, entrants who are not assigned to the plant must complete H_2S Training and be escorted by Degas personnel. Degas Plant entrants must be retrained annually. Entrants must follow all Degas Procedures.

48.8. H_2S RESPONSIBILITIES

SWP Initiator

- Ensure that when a H_2S monitor is needed it is noted in Block 13 (Additional Safety/PPE Requirements) of the SWP.

Operations Manager Designee

- Ensure use of H_2S Monitors is controlled, tracked and inventoried.

Control Room Operator

- Notify the Site Safety Specialist and the Operations Manager and the Maintenance Managers of all alarm events reported by employees or protective force.

Maintenance Manager

- Ensure maintenance personnel assigned to tasks where the potential for exposure to H_2S exists are aware of the requirements for the use of and the proper response to a H_2S Monitor alarm.

Operations Manager

- Ensure operations personnel assigned to tasks where the potential for exposure to H_2S exists are aware of the requirements for the use of and the proper response to a H_2S Monitor alarm

Supervisors/Foreman and Technical Representatives

- Ensure personnel assigned tasks where the potential for exposure to H_2S exists are aware of the requirements for the use of the monitor, how to operate the monitor, and the proper response to a monitor alarm.
- Notify the Site Safety Specialist when an employee's monitor alarms.
- Ensure that their personnel return the monitors when task is completed.

Protective Force Captain

- Ensure the monitors assigned to the protective force are maintained in security vehicles as required and that Protective Force personnel are aware of the requirements and trained for their use in the event of a spill or crude oil emergency.

Site Safety Specialist

- Notify New Orleans Safety and Health of an alarm event and provide date/time, H_2S concentration, and duration of alarm, if possible. Describe the control action taken.

Employees

- Wear H_2S Monitors in designated areas and/or when the potential for H_2S exposure exists.
- Leave the area and report the alarm event to the Control Room and the supervisor
- Be accountable for the use, care and sign-out/sign-in of the monitor. Report any problems with the unit to the operations department

49. BENZENE

PURPOSE

This practice identifies the requirements for minimizing exposure to benzene and products containing 0.1 percent or more of benzene.

SCOPE

This section includes the following major sections:

- General Requirements
- Monitoring
- Medical Surveillance
- Compliance Program
- Exposure Controls
- Training

APPLICATION

This practice applies to work activities conducted on the SPR.

DEFINITIONS

Action Level (AL) – Refers to an exposure one half the allowable limit.

OSHA Permissible Exposure Limit (PEL) – Regulatory limit which can exist in multiple forms (Time Weighted Average, Ceiling, or Maximum).

Regulated Area – Any area where airborne concentrations of benzene exceeds or can reasonably be expected to exceed the allowable exposure limit(s).

Threshold Limit Value – Time-Weighted Average® (TLV-TWA®) – The TWA concentration for a conventional 8 hour workday and a 40 hour workweek, to which it is believed that nearly all workers may be repeatedly exposed, day after day, without adverse effects.

Threshold Limit Value – Short-Term Exposure Limit® (TLV-STEL®) – The concentration to which it is believed that workers can be exposed continuously for a short period of time without suffering from irritation, chronic or irreversible tissue damage, or narcosis of sufficient degree to increase the likelihood of accidental injury, impair self-rescue, or materially reduce work efficiency, and provided that the daily TLV-TWA® is not exceeded. A STEL is a 15 minute TWA exposure that should not be exceeded at any time during a workday even if the 8 hour TWA is within the TLV-TWA ®.

49.1. GENERAL REQUIREMENTS

49.1.1. Potential Exposures

Work conducted involving the following activities/materials/jobs may result in employee exposure:

- Pesticides
- Solvents

- Paints and varnishes
- Refueling vehicles.
- Adhesives
- Crude Oil
- Some Chemicals (See SDS)
- Laboratory operations
- Auto mechanics, painters, printers
- Degreasing operations
- Extraction and sampling
- Tanks: gauging and cleaning operations
- Venting, draining, blinding, or opening process equipment and piping containing or having contained greater than 10 percent benzene
- Unplanned releases or spills greater than 5 gallons (18.9 liters) of liquids that contain 0.1 percent or more of benzene (such as gasoline, crude oil, solvents, and mixed xylenes)
- Rubber and rubber coating, adhesives, sealants
- Engine emissions

49.1.2. Properties and Effects

Benzene is classified by IARC (International Agency for Research on Cancer), OSHA, NIOSH, and NTP (National Toxicology Program) as a known human carcinogen; therefore exposures to benzene should be avoided or minimized to the extent possible.

Benzene liquid is highly flammable and vapors may form explosive mixtures in air.

Physical Data

Color:	Clear and colorless
Odor:	Characteristic pleasant odor at low concentrations; disagreeable at higher concentrations
Odor Threshold:	Greater than 4.6 parts per million (ppm)
Explosive Limits:	1.4 - 8 percent
Boiling Point:	176 °F
Specific Gravity:	0.879 - Floats on water
Vapor Density:	2.8 - Heavier than air

49.1.3. Types of Exposures

Acute - Overexposure to high concentrations of benzene, without the use of personal protective equipment (PPE) may result in feelings of breathlessness, irritability, euphoria, or light headiness. Irritation of the eyes, nose, and respiratory tract may be experienced. Headaches, dizziness, nausea, or intoxication may develop. Severe exposure may lead to convulsions and loss of consciousness.

Chronic - Repeated or prolonged exposure to benzene, without the use of (PPE), may result in various blood disorders. Anemia, leukemia, or fatal cancers of the blood, are examples of adverse effects that may result from long-term exposure to benzene.

First Aid – Notify the Control Room Operator. Exposed employees must be moved to an uncontaminated atmosphere: wash exposed skin with soapy water; remove benzene-wetted clothing (if any) immediately; if benzene is ingested, do not induce vomiting; get the exposed employee medical attention.

49.1.4. Exposure Limits and Routes

The M&O must inform contractors/lower-tier contractors of the areas where there is potential for exposure to benzene.

Exposure Limits:

- OSHA PEL is 1.0 ppm time weighted average over 8 hours
- OSHA Action Level is 0.5 ppm time weighted average over 8 hours
- ACGIH TLV-TWA is 0.5 ppm over 8 hours
- ACGIH TLV-STEL is 2.5 ppm over 15 minutes.

Routes of Entry

- Inhalation is the primary route of entry into the body. Exposures may occur during accidental spills and releases or in/near confined spaces. These exposures are typically experienced in operations such as sampling, liquid draining, tank gauging/cleaning, and equipment maintenance.
- Skin is also a possible route of entry. Benzene can be absorbed through skin and significantly contribute to an employee's overall exposure through cuts, pores, etc. Healthy skin contact with benzene may cause temporary, but still serious, health problems such as defatting, resulting in irritation and dermatitis (rashes).
- Ingestion of benzene can occur due to poor hygiene practices – such as failure to wash hands before eating, chewing gum, or the use of tobacco products.

49.2. MONITORING

49.2.1. Initial Industrial Hygiene Monitoring

Initial personal industrial hygiene (IH) monitoring has been performed to determine representative exposures for each job function in which employees may be exposed (regardless of level, frequency, or duration). The Occupational Exposure Index (OEI) contains information regarding these potential exposures.

49.2.2. Periodic Monitoring

For job functions in which initial monitoring indicates benzene exposure above the Action Limit (AL), a written periodic IH monitoring program will be established as follows:

- IH samples will be collected at least twice a year until engineering controls or work practices have been shown through additional IH monitoring to reduce exposure below allowable exposure limits.
- IH samples will be collected at least annually until engineering controls or work practices have been shown through additional IH monitoring to reduce exposures below the AL.
- Additional IH monitoring will be required when there has been a change in the production, process, control equipment, personnel, or work practices that may result in new or additional exposures to benzene.
- Additional IH monitoring is required when there is reason to suspect a change that may result in new or additional exposures.
- Additional IH monitoring is required whenever spills, leaks, ruptures, or other breakdowns occur that may lead to employee exposure (to ensure that exposures have returned to the level that existed before the incident).

