

FFPO Procedure Blue Sheet Form

A. Procedure Title (list manual, procedure series, or specific procedure #)

SPR Accident Prevention Manual

Section 21 Fall Protection

B. Procedure Name/series type (i.e., operations, maintenance, etc.) E S & H

C. Check (✓) one of the following:

1. Procedure(s) accepted “as is” with terminology replaced as denoted in the Site Procedures Approved Terminology Replacement List for the FFPO SPR M&O contract.

2. In addition to the changes in approved terminology for the FFPO SPR M&O contract, improvements to the procedure are warranted:

Category 1 Finding (Resolution prior to contract start)

Category 2 Finding (Resolution within 90 days of contract start)

Category 3 Finding (Resolution to the Issues Management program)

D. Comments/Notes:

E. Forward a copy of this form to the FFPO Director, Business Management for revision tracking.

Signed

FFPO Reviewer Signature

02/26/14

Date

Steve Mahan

FFPO Reviewer Print Name



Site Procedures Approved Terminology Replacement List

Approved Terminology Replacements	
Terminology to be Replaced	Substituted Verbiage
AGSC	M&O Contractor or MOC
Boeing	M&O Contractor or MOC
Construction Management Services or CMS contractor	M&O Contractor or MOC
DynMcDermott or DM or Company	M&O Contractor or MOC
DM Contract No.	M&O Contract
Organizational Changes	
William Gibson or "Hoot"	DOE Project Manager or DOE PM
Robert (Bob) McGough or DM Project Manager or CEO	MOC Project Manager or MOC PM
Randy Sutton (Acting) or DM General Counsel	MOC General Counsel or MOC GC
Scott Landry or DM APM, O&M and COO	MOC APM, O&M
APM, Cavern Integrity	Senior Director, Cavern Integrity
Colleen Yates or DM APM, Business Operations and CFO	MOC APM, Business Operations and CFO
APM, Security and Emergency Preparedness or Director, Security and Emergency Preparedness Division	Senior Director, Security & Emergency Preparedness
Henry Schmidt, Jordan Jones, or Duane Johnson	Senior Director, Security & Emergency Preparedness
Leslie Williams or APM, Data Systems or Data Systems Director	Senior Director, Data Systems
William Bozzo or DM APM, ES&H	MOC APM, ES&H
Walt Newcomb or DM Director, Energy & Sustainability	Director, Environmental
J.P. Martinez or DM APM, Engineering	MOC APM, Engineering

ACRONYMS

- AGSC ASRC Gulf States Constructors
- APM Assistant Project Manager
- ASRC Arctic Slope Regional Corporation
- CAS Contractor Assurance System
- CFO Chief Financial Officer
- COO Chief Operating Officer
- ES&H Environment, Safety, and Health
- GC General Counsel
- M&O Management and Operating
- MOC Management and Operating Contractor
- O&M Operations and Maintenance
- PM Project Manager

21. FALL PROTECTION

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21.1. INTRODUCTION

This section provides information on preventing injuries and fatalities caused by falls from elevated work places (4 feet or higher), including ladders, scaffolding, single- and multiple-point suspended scaffolds, 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. The supervisor assigning work is responsible for determining whether or not fall protection is required for the particular job, utilizing a PPE assessment.

21.2. DUTY TO HAVE FALL PROTECTION

Fall protection with continuous attachment shall be used by M&O employees as well as all contractors and 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). Applications include, but are not limited to, the situations listed below.

NOTE

The fall protection requirements in 29 CFR 1926 **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. Where no General Industry standard exists, DM applies the relevant construction standard. This is consistent with OSHA's ongoing effort to include this exclusion in the general industry standards. In most circumstances, fall protection is not required when standing on or in a vehicle.

21.2.1. Work on Unprotected Sides and Edges

Through the Safe Work Permit (SWP), each site will identify and authorize job tasks and work locations that have involved or may involve elevated work 4 feet or more above a lower level.

- a. Employees working on a walking/working surface with an unprotected side or edge that is 4 feet or more above a lower level shall be protected from falling by the use of a guardrail system or personal fall arrest system.
- b. Whenever personnel are working without, through, or outside of guardrails and the potential exists to fall 4 feet or more, the fall protection device shall be attached to an anchorage or structural member capable of supporting a minimum dead weight of 5,000 pounds as certified by an engineer.