Screening samples shall be taken by Site Safety via PID to determine need for more in depth survey by NOLA IH.

49.2.3. Notification of Results

Employees shall be notified of monitoring results per APM Section 26.

49.2.4 Direct Reading Instrument Monitoring

VOC/Benzene readings shall be taken also:

- During workover operations on crude oil caverns, at the initial opening of the wellhead before workover operations begin, after lunch or when conditions change. Results will be documented on the Workover Safety Specialist's daily report.
- At initial line breaks,
- Periodically during vacuum truck operations and adjacent to frac/mud tank locations.
- Before entry into Permit Required Confined Spaces where crude oil is present.

Results will be reported to control room and IH group.

49.2.5. Industrial Hygiene Monitoring Methods

IH monitoring methods for benzene include the following:

- Benzene-specific colorimetric tubes, also known as "length-of-stain" tubes. Examples include but are not limited to products made by Draeger, Sensidyne, or Gastec;
- Chip Measuring Systems- Draeger CMS;
- Photoionization Detector (PID);
- Contracted IH Laboratory accredited method.

49.3. MEDICAL SURVEILLANCE

49.3.1. Initial and Periodic Medical Evaluations

Employees working in areas who have potential exposure to benzene as defined below will receive pre-employment and periodic medical evaluations as follows:

- Potential exposure above the AL for 30 days or more per year
- Potential exposure above the PELs 10 or more days per year

If initial or periodic medical evaluations indicate an abnormal condition, further evaluations will be given and referrals made as determined by the healthcare provider.

49.3.2. Medical Evaluations as a Result of Emergency Exposures

In the event of exposure, without the use of proper respiratory protection, to an unforeseen release of benzene-containing vapor or liquid, the Control Room must be notified and the ERT activated. WorkCare should be contacted to assist in the evaluation of exposed employee. If the determination is made through consultation with WorkCare that medical surveillance is advised, the employee shall provide a urine specimen to the designated healthcare provider. The specimen must be collected according to protocols published by the laboratory performing the analysis and in accordance with applicable regulations (see 49.3.3 below).

If the urine specimen indicates an abnormal condition, further evaluation will be performed and referrals made as determined by the healthcare provider.

49.3.3. Content

Content of medical evaluations will be in accordance with 29 Code of Federal Regulations (CFR) 1910.1028 (Benzene) and/or ACGIH® BEI (Biological Exposure Indices) protocols.

49.4. COMPLIANCE PROGRAM (EXPOSURE REDUCTION PROGRAM)

When IH monitoring results indicate an exposure over the exposure limit, a written compliance program will be developed to reduce future employee exposures to or below the exposure limit primarily by means of engineering and work practice controls.

The written program will include a schedule for development and implementation of engineering and work practice controls. This program will be reviewed and revised as appropriate (but at least annually) based on the most recent exposure monitoring data, and to reflect the current status of the program.

49.5. EXPOSURE CONTROLS

49.5.1. Engineering

Where feasible, benzene exposures must be controlled through engineering controls. Work practices, respirators, and protective clothing may be used to control exposures that are intermittent, caused by emergency conditions, while awaiting engineering controls to be implemented, or where engineering controls are not feasible.

49.5.2. Respirators

Appropriate respiratory protection will be selected based on the best available information. Examples of best available information in order of preference include:

- Applicable IH monitoring results collected by the employer.
- Written recommendations from the NO IH Staff.
- The following table:

Benzene Concentration	Respirator	Cartridge
Unknown (such as no IH monitoring information and/or emergency response for a release)	Supplied air	Not applicable
Less than 0.25 ppm	None required	Not applicable
Greater than or equal to 0.25 ppm, but less than 2.5 ppm	Half-mask air purifying	Organic vapor (black) or organic vapor/acid gas (yellow) cartridges
Greater than or equal to 2.5 ppm, but less than 12 ppm	Full-face air purifying or supplied air	Organic vapor (black) or organic vapor/acid gas (yellow) cartridges
Equal to or above 12 ppm	Supplied air	Not applicable

Respirator cartridges will be changed according to the manufacturer's recommendations.

Respirators will be used in accordance with APM Section 39.

49.5.3. Additional Personal Protective Equipment

When liquids containing benzene are present, engineering, administrative controls, or PPE must be used to prevent eye and skin contact.

49.5.4. Work Controls

Regulated Areas - To limit access to trained and authorized personnel only, regulated areas must be established and posted with the appropriate warning signs, in accordance with APM Section 41. Warning signs shall contain the following warning:

DANGER
BENZENE
CANCER HAZARD
RESPIRATORY PROTECTION MAY BE REQUIRED

- Warning signs must be in each of the languages used to communicate with employees.
- Once established, the area will remain regulated until IH monitoring indicates the concentration of benzene in the air is less than the AL.
- Only approved personnel with appropriate respiratory protection and other PPE will be allowed to enter the area.

Job Hazard Analysis - Pre task planning includes a thorough identification of benzene/benzene-containing materials.

Where potential benzene exists, the JHA will include protective measures to be used by employees that will reduce benzene exposure.

49.6. TRAINING

Training will be conducted as follows:

- Upon initial employment
- Annually
- Any time there is a change in this practice
- When there is a change in or addition of a process or operation that creates the potential for exposure or an increase in exposure

Training will include the following:

- Summary of this practice
- Summary of the relevant standard(s)
- Summary of the medical surveillance program
- Area emergency alarms and evacuation routes
- Location of emergency eye wash stations and showers
- Emergency phone numbers
- Appropriate protective measurements to control benzene exposures during normal operations and emergency situations

49.7 RESPONSIBILITIES:

S&H Director

- Ensure the requirements of this standard practice remain current with applicable regulatory directives.

Human Capital

- Ensure that required medical monitoring is performed according to regulatory requirements.

ES&H Manager and Site Safety

- Oversee site personnel to ensure proper exposure monitoring is conducted and that all procedures are followed.
- Perform inspections as needed.

NO IH Department

- Perform exposure monitoring as delineated in IH Section of APM (Section 26).
- Provide Employee Notifications, SEG Notifications per schedule.
- Work with Site Safety and Engineering to provide recommendations for decreasing exposure to Benzene and other Volatile Organic Compounds.

Supervisors

- Ensure that elements of this policy are being followed by conducting inspections, reviews, spot-checks, and other follow-up actions.
- Ensure air sampling is performed to verify worker exposures are within controls
- Conduct or arrange for inspections in their area of responsibility.
- Ensure workers are aware of possible hazards associated with benzene and/or VOC exposure.
- Initiate corrective action for deficient items noted during inspections.

Employees

- Follow the requirements of this procedure.

50. CARCINOGENS

PURPOSE

This procedure provides instructions for protecting employees by eliminating occupational exposures to chemical carcinogens; either confirmed or suspected.

SCOPE

This section includes the following major sections:

- General Information
- Actions
- Training
- Responsibilities

APPLICABILITY

This procedure applies to anyone performing work at the Strategic Petroleum Reserve.

DEFINITIONS /ACRONYMS

Carcinogen − any non-radioactive substance that can cause cancer in humans and/or animals (see Section 50.1).

Carcinogen Control Plan (CCP) − Form AAA9020.855; a written plan which sets forth procedures, equipment, personal protective equipment, and work practices to protect employees in a particular workplace. This term encompasses the "safety plans and standard operating procedures" that describe the use of chemical carcinogens, the procedures used to control exposure, emergency actions, and waste disposal. This plan is to be used in conjunction with current hazard communication programs and programs developed for control of toxic chemicals in laboratories.

50.1. GENERAL INFORMATION

This procedure is applicable to non-radioactive materials that contain at least one carcinogen in a concentration greater than or equal to 0.1% by weight or volume. This threshold concentration of 0.1% may be superseded by a different level when it is indicated by an applicable regulation (e.g., OSHA substance-specific standard).