21.2.2. Leading Edge Work

Work that is conducted on a leading edge must include fall protection for employees who are working 4 feet or more above lower levels. They shall be protected from falling by guardrail systems or personal fall arrest systems. For some jobs involving leading edge work, it may be infeasible or may increase the hazard to use a specified fall protection system. In that case, a fall protection plan shall be developed and implemented.

- a. Employees on a walking/working surface 4 feet or more above a lower level where leading edges are under construction, but who are not engaged in the leading edge work, shall be protected from falling by a guardrail system or personal fall arrest system.
- b. If a guardrail system is chosen to provide the fall protection, and a controlled access zone has already been established for leading edge work, the control line may be used in lieu of a guardrail along the edge that parallels the leading edge.

21.2.3. Working near Holes and Floor Openings

- a. 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.
- b. All covers will be color-coded or they will be marked with the word "HOLE" or "COVER" in a recognizable color to provide warning of the hazard.

21.2.4. Work on Ramps, Runways, and Other Walkways

Employees on ramps, runways, and other walkways shall be protected from falling 4 feet or more to lower levels by guardrail systems.

21.2.5. Working On and Near Excavations

- a. Work being conducted on or near shored excavations that are greater than 4 feet in depth requires the use of a guardrail system, barricades, or fences.

NOTE

Work being conducted on sloped excavations does not require the use of a fall protection system unless dangerous equipment or piping is located within the excavation.

- b. Employees at the edge of an excavation 4 feet or more in depth shall be protected from falling by a guardrail system, fences, or barricades when the excavations are not readily seen because of plant growth or other visual barriers.
- c. All employees at the edge of a well, pit, shaft, or similar structure 4 feet or more in depth shall be protected from falling by a guardrail system, fences, barricades, or covers.

21.2.6. Working Near and Above Dangerous Equipment

- a. Examples of dangerous equipment include tanks, process piping, machinery, and electrical equipment.
- b. 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.
- c. Employees 4 feet or more above dangerous equipment shall be protected from falling hazards by a guardrail system or personal fall arrest systems.

21.2.7. Roofing Work on Low-Slope Roofs

- a. Workers on low-slope roofs (1926.500 defines a low slope roof as a roof having a slope less than or equal to 4 in 12 [vertical to horizontal]. with unprotected sides and edges 4 feet or more above lower levels shall be protected from falling by a guardrail system, a personal fall arrest system, or a combination of a:
 1. Warning line system and a guardrail system,
 2. Warning line system and a personal fall arrest system, or
 3. Warning line system and a safety monitoring system.
- b. On roofs 50 feet or less in width, the use of a safety monitoring system alone is permitted. A fall protection plan must accompany this method.
- c. Materials and equipment shall not be stored within 4 feet of an edge unless guardrails are erected at the edge. Materials that are piled, grouped, or stacked near a roof edge shall be stable and self-supporting.
- d. Personnel engaged in roof work must be trained in the specific fall hazards of working near the roof perimeter, the erection and use of designated fall arrest systems, and job procedures required for the job-specific work.
- e. Personnel engaged in work on low-sloped roofs (other than roofing) and more than 10 feet from the edge do not need to have a fall restraint system.

21.2.8. Roofing Work on Steep Roofs

Workers on steep roofs with unprotected sides and edges 4 feet or more above lower levels shall be protected from falling by guardrail systems with toeboards, or by personal fall arrest systems. OSHA defines a steep roof as a roof having a slope greater than 4 in 12 (vertical to horizontal).

21.2.9. Wall Openings

Employees working on, at, above, or near wall openings where the outside bottom edge of the wall opening is 4 feet or more above lower levels and the inside bottom edge of the wall opening is less than 39 inches above the walking/working surface shall be protected from falling by the use of a guardrail system or a personal fall arrest system.

21.2.10. Walking and Working Surfaces Not Otherwise Addressed

- a. Personnel working from or riding in any aerial lift device shall wear a fall arrest system with the lanyard attached to the basket.
- b. When personnel are working off portable ladders and the work requires them to be outside the “confines of the ladder,” a fall-restraint device must be used.

21.3. ANCHORAGE POINTS

All anchorage points to which personal fall arrest equipment is attached shall be capable of supporting at least 5,000 pounds and have a minimum free-fall distance of 4 feet.

Anchorage points shall also be:

- a. designed, installed, and used under the supervision of a Competent Person;
- b. capable of supporting twice the weight expected to be imposed on it; and
- c. independent of any anchorage used to support or suspend platforms.