The chemical substances covered by this procedure as carcinogens are identified as follows:

- Occupational Safety and Health Administration (OSHA) 29 Code of Federal Regulations (CFR) 1910 Subpart Z (Standards):
  - Carcinogens
- American Conference of Governmental Industrial Hygienists (ACGIH®) Threshold Limit Values (TLV®s):
  - Group A1 - Confirmed Human Carcinogens
  - Group A2 - Suspected Human Carcinogens

- International Agency for Research on Cancer (IARC) (Monographs):
  - Group 1 - Carcinogenic to Humans
  - Group 2A - Probably Carcinogenic to Humans
  - Group 2B - Possibly Carcinogenic to Humans (applicable only to those substances having at least limited evidence in humans when sufficient evidence in animals is lacking)
- National Toxicology Program (NTP) (Annual Report on Carcinogens):
  - Group K - Known To Be A Human Carcinogen
  - Group R - Reasonably Anticipated To Be A Human Carcinogen

Exceptions:

- Control of waste material and samples of unknown composition are not included within the scope of this procedure.
- Control of asbestos-containing materials is addressed in Asbestos Awareness and Handling Procedures, Section 08 of APM.

50.2. ACTIONS

50.2.1. Identification of Chemical Carcinogens

Classify SPR carcinogens, according to Section 50.1 of this procedure.

Contact IH Staff for identification, evaluation, and recommended control of materials that may be carcinogenic

Chemicals that have been identified as Carcinogens and currently in use are listed in AAA9020.856, Carcinogen List.

50.2.2. Protection from Chemical Carcinogen Exposure in the Workplace

Carcinogens should only be used in those situations where no less hazardous, equivalent substitute is feasible; and where the function they serve is essential.

Whenever substitution with non-carcinogenic materials is not feasible, exposures shall be maintained within ACGIH® Threshold Limit Values (TLV®s), OSHA substance-specific Action Levels (ALs) and OSHA Permissible Exposure Limits (PELs).

The following guidelines shall be used when non-carcinogenic substitutes cannot be used:

- Use engineering controls and safe work practices as the primary methods to minimize exposure to carcinogens, and to prevent the release of carcinogens into the work environment.
- Use administrative controls and personal protective equipment (PPE) as secondary and tertiary measures, respectively, when needed to reduce exposure to carcinogens.
- Make provisions to ensure that contaminated air is not exhausted into work areas.

- Utilize approved methods to contain and dispose of liquid and solid wastes that may contain carcinogens.

If a significant potential for occupational exposure is determined to exist and more stringent controls than normal good work practices are required, then ensure safety plans and/or procedures describing the use of chemical carcinogens and the methods used to control exposures are developed and implemented.

A Carcinogen Control Plan (AAA9020.855) shall be initiated for any operation involving the use of carcinogenic materials that is likely to exceed applicable ALs, PELs or TLVs, as determined by IH Staff.

Access shall be controlled and a regulated area shall be established and posted, where exposure to a carcinogen above the applicable AL, PEL or TLV® is likely, as determined by IH Staff. The regulated area will depend on the quantity and physical properties of the material being used and on the operations being performed.

- Personnel working in the regulated area shall be identified in the required Carcinogen Control Plan.
- Visitors to the area shall be escorted by personnel authorized for entry under the Carcinogen Control Plan.

Placards, labels, or signs shall be used to identify regulated areas and containers of carcinogens in accordance with applicable procedures/regulations.

Good hygiene must be facilitated through use of protective clothing; availability of showers; bans on eating, drinking, and chewing in regulated areas; use of non-permeable work surfaces to the extent practical; and good housekeeping practices.

50.3. TRAINING

Hazard communication training and any required substance-specific training shall be completed in accordance with Hazard Communication and applicable procedures/regulations.

Hazard Communication training shall be provided according to the Carcinogen Control Plan, prior to work in an area or operation determined to require a CCP.

50.4. RESPONSIBILITIES

Director, Occupational Safety and Health

- Provide adequate resources to maintain an effective carcinogen control program.
- Provide for evaluation of potential improvements to processes which could result in reduced usage and inventory levels of carcinogens.

Industrial Hygiene (IH) Staff

- Classify applicable chemicals used at the SPR as carcinogens, according to this procedure.
- Determine an operation's potential for occupational exposure and the need for a Carcinogen Control Plan. This determination will be based on the quantity used, potential for exposure, types of controls, monitoring results, and the type of operation in which the material is used.

- Assist in the selection of appropriate control measures by completing Part II of the CCP.
- Determine the type and frequency of periodic monitoring, reports results to supervision/employees, and recommends exposure-control measures.
- Act as consultant in matters related to storage, handling, spills, and disposal of carcinogens.
- Assist Training in the development of appropriate educational and training materials.
- Perform investigations of diagnosed or suspected occupational illnesses, as necessary.

Supervisor/Subcontract Manager Technical Representative (SMTR)

- Contacts IH Staff for identification, evaluation, and recommended control of materials that may be carcinogenic.
- Recommends replacement of carcinogens with less hazardous, non-carcinogenic materials, whenever feasible.
- Initiate preparation of Carcinogen Control Plan for any operation involving the use of carcinogenic materials that is likely to exceed applicable ALs, PELs or TLV®s, as determined by the IH Staff.
- Implements the Carcinogen Control program by requiring employee compliance and providing adequate resources for evaluation of potential process improvements.
- Establishes and posts regulated areas where chemical carcinogens are used and controls access to these areas in accordance with the CCP.
- Maintains a record of personnel working in the regulated area.
- Uses engineering controls and required safe work practices as the primary method to minimize exposure to carcinogens and to prevent the release of carcinogens into the working environment, as directed by IH Staff.
- Ensures containers are properly labeled, identifying the presence of chemical carcinogens.
- Ensures employees maintain good hygiene when chemical carcinogens are present.
- Performs chemical inventory in accordance with Hazard Communication (Section 23 of APM).
- Performs an inventory, identifying the quantities of chemical carcinogens that are kept in the work area, and submits hazardous material reports to the M&O ES&H Directorate in accordance with Hazard Communication and M&O Environmental Policy.
- Ensures applicable documents have been developed and completed. Such documents may include safety plans and standard operating procedures associated the use of chemical carcinogens and the methods used to control exposures; a Job Hazard Analysis (JHA); and/or a documented Pre-Job briefing to inform employees of the health hazards and exposure control measures associated with the task.

Human Capital

- Provide medical occupational contract oversight with regards to medical surveillance, testing, and evaluation program for personnel who are potentially exposed to carcinogens above applicable limits, when required by OSHA or DOE regulations.
- Alert the IH staff of any diagnosed or suspected occupational illness that may have resulted from exposure to a carcinogenic agent for follow-up investigation.

Employee(s)

- Notify Supervisor and/or Control Room immediately of potential overexposure to carcinogens.
- Observe safety and health rules.

51. POWERED INDUSTRIAL TRUCKS (FORKLIFTS)

PURPOSE

This section identifies the requirements for the protection of employees engaged in powered industrial truck (forklift) operations or working in the area of such operations.

SCOPE

This section includes the following major sections:

- General Requirements
- Inspections
- Traveling
- Loading and Unloading
- Maintenance/Repairs
- Detachable Fork Adjustment
- Lifting Suspended Loads
- Training and Qualification

APPLICATION

This section applies to work activities and employees under the control of the M&O and its subcontractors.

DEFINITIONS

Competent Person — One who is capable of identifying existing and predictable hazards in the surroundings or working conditions which are unsanitary, hazardous, or dangerous to employees, and who has authorization to take prompt corrective measures to eliminate them.

51.1. GENERAL REQUIREMENTS

Prior to starting work, operations involving powered industrial trucks (forklifts) shall be assessed using the Job Hazard Analysis (JHA). The JHA is required for this and other Life Critical operations to ensure that all hazards associated with the work are identified, the likelihood and severity are understood, and control measures are defined that will effectively reduce the risk.

No modifications or additions that affect the capacity or safe operation of the forklift shall be made without the manufacturer's written approval. If such modifications or changes are made, the capacity, operation, and maintenance instruction plates, tags, or decals shall be changed accordingly.

To operate a forklift, employees must, at a minimum:

- Be trained and evaluated on the specific make/model in accordance with applicable OSHA/ANSI requirements.
- Be mentally alert and possess the physical ability to operate a forklift safely.

Forklifts are designated as diesel (D), electric (E), gasoline (G), or liquid petroleum gas (LP), depending on the source of power. Additional designations (S, Y, E, and X following the power source designation

[such as DY, EE, GS, and LPS]) are based on the safeguards to the power source allowing a truck to be operated in a particular hazardous atmosphere (refer to 29 CFR 1910.178 for a complete discussion on this subject).

Employees are not allowed to:

- Ride on forklifts or the load
- Stand or pass under the elevated portion of a forklift, whether the forklift is loaded or empty

The forklift operator shall:

- Fully lower the load or empty forks to ground level, neutralize controls, shut off power, and set parking brakes when a forklift is unattended.
- Maintain a safe distance from the edge of ramps or platforms while on an elevated dock, platform or freight car. Forklifts shall not be used for opening and closing freight doors.
- Set brakes and block wheels in place to prevent movement of trucks, trailers, or railroad cars while loading and unloading. Fixed jacks shall be necessary to support a semi-trailer during loading or unloading when the trailer is not coupled to a tractor.
- Check the flooring of trucks, trailers, and railroad cars for breaks and weakness before driving the forklift on or across the flooring.
- Ensure there is sufficient headroom under overhead installations, lights, pipes, and sprinkler systems.
- Use an overhead guard to protect against falling objects.

NOTE
An overhead guard is intended to offer protection from the impact of small packages, boxes, and bagged material representative of the job application, but not to withstand the impact of a falling capacity load.

- Use a load backrest extension whenever loaded material is above the permanent backrest to minimize the possibility of the load or part of it falling rearward.
- Use only approved forklifts in hazardous locations.
- Keep fire aisles, access to stairways, and fire equipment clear.

Additionally the forklift operator shall:

- Not drive a forklift up to anyone standing in front of a bench or other fixed object.
- Not allow arms or legs to be placed between the uprights of the mast or outside the running lines of the forklift anytime while in operation.
- Not fill fuel tanks while the engine is running. Also, they must carefully remove oil or fuel spillage and replace the fuel tank cap before restarting the engine.
- Not operate a forklift with a leak in the fuel system.

- Not use open flames for lighting when checking the electrolyte level in storage batteries or the gasoline level in fuel tanks.

The use of a forklift for lifting personnel is not allowed on the SPR.

51.2. INSPECTIONS

Powered industrial trucks (forklifts) received for use through purchase, contract obligations, or rental, shall receive an initial documented inspection before placed into operation to verify that there are no mechanical defects or safety deficiencies. Initial-receipt inspection shall be documented on the Support Equipment Acceptance Checklist (AAA9020.732).

Refer to APM Section 32 (Support Equipment) for inspection procedures.

51.3. TRAVELING

When the forklift is in the travel mode, the operator shall:

- Observe traffic regulations, including authorized speed limits; maintain a safe distance, approximately 3 lengths from another “vehicle” ahead; and keep the forklift under control at all times.
- Not pass other trucks traveling in the same direction at intersections, blind spots, or other dangerous locations.
- Slow down and sound the horn at cross aisles and other locations where vision is obstructed. If the load being carried obstructs forward view, the operator shall travel with the load trailing.
- Utilize a designated spotter in congested areas, in close proximity to plant process, near electrical installations, hazardous areas or as designated by management.
- Operate the forklift at a speed that permits it to be brought to a stop in a safe manner; slow down for wet and slippery conditions.
- Use headlights or flashing lights in obstructed or dark areas.
- Ascend or descend grades slowly:
  - When ascending or descending grades in excess of 5 percent, operate loaded trucks with the load upgrade.
  - Operate unloaded forklifts on grades with the load-engaging means downgrade.
  - On grades, tilt the load and load-engaging means back if applicable, and raise only as far as necessary to clear the road surface.

NOTE
If the forklift becomes “stuck” in soft or wet terrain, the forks shall not be used to penetrate the ground to push/pull the forklift out.

51.5. LOADING AND UNLOADING

Operators shall only handle loads within the rated capacity of the forklift.

Extreme care must be used when tilting the load forward to backward, particularly when high-tiering. An elevated load must not be tilted forward except when the load is in a deposit position over a rack or stack. When stacking or tiering, only enough forward or backward tilt is to be used to stabilize the load.

Refer to APM Section 31, Material Handling.

51.6. MAINTENANCE/REPAIRS

If, at any time, a forklift is found defective or in any way unsafe, the forklift shall be tagged and taken out of service until it has been restored to a safe operating condition.

Maintenance/repairs shall be performed by authorized employees in approved locations.

When trouble shooting is complete and repairs are initiated on the electrical system, the battery must be disconnected.

51.7. DETACHABLE FORK ADJUSTMENT

When adjusting forks that are not attached to the mast, the operator shall take the following steps to minimize the risk of possible injury:

- Hand injuries are common during this activity — extreme caution and (if an individual other than the operator is adjusting the forks) FULL COMMUNICATION must be exercised.
- Follow the operations manual “to the letter” when adjusting forks.
- Place forklift into a “safe” state by shifting to park and set brake prior to adjustment of forks.
- Raise the forks at least 4 feet to place forks in a more accessible position.
- Tilt forks forward as far as possible to redistribute the weight to aid in the adjustment.
- Ensure the bar is properly lubricated.
- Use the palm of the hand placed in the middle of the fork below the 90 degree turn to open and close the forks.

51.8. TELESCOPIC FORKLIFTS

- Telescopic forklifts operate differently than straight- mast forklifts. The extending boom reduces capacity limits. Telescopic forklifts have different and unique hazards. The operator shall read manuals to become familiar with controls and operation.
- The operator shall be familiar with all controls before operating a telescopic forklift.
- If telescopic forklift has multi-steering option the operator shall be familiar with this function.
- If the forklift is equipped with outriggers/stabilizers, operators must follow manufacturer guidelines for proper usage.

- As the boom is extended stability is jeopardized.
- Load charts shall be posted in the cab of a telescopic forklift.
- Load charts indicate lifting capacities within certain lifting “regions” Most forklifts have charts posted on the machine. A copy of the chart can be found in the operator’s manual.
- The operator shall know how to read a load chart and be aware of the different capacities in various “lifting regions.”
- All load charts are different. The operator will know how to read the load chart for the specific forklift before attempting to pick up a load.
- The Operator and Rigger will know the weight of a load and center of gravity before lifting.

51.9. LIFTING SUSPENDED LOADS

- Only forklift attachments approved by the manufacturer shall be used for lifting underslung loads.
- Only approved lifting device systems that attach to fork lifts shall be used.
- Attaching slings directly to forks is prohibited.
- Prior to lifting and/or carrying loads utilizing underslung methods, the forklift operator shall be trained in accordance with APM Section 13, Hoisting and Rigging Operations. The supervisor shall observe the operator demonstrate ability to lift loads prior to lifting near employees and critical equipment.
- Only qualified riggers shall be allowed to rig and attach loads to be underslung lifts by forklifts.

51.10. TRAINING AND QUALIFICATION

Operators of forklifts must be trained, evaluated, and qualified on specific make/model of forklifts they will operate.

For general training and qualification requirements, see APM Section 32, Support Equipment.

NOTE
Refer to the DOE Hoisting and Rigging Standard, OSHA, ANSI/ITSDF B56.1, and M&O operating requirements for additional information pertaining to powered industrial trucks.

52. ELEVATED LIFT EQUIPMENT

PURPOSE

This section identifies the requirements for the operation and maintenance of elevated lift equipment; aerial lifts that can be raised and lowered, including those that are boom-supported, self-propelled, manually operated, and vehicle-mounted; and elevating work platforms, including hoists used to raise material and personnel.

SCOPE

This section includes the following major sections:

- General Requirements
- Inspections
- Training and Qualification
- Operation — Aerial Lifts and Elevating Work Platforms
- Operation — Material and Personnel Hoists

APPLICATION

This practice applies to work activities and employees under the control of the M&O Contractor and its subcontractors.