21.4. FALL PROTECTION SYSTEMS

21.4.1. Guardrail Systems (GS)

When a guardrail system is used, its design and construction shall comply with the following provisions.

- a. The top edge height of top rails, or equivalent guardrail system members, shall be 42 inches plus or minus 3 inches above the walking/working level. When employees are working on elevated platforms or levels, the top edge height of the top rail must exceed the designated height of the elevated work.
- b. Midrails, screens, mesh intermediate vertical members, or equivalent intermediate structural members shall be installed between the top edge of the guardrail system and the walking/working surface when there is no wall or parapet wall at least 21 inches high.
- c. Guardrail systems must be able to withstand, without failure, a force of at least 200 pounds applied within 2 inches of the top edge. When the 200-pound-test load is applied in a downward direction, the top edge of the guardrail shall not deflect to a height less than 39 inches above the walking/working level.

- d. Midrails, screens, mesh, intermediate vertical members, solid panels, and equivalent structural members shall be capable of withstanding, 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.
- e. 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.
- f. The ends of all top rails and midrails shall not overhang the terminal posts, except where such overhang does not constitute a projection hazard.
- g. If wire rope is used for top rails, it shall be flagged at no more than 6-foot intervals with high-visibility material.
- h. Toprails and midrails shall be at least one-quarter inch in diameter or thickness to prevent injuries to employees.
- i. Guardrails **shall not be used** as anchor points for fall arrest equipment unless they are approved by a structural engineer for that specific purpose.
 - 1. An engineering drawing or other documentation must exist showing what specific locations are suitable as anchor points, and what equipment, by rating, may be used and how it is to be attached.
 - 2. The worker must be trained in recognition of approved anchor points.

21.4.2. Personal Fall Arrest Systems (PFAS)

All personal fall arrest systems used on the SPR shall meet the following criteria.

- a. The primary fall arrest device shall be a Class III body harness.
 - 1. The lanyard anchorage point must be such that the maximum fall distance is 4 feet, or 6 feet if the lanyard is used in conjunction with an ANSI-approved shock absorber.
- b. **The use of a Class I body belt is not permitted on any SPR site.**
- c. Lanyards must have double locking snap hooks to prevent roll-out.
- d. If a lanyard may come in contact with hot surfaces, an insulated cover, either on the lanyard or on the hot surface, must be used for protection.
- e. Lanyards must be protected from sharp surfaces.
- f. Fall restraint devices exposed to impact loading will be removed from service and destroyed.
- g. Personnel shall never attach two pieces of fall arrest equipment together by any means.
- h. Personnel shall never attach fall arrest equipment snaphooks together.
- i. Personnel shall never use fall arrest equipment as a work tool unless your equipment is specifically designed for work positioning. If it is, the worker must have a fall arrest system in addition to the work positioning equipment.
- j. Lanyards shall be the shock-absorbing type and should be approved for use with the other fall protection devices (harness) and for the application for which it is being used.
- k. Lanyards shall not be attached to themselves unless specifically designed for that application by the manufacturer. An example of misuse would be looping a lanyard around a pipeline (as the anchor point) and attaching it.

NOTE

Fall protection systems shall be approved for the application for which they are being provided.

21.4.3. Positioning Device Systems (PDS)

If an activity requires the use of a positioning device, the following provisions will be met.

- a. The user of the positioning device shall be rigged such that they cannot free-fall more than 2 feet.
- b. Positioning devices shall be 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.
- c. Positioning devices must be inspected prior to each use for wear, damage, and other deterioration. If any component shows signs of being defective, it shall be removed from service immediately.
- d. Positioning devices must not be used for lifting or hoisting either personnel or materials.

21.4.4. Warning Line Systems (WLS)

Warning line systems and use will comply with the following provisions.

- a. A warning line system alone may only be used during roofing work on low-slope roofs.
- b. The warning line system shall be erected around the roof work area not less than 6 feet from the roof edge.
- c. Warning lines shall consist of ropes, wires, or chains, and supporting stanchions erected with visible flagging every 6 feet.
- d. No personnel will be allowed in the area between the roof edge and a warning line unless the employee is performing roofing work in the area and wearing approved fall arrest device.
- e. Mechanical equipment on low-slope roofs shall be used or stored only in areas where employees are protected by a warning-line system or a conventional fall-arrest system.