DEFINITIONS

Aerial Lift — A vehicle-mounted device, telescoping or articulating, or both, used to position personnel. They include the following types of vehicle-mounted aerial devices used to elevate personnel to jobsites above ground: extensible boom platforms, aerial ladders, and articulating boom platforms. Commonly-used terms include JLG, snorkel lift, and high-lift boom truck.

Competent Person — One who is capable of identifying existing and predictable hazards in the surroundings or working conditions which are unsanitary, hazardous, or dangerous to employees, and who has authorization to take prompt corrective measures to eliminate them.

Elevating Work Platform — A device designed to elevate a platform in a substantially vertical axis. Commonly used terms include vertical tower, scissor lift, and spider lift.

52.1. GENERAL REQUIREMENTS

Prior to starting work, operations involving Aerial lifts and elevating work platforms (hereafter called lifts) shall be assessed using the Job Hazard Analysis (JHA). The JHA is required for this and other Life Critical operations to ensure that all hazards associated with the work are identified, the likelihood and severity are understood, and control measures are defined that will effectively reduce the risk.

No modifications or additions that affect the capacity or safe operation of the equipment will be made without the manufacturer's written approval. If such modifications or changes are made, the capacity, operation, and maintenance instruction plates, tags, or decals will be changed accordingly.

Designation of Competent and Qualified Persons must be documented in accordance with APM Section 2, Introduction and General Safety.

52.2. INSPECTIONS

Lifts received for use through purchase, contract obligations, or rental, shall receive an initial documented inspection before being placed into operation to verify that there are no mechanical defects or safety deficiencies. Initial-receipt inspection shall be documented on the Support Equipment Acceptance Checklist (AAA9020.732).

Refer to APM Section 32, Support Equipment, for inspection procedures.

52.3. TRAINING AND QUALIFICATION

Operators of lifts must be trained, evaluated, and qualified on the specific make/model of equipment they will operate and documented.

For general training and qualification requirements, see APM Section 32, Support Equipment.

Training requirements for lift equipment shall comply with applicable OSHA/ANSI requirements.

52.4. OPERATION — AERIAL LIFTS AND ELEVATING WORK PLATFORMS

52.4.1. General Requirements

Scissor lifts are strictly prohibited from use on the SPR in tanks or on uneven terrain.

Lifts purchased, leased, rented, or otherwise used on the SPR shall meet the criteria in the ANSI A92 series.

Lifts shall be maintained and repaired in accordance with the manufacturer's requirements.

Insulated portions of lifts shall not be altered or damaged by use that reduces the insulation capability of the unit.

52.4.2. Operations

Lifts will be operated in accordance with the requirements contained in this section, training, and the manufacturer's operating instructions.

Operate lifts on level surfaces or within the slope limits given by the manufacturer.

Set parking brakes and fully extend the outriggers (if equipped), position on stable surfaces, or use pads/appropriate cribbing arranged in a stable configuration, as applicable.

NOTE
If the outriggers cannot be fully extended, operate within limitations specified in the manufacturer's operating manual.

Ensure the area surrounding the lift is clear of personnel and equipment before lowering the platform, or position awareness barriers around the lifts.

Provide safety barricades around aerial lifts, in accordance with APM Section 41, Barricades, Signs, and Tags, so that personnel cannot be caught between rotating equipment and adjacent fixed objects.

Stand on the floor of the lift and do not sit, stand, climb, or work from the edge or handrail. Do not climb out of the lift or use planks, ladders, or other devices, to reach the work location.

In aerial lifts (e.g. JLGs, snorkel lifts, boom trucks), wear personal fall protection and attach it to an approved anchorage on the boom or basket. For elevated work platforms, fall protection is required when the manufacturer has provided a designated anchorage point and has specified in the operating manual that fall protection is required. The use of SRLs (Self Retracting Lifeline) rather than a 6 ft. lanyard is encouraged.

Do not tie off to an adjacent pole, structure, or equipment while in a lift.

Only tools and materials required for the task are permitted to be raised in a lift.

Do not exceed the load capacity or lateral force limits of the lift.

Do not move lifts when the platform is occupied unless the equipment is specifically designed for this type of operation.

NOTE
For aerial lifts, when the boom is completely retracted and resting in the transport cradle, employees may stay in the bucket/platform for simple relocation movements, e.g. two feet over on level surface.

Lifts that can be moved in elevated positions must have interlocks that keep the unit from moving or controlling the speed to a rate that does not affect stability when the platform is raised.

Booms and outriggers must be secured in accordance with the manufacturer's instructions before over the-road transport.

52.5. OPERATION — MATERIAL/PERSONNEL HOISTS

52.5.1. Operation

Rated load capacities, manufacturer recommended operating speeds, special hazard warnings, operating rules, signal systems, and operating instructions must be conspicuously posted at the operator's station for the hoist, on the car frame or crosshead.

52.5.2. Wire Rope

Wire rope shall be inspected prior to each use.

Defective wire rope must be removed or replaced immediately.

Any of the following defects will render the wire rope unfit for use:

- **Corrosion** – Any development of slight corrosion shall be documented on the daily pre-operation inspection report by the Competent Person and watched closely. Severe corrosion is cause for replacement.
- **Broken Wires** – One or more valley breaks, 6 randomly distributed broken wires in one rope lay, or 3 broken wires in one strand in one rope lay is cause for replacement.
- **End Attachments** – Development of broken wires near attachments is cause for replacement. If this condition is localized in an operating rope and the section in question can be eliminated by making a new attachment; this may be done rather than replacing the entire rope.
- **Abrasion** – Abrasion, scrubbing, flattening, or peening that causes loss of more than one-third of the original diameter of the outside wires is cause for replacement.
- **Kinking** – Severe kinking, crushing, birdcaging, or other damage resulting in the distortion of the rope structure is cause for replacement.
- **Heat Damage** – Evidence of heat damage resulting from contact with a torch or any damage caused by contact with electrical wires is cause for replacement.
- **Reduced Rope Diameter** – Cause for replacement if the reduction from the normal rope diameter is more than:
    - 3/64 inch for diameters up to and including 3/4 inch
    - 1/16 inch for diameters ranging from 7/8 to 1-1/8 inches
    - 3/32 inch for diameters from 1-1/4 to 1-1/2 inches

52.5.3. Material Hoists

No person is allowed to ride on a material hoist except for the purpose of inspecting or maintaining the hoist.

Entrances to material hoistways must be protected by gates or bars that:

- Guard the full width of the landing entrance
- Are equipped with a latching device

52.5.4. Personnel Hoists

Personnel hoistway doors may be no less than 6 feet 6 inches high. Solid doors, where used, will be provided with a vision panel opening having a width not exceeding 6 inches and an area not exceeding 80 square inches that is covered with expanded metal.

Landing doors will be provided that can be locked mechanically so that they cannot be opened from the landing side. These locks will be of a type that can be released only by a person in the car.

For hoists located outside of structures, the enclosures on the building side of the hoistway will be full height or a minimum of 10 feet at each floor landing.

Inspection, testing, construction, operation, and maintenance of personnel hoists will be performed in accordance with the requirements of applicable OSHA/ANSI A10.4 standards.

NOTE
For suspended personnel platforms (workbaskets), refer to APM Section 13, Hoisting and Rigging.

52.5.5. Lifting Cradle

The following types of equipment/materials shall only be lifted using an engineered and certified lifting cradle:

- Drums
- Tool boxes or tool kits
- Oxy-acetylene and other compressed gas cylinders

Cradles must have a retention/restraint system.

53. MOTORIZED HEAVY EQUIPMENT

PURPOSE

This section defines the requirements for the safe operation of motorized heavy equipment.

SCOPE

This section includes the following major sections:

- General Requirements
- Inspections
- Equipment Operators
- Signal Persons
- Standard Equipment
- Training and Qualifications

APPLICATION

This section applies to work activities and employees under the control of the M&O and its subcontractors.

DEFINITIONS

Competent Person — One who is capable of identifying existing and predictable hazards in the surroundings or working conditions which are unsanitary, hazardous, or dangerous to employees, and who has authorization to take prompt corrective measures to eliminate them.

Heavy Equipment (types of) – Includes but is not limited to the following:

- Backhoes
- Bulldozers
- Loaders
- Road graders
- Excavators
- Scrapers (pans)
- Skid-steers
- Dump trucks
- Earth movers
- Trucks 2 tons Gross Vehicle Weight GVW or greater
- Hydraulic excavators (Grad-all)
- Concrete pump trucks
- Vibrating compactors
- Water carts/trucks
- Rollers/compactors
- Tractors
- Service/re-fueling trucks
- Vehicle Mounted Air tuggers
- Marsh Buggies

53.1. GENERAL REQUIREMENTS

Prior to starting work, operations involving motorized heavy equipment shall be assessed using the equipment specific OEM manual and the Job Hazard Analysis (JHA). The JHA is required for this and other Life Critical operations to ensure that all hazards associated with the work are identified, the likelihood and severity are understood, and control measures are defined that will effectively reduce the risk.

No modifications or additions that affect the capacity or safe operation of the equipment will be made without the manufacturer's written approval. If such modifications or changes are made, the capacity, operation, and maintenance instruction plates, tags, or decals will be changed accordingly.

Designation of Competent and Qualified Persons must be documented in accordance with APM Section 2, Introduction and General Safety.

To operate/drive motorized heavy equipment employees must, at a minimum:

- Be trained and evaluated on the specific make/model in accordance with applicable OSHA/ANSI requirements.
- Be mentally alert and possess the physical ability to operate motorized heavy equipment safely.

Operators and ground employees who may be working near machinery must be trained in, understand, and practice safe operation/maintenance procedures for equipment.

It is required that flaggers and one ground employee working in close proximity to equipment traffic or movement to have adequate PPE such as high visibility vest (FR-Rated in required areas) and the equipment should have an audible backup alarm in working condition if originally equipped by the manufacturer.

Employees are prohibited between machines and trailing equipment when maneuvering to connect them.

Equipment or parts thereof that are suspended or held aloft must be secured (blocked or cribbed) to prevent falling or shifting before employees are permitted to work under or between them.

Employees on foot must not approach equipment until the operator is signaled and acknowledges their presence.

Employees must not ride in or work from excavator or backhoe/loader buckets.

Employees must not stand under suspended loads or suspended machine components such as the boom, arm, or bucket.

53.2. INSPECTIONS

Motorized heavy equipment received for use through purchase, contract obligations, or rental, shall receive an initial documented inspection before being placed into operation to verify that there are no mechanical defects or safety deficiencies. Initial-receipt inspection shall be documented on the Support Equipment Acceptance Checklist (AAA9020.732).

Refer to APM Section 32 (Support Equipment) for inspection procedures.

53.3. EQUIPMENT OPERATORS

Depending on site-specific requirements, Personal Protective Equipment worn by operators may include the following:

- Boots or safety shoes
- Eye/face protection
- Long pants
- Hard hat
- Hearing protection
- Gloves
- Roll Over Protection Structures (ROPS) are required on all equipment capable of lifting /loading material above head level of the operator.
- Seat belts are mandatory on equipment

53.3.1. Operation

ALL seated “ride - on” equipment shall have ROPS.

If a machine is noticed to be deficient during operation, the operator must cease operation, tag equipment out and contact their immediate supervisor and shall not operate the equipment until proper repairs have been made.

The following “general” rules apply to the operation of equipment:

- The operator must be satisfied that no one will be endangered before moving the equipment.
- If there is an obstructed view in the direction of movement, or the equipment is large enough or configured such that it allows someone to perform work on it and not be noticed by the operator, use of the equipment is prohibited unless an observer/signal person/spotter/flagger is present.
- In congested areas, isolated areas with a concentration of employees (such as concrete pours), or significant equipment movement areas (such as in the vicinity of stockpiles), flaggers will be used to coordinate equipment and pedestrian movement.
- Operators shall stay a safe distance away, especially with raised attachments, from energized power lines and equipment, electrical poles, and circuits.
- Electric equipment and lines must be considered energized until determined otherwise by testing or until grounded.
- Operators shall keep the equipment under control and not work it over its capacity.
- Operators shall acquaint themselves with the controls before operating the equipment.
- Operators shall drive at speeds compatible with working conditions, visibility, and terrain.
- Operators shall follow the manufacturer’s load capacity limits and identification plates shall be attached to all machines.

- Operators shall not make mechanical adjustments while the unit is in motion.
- Operators shall always follow the manufacturer's recommendations.

53.3.2. Refueling

- Fuel tanks on equipment must not be filled while the engine is running, or while welding or other hot work is being performed within 50 feet.
- Smoking is not permitted during fueling operations.
- Use of a cell phone is not permitted during fueling operations.
- Ensure the fueling area is well-ventilated.
- Ground the funnel or fuel nozzle against the filler neck to avoid sparks when refueling.
- Know where the fire extinguisher is located.

53.3.3. Parking of Heavy Equipment

The following rules apply to parking heavy equipment:

- Lower attachments on equipment fitted with moveable attachments (such forks, buckets, blades, and rippers) before shutting down or getting off the machine.
- If on an incline, chock or wedge the wheels and turn wheels into the side of the bank or road.
- Where applicable, select neutral and apply the parking brake and slew brake.

NOTE

No employee is allowed to sit or rest:

- Under heavy equipment
- Near or against any tire or attachment such as a bucket or blade
- Directly in front of or behind heavy equipment

53.4. SIGNAL PERSONS

- Only one employee can act as the signal person at any given time.
- Before each work shift begins, review and confirm communications signals with the operator(s).
- The signal person is responsible to:
  - Keep the operator and the other employees in sight at all times.
  - Keep employees on foot outside heavy equipment work areas (marked with rope, tape, or other barrier).
- Deliver an "All Stop" command quickly to both the Operator and affected employees when needed.
- Ensure employees who must be near heavy equipment are kept out of the equipment swing areas and clear of attachments when hoisting materials.
- Ensure heavy equipment, or parts thereof, which are suspended or held aloft, are blocked to prevent falling or shifting before employees are permitted to work under or between them.

53.5. STANDARD EQUIPMENT

Equipment will be equipped with the following items, at a minimum:

- Operator's manual
- All manufacturer required/installed safety devices

No equipment may be operated without fully functional safety devices.

The operator shall not operate/use a cellular phone in any mode while heavy equipment is running.

53.6. TRAINING AND QUALIFICATIONS

Operators of motorized heavy equipment must be trained, evaluated, and qualified on specific make/model of equipment they will operate.

For general training and qualification requirements, see APM Section 32, Support Equipment.

Training requirements for motorized heavy equipment shall comply with applicable OSHA/ANSI requirements.

54. LAWN EQUIPMENT AND CHAIN SAWS

PURPOSE

This section describes the requirements for inspection and safe operation of lawn equipment (such as lawn mowers, weed cutters [with string blades or other attachments], and chain saws).

SCOPE

This section includes the following major sections:

- Operator Qualifications
- Inspection
- Personal Protective Equipment
- Planning
- Operating Equipment

APPLICATION

This practice applies to work activities and employees under the control of the M&O contractor and its subcontractors.

DEFINITIONS

Dead Man Switch (Interlock) - A switch that deactivates or deenergizes equipment when the operator releases his or her grip on the controls or when the operator leaves the equipment.

Kick-Back - An action occurring when the material being cut catches the chain of a chain saw causing the chain saw to jerk back towards the operator.

54.1. OPERATOR QUALIFICATIONS

The operator must be trained in the safety features of the equipment and know how to properly operate it according to the manufacturer's operating instructions. Training shall be documented.

For general training and qualification requirements, see APM Section 32, Support Equipment.

54.2. INSPECTION

Operators must inspect lawn mowers, weed cutters, and chain saws before use, and in accordance with applicable Maintenance Requirements Cards (MRCs).

54.3. PERSONAL PROTECTIVE EQUIPMENT

Lawn mowers, weed cutters, leaf blowers, and chain saws generate a high level of noise. Site Safety shall determine the appropriate type of hearing protection.