21.4.5. Safety Monitoring System (SMS)

A fall protection plan must be written and approved if the desired method of fall protection is the use of a safety monitoring system on a low-slope roof and leading edge work. Use of a safety monitoring system on a high-slope roof is not permitted. The use of a safety monitoring system shall comply with the following provisions:

- a. A competent employee will be designated to monitor the safety of other employees working near the fall hazard.
- b. Mechanical equipment shall not be used or stored in areas where safety monitoring systems are being used to monitor employees engaged in roofing operations.
- c. No employee, other than an employee engaged in roofing work on low-sloped roofs or an employee covered by a fall protection plan, shall be allowed into an area where an employee is being protected by a safety monitoring system (the controlled access zone).
- d. Each employee working in a controlled access zone shall be directed to comply promptly with fall hazard warnings from the safety monitor(s). The monitor must:
 1. be competent to recognize fall hazards,
 2. warn the employee if it appears the employee is unaware of a fall hazard or is acting in an unsafe manner,
 3. be on the same walking/working surface and within visual sighting distance of the employee being monitored,
 4. be close enough to communicate orally with the employee at all times, and
 5. have no other responsibilities that could distract the monitor's attention from the monitoring function.

21.4.6. Covers (for holes in roofs)

- a. All other covers must be capable of supporting, without failure, at least twice the weight of employees, equipment, and materials that may be imposed on the cover at any one time.
- b. All covers will be secured when installed so as to prevent accidental displacement by wind, equipment, or employees.
- c. All covers will be marked with the word “HOLE” or “COVER” in a recognizable color to provide warning of the hazard, or they shall be a contrasting color from the background that is not red or green. (This does not include manhole covers.)

21.5. PROTECTION FROM FALLING OBJECTS

In situations where personnel may be exposed to falling objects, they must wear an ANSI-approved hard hat and implement one of the following measures:

- a. Install toeboards, screens, or guardrail systems to prevent objects from falling from higher levels.
- b. Install a canopy structure and keep potential fall objects far enough from the edge of the higher level so that those objects would not go over the edge if they were accidentally displaced.
- c. Barricade the area to which objects could fall, prohibit employees from entering the barricaded area, and keep objects that may fall far enough away from the edge of a higher level so that those objects cannot go over the edge if accidentally displaced.

When toeboards are used as protection against falling objects, they shall be erected along the edge of the overhead walking/working surface for a distance sufficient to protect employees below. All toeboards must meet the following design and performance criteria.

- a. Toeboards must be designed and installed to withstand a force of at least 50 pounds applied in any downward or outward direction at any point along the toeboard.
- b. Toeboards shall be a minimum of 3 1/2 inches in vertical height from their top edge to the level of the walking/working surface.
- c. Toeboards shall have not more than 4 inch clearance above the walking/working surface.
- d. Any openings located along any length of toeboard shall not exceed 1 inch in any dimension.

When tools, equipment, or materials are piled higher than the top edge of a toeboard, paneling or screening must be erected from the walking/working surface or toeboard to a distance sufficient to protect employees.

21.6. EQUIPMENT INSPECTION AND TESTING

- a. Personal fall restraint devices shall be visually inspected for defects by the user prior to each use.
 1. Visual inspection before each use requires a check for cracks, cuts, dents, distortion, and excessive wear, as well as for proper operation.
 2. These inspections shall be conducted in accordance with the manufacturer's guidelines and written site procedures.
 3. Inspection will be noted on the Pre-Job briefing form.
- a. Fall restraint devices shall be placed on an MRC for annual inspection or as specified by manufacture.

1. The devices will be inspected for cuts, burns, excessive wear, loose splices, defective hardware, and distorted thimbles.

NOTE

All fall protection is rated for a maximum load. Ensure that the harnesses and lanyards are rated for the load they may be expected to have."

21.7. RESCUE AND RETRIEVAL CONSIDERATIONS

Each SPR site shall provide for prompt rescue of employees in the event of a fall or shall ensure that employees are able to rescue themselves. An employee should never be put in a situation where, in the event of a fall, prompt rescue would be impractical/impossible.