Site Safety shall review the types of personal protective equipment (PPE) worn while operating lawn equipment and chain saws to confirm that they provide adequate protection.

At a minimum:

- Operators of lawn mowers shall wear a hard hat, safety glasses, safety shoes, work gloves, and hearing protection.
- Operators of weed cutters shall wear a hard hat, safety glasses, safety shoes, leg protection, work gloves, hearing protection, and a full-face shield.
- Operators of chain saws shall wear a hard hat, safety glasses, safety shoes, protective chaps, work gloves, hearing protection, and a full-face shield.
- Operators of leaf blowers shall wear safety glasses, safety shoes, and hearing protection.

Consider using tight-fitting safety glasses (spoggles) under full-face shield when conditions warrant.

54.4. PLANNING

While planning and administering work, the supervisor shall perform at least the following:

- Review the work area to identify any hazards and develop a JHA. Possible hazards include steep banks, exposed electrical lines at ground level, loose gravel in grassy areas, uneven terrain, insects, environmental factors, and objects protruding out of the ground.
- Involve the electrical supervisor in planning the use of equipment around substations, exposed cables, lines, and other types of electrical equipment.
- Consider flammable and explosive classifications of the work area(s) before using the equipment.
- Avoid assigning employees to work alone in remote areas. Follow the buddy system requirements as outlined in APM Section 17.

Employees must adhere to all equipment specific hazards and operating limitations as identified in the most current up-to-date operational manuals while operating lawn mowers, weed cutters and chain saws. Examples include but are not limited to the following: Do not remove or bypass any dead man switch or other safety mechanisms or devices to run the equipment.

- Discuss hazards associated with environmental factors as they pertain to the work being performed.
- Shut off the equipment and allow it to cool before refueling. Use funnels or extended nozzles to avoid spilling fuel onto the equipment and ground.

54.5. OPERATING EQUIPMENT

54.5.1. Lawn Mowers

Operators must be qualified on each specific type of mower and take the following minimum safety precautions while operating lawn mowers:

- Operate lawn mowers in accordance with manufacturer’s operating manual.
- Keep other employees a minimum of 25 feet away from a mower while it is running.
- Do not put hands or feet anywhere on or under a mower while it is running, other than on the surfaces designed for operating the mower. (This precaution also applies to mechanics.)

- Do not stand in front of the cutting discharge area.
- Do not remove the catch bag while the mower is running.
- Be aware of the cautions, hazards and warnings found in the manufacturer O&M manuals.

Qualification shall be documented.

54.5.2. Weed Cutters

Operators must take the following minimum safety precautions while operating weed cutters:

- Be careful when using weed cutters close to objects subject to damage. The cutting radius of a weed cutter is difficult to determine and maintain during operation. An object may be damaged or become airborne if it comes in contact with the weed cutter.
- Do not operate weed cutters closer than 25 feet to other employees or in restrictive spaces.
- Be aware of the cautions, hazards and warnings found in the manufacturer O&M manuals.

54.5.3. Chain Saws

Operators must take the following minimum safety precautions while operating chain saws:

- Before cutting the approved material, inspect and clear it of foreign objects such as nails, wire, and rocks.
- Unless the employer demonstrates that a team of employees is necessary to manually fell a particular tree, no employee will approach a feller (person cutting tree) closer than 2 tree lengths of trees being felled until feller has acknowledged that it is safe to do so.
- Do not use the tip of a chain saw for cutting or allow it to inadvertently touch a limb not being cut.
- To avoid kick-back, be extremely cautious when cutting small limbs.
- Always cut away from you.
- Be aware of the cautions, hazards and warnings found in the manufacturer's O&M manuals.
- Do not place your hands or feet on the material being cut to stabilize it. Secure the object by other means.
- Use caution against danger of something falling from above.
- Ensure that chain saws have an automatic chain brake or anti kickback device.
- Adjust the chain so that the chain does not move when the engine is idling.
- Wear head, eye, ear, hand, foot (safety shoes), and leg protection as a minimum.
- Do not fuel chain saws while they are running, hot, or near open flame.
- Do not start chain saws within 10 feet of a fuel container.
- Hold the saw with both hands during cutting operations.
- Never use a chain saw to cut above the operator’s shoulder height.

54.5.4. Hedge Trimmer

When using a hedge trimmer, operators must adhere to the following minimum requirements:

- Always keep both hands positioned on the hedge trimmer while it is in use.
- Always cut away from you.
- Be aware of the cautions, hazards and warnings found in the manufacturer's O&M manuals.

55. PRESSURIZED COMPRESSED AIR AND GAS

PURPOSE

This section defines the requirements for operating or using pressurized or compressed air equipment.

Note: Refer to APM Section 39 (Respiratory Protection) for guidance on breathing air, hose connections and fittings, and other NIOSH respiratory requirements.

SCOPE

This section includes the following major sections:

- General Requirements
- Pressurized/Compressed Air Equipment
- Compressed Gas Cylinders
- Manifolds

APPLICATION

This section applies to work activities and employees under the control of the M&O and its subcontractors.

DEFINITIONS

Pressurized Equipment - Includes but is not limited to any equipment, such as line, hose, vessel, or container, which is subjected to pressure above or below that of one atmosphere.

55.1. GENERAL REQUIREMENTS

All connections on pressurized/compressed air hoses or lines must have a positive means of coupling to prevent the connection from uncoupling.

All hoses shall have a containment device fitted to prevent whipping should it become detached.

The requirements listed in this section do not apply to the 15 minute escape packs used for the posted areas in and around the degas plant.

55.1.1. Whip Checks

If inadequately restrained or “whip-checked,” the resulting whipping effect may, and has previously, caused equipment damage and significant injury to, or death of, employees. Consequently, all pressurized equipment must be restrained, or whip-checked through the use or combined use of the following:

- Single leg cable stocking
- Sling (such as 1 or 2 leg slings)
- Internal reinforcement
- Double or 2-leg cable stocking, or

- Fittings or fixtures designed specifically for restraint

Particular attention must be given to the securing and whip checking of:

- Hydraulic lines and pressure units
- High-pressure water lines, pumps, and vessels
- Air compressors and lines
- Associated tools and accessories

55.2. PRESSURIZED/COMPRESSED AIR EQUIPMENT

Only certified pressure vessels are permitted.

Employees required to use pressurized equipment must be trained in the use of such equipment and fully conversant with the hazards associated with pressurized equipment. Most pressurized equipment fails through:

- Mistreatment
- Sharp edges
- Poor handling techniques
- Incorrect installation or fitting
- Incorrect fitting of whip-check system
- Incorrect flow rate

Upon arrival to the project/site, compressed air equipment shall be inspected and deemed fit for the intended purpose.

Certificates of inspection for air receivers must be provided before arriving on the project/site. Bleed/pressure-relief valves, as well as air diffusers, must be fitted to air-powered equipment.

Air lines must be protected from being driven over by machinery and kept away from walkways and supported by cable stands where practicable.

55.2.1. Inspections

Pressure vessels shall be inspected/certified according to the manufacturer's recommendations, and applicable codes/standards.

Air compressors and similar equipment, in use, shall be inspected in accordance with applicable MRCs or OEM checklists.

55.2.2. Cleaning

Compressed air shall not be used for cleaning purposes unless the pressure is reduced to less than 30 psi — and then only with effective chip guarding and adequate personal protective equipment.

55.3. COMPRESSED GAS CYLINDERS

55.3.1. Procurement Specifications and Limits

Requisitions for cylinders and hardware shall include the following specifications when applicable:

- Portable cylinders used to store and ship compressed gas will be constructed and maintained in accordance with U.S. Department of Transportation (DOT) regulations, Title 49 Code of Federal Regulations, Parts 171 179.
- Devices used on compressed gas cylinders must comply with applicable Compressed Gas Association (CGA) Standards.

55.3.2. Transporting and Moving Cylinders

When compressed gas cylinders are mechanically hoisted, they shall be secured on a cradle, cylinder truck/dolly, sling board, or pallet; cylinders shall not be hoisted using slings choked around the body nor with unapproved devices or attachments.

When cylinders are moved with powered vehicles, they shall be secured in a vertical position, regulators will be removed, and valve protection caps put in place.

Unless cylinders are firmly secured on a special carrier intended for this purpose, regulators shall be removed and valve protection caps put in place before moving.

When cylinders are moved with the welding truck, regulators do not need to be removed if a regulator protection safety device is properly installed and the bottles are firmly secured on a special carrier intended for this purpose.

When cylinders are manually handled, unless cylinders are firmly secured on a cylinder truck, regulators shall be removed and valve protection caps put in place before cylinders are moved in any fashion or by any means.

Whenever cylinders are moved, the valve shall be in a closed position.

Proper support racks shall be provided in vehicles used to transport cylinders.

The driver/operator shall ensure cylinders filled for transportation (bulk loads) comply with DOT regulations on the following subjects:

- Ownership and authorization to fill
- Type of shipping cylinders for each gas
- Charging cylinders – amount of gas and conditions of filling
- Marking and labeling
- Placarding transport vehicles
- Type(s) of pressure relief devices, where required

Compressed gas cylinders shall not be transported in automobiles or in closed-bodied vehicles, unless designed for that purpose (i.e. firetrucks).

Shipping compartments shall be adequately ventilated.

55.3.3. Placing Cylinders

Cylinders shall be secured in an upright position, even when being hoisted or moved.

Cylinders shall be placed where they cannot become part of an electrical circuit and shall be kept away from piping systems and layout tables that may be used for grounding electrical circuits.

When cylinders are in use, they shall be placed with the valve end up, and a steadying device used to keep them from being knocked over. Cylinders shall not be placed where they will be exposed to open flames, hot metal, or other sources of heat.

55.3.4. Storing Cylinders

Inside of buildings, compressed gas cylinders shall be stored in areas that are safe, dry, well-ventilated, and protected from direct sun and weather conditions; do not expose cylinders to temperatures above 125 ^{o}F.

Compressed gas cylinder storage areas shall be clearly identified and posted with the name(s) of the gas(es) stored in the area.

The quantity of gas in cylinders allowed in storage (inside or outside) shall be in accordance with NFPA Standards 51 and 55.

Cylinders shall not be stored in a place where they are likely to be knocked down or interfere with traffic.

Empty cylinders shall be segregated from other cylinders and labeled or tagged “Empty” or “MT.”

Oxygen cylinders not in use shall not be stored within 20 feet of cylinders containing flammable gases unless separated by a fire wall at least 5 feet tall and having a fire-resistance rating of at least 1/2 hour.

NOTE
In accordance with 29 CFR 1910.253, cylinders are considered in "storage" if they are not in use or connected for use. A welding/cutting unit that is in use or connected for use consists of a single oxygen cylinder and a single acetylene cylinder connected to a properly functioning regulator.

Cylinders containing oxidizing gases shall be stored away from flammable substances such as oil and volatile liquids.

Valves on empty cylinders shall be closed and capped.

Storage areas shall be constructed so that they are dry, well-ventilated, and made with noncombustible materials; ensure shelves are able to support cylinders.

Dry vegetation and combustible materials shall be cleared for a minimum distance of 15 feet from around the storage area.

Physical protection (barriers) shall be provided to prevent damage from vehicles.

55.3.5. Using Cylinders

Gas welding and cutting equipment shall be inspected by the user at prior to use to identify any of the following defects:

- Leaking or damaged hose or hose couplings
- Leaking or damaged fuel-gas pressure regulators and gauges and related connections
- Leaking or damaged torch heads or shutoff valves and related connections
- Clogged tip openings

Before connecting a regulator to the valve, the valve shall be opened slowly to clear debris from the valve nozzle and closed immediately. This action shall be taken in an area where there are no possible sources of ignition, and the employee will stand to one side when taking this action.

Safety devices will not be tampered with.

Cylinders shall be clearly identified as to their contents in accordance with local hazardous substance legislation.

Do not strike an arc on a cylinder.

Hoses from compressed gas cylinders must be removed from confined spaces when not in use and during breaks.

Flashback devices, such as flash arrestors shall be installed at both the regulator and torch end, on both lines, of oxygen/fuel gas systems.

Regulators and hoses used with flammable compressed gas cylinders shall be leak tested immediately after they are connected to the cylinders.

Cylinders must be kept far enough away from the actual welding/cutting operation to prevent sparks, hot slag, and flames from reaching them.

Acetylene cylinder valves shall be opened 3/4 of a turn; do not open acetylene cylinder valves more than 1 1/2 turns.

Acetylene regulators shall be adjusted so the low-pressure gauge indicates a delivery pressure of less than 100 kPa (15psig) to the hose and torch.

Cylinders shall be considered full and must be handled accordingly.

Approved reducers and regulators must be used; do not use gas directly from cylinders without pressure being reduced through specifically approved regulators; do not tamper with safety devices on regulators or on cylinder valves.

Cylinders shall be protected from damage; do not drag, drop, or strike; do not use cylinders with signs of damage.

Cylinders shall not be used as rollers or supports or for any purpose other than to store and dispense the original contents.

Oxygen cylinders and fittings must be kept away from oil, grease, and other combustible/flammable materials; keep cylinders, cylinder caps and valves, couplings, regulators, hoses, and apparatus free from oil and greasy substances, and do not handle with oily hands or gloves; do not direct oxygen at oily surfaces or greasy clothes.

Gaseous hydrogen systems shall be equipped with pressure-relief devices and protected from tampering. Relief devices shall be arranged so that if actuated, they have an unobstructed upward vent path to open air.

Cylinder tags or markings shall not be removed or altered.

Mixing gases, transferring them from one cylinder to another, or unauthorized refilling cylinders is prohibited.

Valve protective caps shall be kept on the cylinder except when the cylinder is secured and connected to dispensing equipment.

Cylinder valves must be opened slowly.

Users shall ensure reverse-flow gas check valves and flashback arrestors are installed on both lines of all oxygen and fuel gas setups.

Special wrenches, when required, shall be left in position on the stem of the valve while the cylinder is in use; in the case of coupled cylinders or cylinders connected with a manifold, at least one such wrench must be available for immediate use.

When the work is complete, or at the end of the shift, valves and regulators shall be closed; gas lines and regulators must be drained; and the adjusting screw “backed out.”

Note: This does not apply to cylinders connected with a manifold.

Regulators and pressure gauges shall be used only for the gases that they are designed and intended for. Repair, modification, or alteration on cylinders, valves, or attachments shall be performed only by the manufacturer/authorized service center.

Difficult connections must not be forced; threads on regulators must match to those on the cylinder valve outlet.

Cylinders shall not be dragged, dropped, rolled, or struck in horizontal position, or allowed to strike each other or another surface violently.

When transporting cylinders, a suitable hand truck, forklift, or similar handling device shall be used with the cylinder properly secured to the device and the valve cap on.

Cylinders shall not be lifted using the protective cap or with a magnet.

When disconnecting regulators and hose, the valve must be closed and the hoses purged before removing the regulators, and storing.

Torches and hoses shall be completely depressurized (bled) before storage, or at the end of each shift.

Torch, hose, and regulators must be completely contained within any box for storage. Storage of torches or hose with one end out of the box is strictly prohibited, regardless of the regulators being connected to a compressed gas cylinder.

55.3.6. Refilling Gas Cylinders

Compressed gas cylinders may only be refilled by the owner or authorized employees in compliance with applicable standards.

55.4. MANIFOLDS

Use manifolds and manifold parts only for the gas(es) they are designed for.

Cylinder manifolds shall be installed under the supervision of an employee who is familiar with the uses of the gas.

Ensure compressed gas manifolds are designed to meet NFPA Standard 51.

Ground and bond flammable gas piping systems in accordance with NFPA Standard 51.

When acetylene cylinders are connected by a manifold, approved flash arrestors are installed between each cylinder and the coupler block. One flash arrestor installed between the coupler block and regulator is acceptable only for outdoor use or if the number of cylinders coupled does not exceed 3.