21.8. FALL PROTECTION PLANS

- a. When installing a conventional protection system is not technologically feasible, or a greater hazard would be created by doing so, a fall protection plan will be developed, communicated, and posted at the work site.
- b. A fall protection plan pertains only to work being conducted on a leading edge.
- c. Fall protection plans must meet the following criteria:
 1. They shall be prepared by a qualified person and developed specifically for the SPR site where the leading edge work is being performed. The plan must be current.
 2. Any changes to the fall protection plan shall be approved by a qualified person.
 3. A copy of the approved fall protection plan with all approved changes will be maintained at the job site.
 4. The fall protection plan will be implemented under the supervision of a competent person.
 5. The plan shall document the reasons why conventional fall protection systems are infeasible or why their use would create a greater hazard.
 6. The plan shall include a written description of other measures that will be taken to reduce or eliminate the fall hazard for workers who cannot be provided with protection by conventional fall protection systems.
 7. The plan shall identify each location where conventional fall protection methods cannot be used.
 8. Where no other protective measure has been implemented, the plan will specify that a safety monitoring system can be used.
 9. The fall protection plan must include a listing that provides the names of each employee who is designated to work in a controlled access zone.
 10. All fall protection plans must be signed and approved by the site director.
 11. In the event a fall or some other related incident occurs, the site or responsible contractor shall investigate the circumstances and root causes of the fall to determine if the fall protection plan needs to be changed. Any recommended changes shall be implemented to prevent similar types of falls or incidents.

21.9. TRAINING REQUIREMENTS

21.9.1. Training

- a. A training program must be provided for all employees, supervisors, and contractors who might be exposed to fall hazards during the course of their duties. Training shall be provided by a competent person, and will cover:
 - 1. Fall hazards inherent in elevated work assignments.
 - 2. Correct procedures for inspecting, erecting, using, disassembling, storing, and maintaining fall protection systems.
 - 3. The use and operation of conventional fall protection systems as well as any other systems that are reasonably expected to be used on site.

NOTE
 If a new type of fall protection system is to be used, the employees will be trained in its use before performing work.

- 4. The role of each employee in fall protection plans and safety monitoring when these systems are used.
- 5. Methods required for safely performing elevated work from scaffolds, vehicle-mounted lifts, and mobile work platforms (affected employees only).
- 6. The role of employees in fall protection plans.
- 7. Applicable fall protection standards contained in 29 CFR Part 1910, Subpart D, and Part 1926, Subpart M.
- b. Engineering and maintenance personnel involved in the design or modification of elevated workplaces shall be familiar with the design specifications referenced in this procedure.

21.9.2. Re-Training

Circumstances where retraining is required include, but are not limited to, the following.

- a. 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.
- b. Changes in the workplace or equipment render previous training obsolete or make new training required.

21.10. TABLES: FALL PROTECTION

TABLE 21.1. FALL PROTECTION RESPONSIBILITIES	
Position or Department	Responsibility
New Orleans Safety	a. Develop fall protection safety requirements and training.
Site Safety Specialist	a. Assess fall protection equipment and systems. b. Investigate all fall incidents. c. Upon request, assist in designing and selecting fall protection systems.
Site Director	a. Designate qualified individuals to write fall protection plans. b. Designate competent individuals to implement fall protection plans.

TABLE 21.1. FALL PROTECTION RESPONSIBILITIES

Position or Department	Responsibility
	c. Designate a competent individual to train site employees on fall protection. d. Maintain list of qualified and competent personnel for fall protection. e. Approve all fall protection plans and any changes to the plans. f. Provide adequate resources to establish and implement an effective fall protection program in accordance with this procedure.
Operations	a. Ensure that fall protection requirements are stated in the Safe Work Permit when issued, including any additional controls as needed.
Engineering	a. Ensure that all guardrail systems comply with design requirements under CFR 29 1910.502(b)(1-15). b. Ensure that anchorage points are capable of supporting at least 5,000 pounds.
Maintenance	a. Inspect and maintain facility fall protection systems. b. Ensure that the SPR sites are equipped with adequate fall protection equipment that meets the requirements of this procedure.
Site Personnel	a. Submit ideas for improving the fall protection procedure through the Job planning and JHA systems and safety suggestion system. b. Understand all aspects of the fall protection program. c. Ensure fall protection equipment is inspected before use and, if unsafe, taken out of service.
Supervisors	a. Ensure employees are trained in recognizing and controlling fall hazards. b. Understand and interpret all aspects of fall protection procedure. c. Ensure that a means of rescue is available for employees using fall protection.
Contractors and Subcontractors	a. 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). b. Ensure that a means of rescue is available for subcontractor employees using fall protection.