POINT EIGHT POWER
Controlling the Power You Generate

HEALTH AND SAFETY MANUAL	
Title: Fall Protection	
Approved by: Greg Savoy	Rev. 8/30/11

1 Purpose/Scope:

The purpose of this program is to provide fall protection procedures to prevent injury to employees while performing work assignments at elevated levels.

Applies to all Company employees who have work assignments at work levels that exceed 6 feet in height where guardrails or nets are not utilized (offshore requirement is 4 feet). This includes work near and around excavations. Guardrails, safety nets, or personal fall arrest systems shall be used where feasible. When work is performed on a non-owned or operated site, the operator's program shall take precedence, however, this document covers Company employees and shall be used on owned premises, or when an operator's program doesn't exist or is less stringent.

2 Definitions/Responsibilities:

2.1 Definitions:

2.1.1 Anchorage - a secure point of attachment for lifelines, lanyards, or deceleration devices.

2.1.2 Body Harness - straps that are secured about the employee in a manner that will distribute the fall arrest force over at least the thighs, pelvis, waist, chest and shoulders with means for attaching it to other components of a personal fall arrest system.

2.1.3 Competent Person – is qualified in the following areas:

- ❑ The nature of fall hazards in the work area.
- ❑ The correct procedures for erecting, maintaining, disassembling, and inspecting the fall protection systems.
- ❑ The use and operation of guardrail systems, personal fall arrest systems, safety net systems, warning line systems, safety monitoring systems, controlled access zones, and other protection to be used.
- ❑ The correct procedures for the handling and storage of equipment and materials and the erection of overhead protection.

2.1.4 Dangerous Equipment - equipment (such as tanks, degreasing units, machinery, electrical equipment, and other units) that, as a result of form or function, may be hazardous to employees who fall onto or into such equipment.

2.1.5 Deceleration Device - any mechanism, such as a rope grab, rip stitch lanyard, specially-woven lanyard, tearing or deforming lanyards, automatic self-retracting lifelines/lanyards, etc., which serves to dissipate a substantial amount of energy during fall arrest, or otherwise limit the energy imposed on an employee during fall arrest.

2.1.6 Deceleration Distance - the additional vertical distance a falling employee travels, excluding lifeline elongation and free fall distance, before stopping, from the point at which the deceleration device begins to operate. It is measured as the distance between the location of an employee's body harness attachment point at the moment of activation (at the onset of fall arrest forces) of the deceleration device during a fall, and the location of that attachment point after the employee comes to a full stop.

2.1.7 Failure - load refusal, breakage, or separation of components parts. Load refusal is the point where the ultimate strength is exceeded.

2.1.8 Free Fall - the act of falling before a personal fall arrest system begins to apply force to arrest the fall.

2.1.9 Free Fall Distance - the vertical displacement of the fall arrest attachment point on the employee's body harness between onset of the fall and just before the system begins to apply force to arrest the fall. This distance excludes deceleration distance, and lifeline/lanyard elongation, but includes any deceleration device slide distance or self-retracting lifeline/lanyard extension before they operate and fall arrest forces occur.

2.1.10 Lanyard - a flexible line of rope, wire rope, or strap that generally has a connector at each end for connecting the body harness to a deceleration device, lifeline, or anchorage.

2.1.11 Lifeline - a component consisting of a flexible line for connection to an anchorage at one end to hang vertically (vertical lifeline), or for connection to anchorages at both ends to stretch horizontally (horizontal lifeline), and which serves as a means for connecting other components of the personal fall arrest system to the anchorage.

2.1.12 Lower Level - those areas or surfaces to which an employee can fall. Such areas or surfaces include, but are not limited to: ground levels, floors, platforms, ramps, runways, excavations, pits, tanks, material, water, equipment, structures, or portions thereof.

2.1.13 Personal Fall Arrest System - a system used to arrest an employee in a fall from a working level. It consists of anchorage, connectors, a body belt or

body harness and may include a lanyard, deceleration device, lifeline, or suitable combinations of these.

2.1.14 Rope Grab - a deceleration device that travels on a lifeline and automatically, by friction, engages the lifeline and locks so as to arrest the

fall of an employee. A rope grab usually employs the principle of inertial locking, cam/level locking, or both.

2.1.15 Self-retracting Lifeline/Lanyard - a deceleration device containing a drum-wound line that can be slowly extracted from, or retracted onto, the drum under slight tension during normal employee movement, and which, after onset of a fall, automatically locks the drum and arrests the fall.

2.1.16 Snap hook - a connector comprised of hood-shaped member with a normally closed keeper, or similar arrangement, which may be opened to permit the hook to receive an object and, when released, automatically closes to retain the object. Only locking type snap hooks shall be used.

2.1.17 Unprotected Sides and Edges - any side or edge (except at entrances to (point of access) of a walking/working surface, e.g., floor, roof, ramp, or runway where there is no wall or guardrail system at least 39 inches high.

2.1.18 Walking/Working Surface - any surface, whether horizontal or vertical on which an employee walks or works, including, but not limited to, floors, roofs, ramps, bridges, runways, form work and concrete reinforcing steel but not including ladders, vehicles, or trailers, on which employees must be located in order to perform their job duties.

2.1.19 Work Area - that portion of a walking/working surface where job duties are being performed.

2.2 Responsibilities:

2.2.1 Manager - accountable that the supervisor in charge is qualified to implement a fall protection plan for specific jobs and has thoroughly familiarized all assigned personnel and subcontractors with the contents of this procedure. All jobs shall be pre-planned prior to the start of work.

2.2.2 Supervisor – ensure that all persons assigned to work at elevated levels, exceeding 6 feet in height or more above lower level and where guardrails or nets are not utilized, be protected by personal fall protection equipment.

- ❑ Supervisors shall make exposure determinations and shall discuss with their employees the extent to which scaffolds, ladders or vehicle mounted work platforms can be used.
- ❑ Ensure that fall protection equipment is available and in safe working condition.
- ❑ Provide for emergency rescue in the event of a fall.
- ❑ Pre-plan the job to ensure that employees have been properly trained in the use, limitations, inspections and rescue procedures and that training records are on file.

2.2.3 Employee – ensure they have and use the fall protection equipment as required by this program and:

- ❑ Understand the potential hazards of working at elevated levels as well as gaining access to and from the work location.
- ❑ Understand the use and limitations of such equipment.

- ❑ Pre-plan the job with his/her supervisor to agree that the job can be done safely.
- ❑ Inspect such equipment before each use and to report defective equipment immediately to their supervisor.
- ❑ Understand that fall protection is required when working offshore in an area where it is possible to fall more than four feet through deck and floor openings.
- ❑ Understand that fall protection is required when working on scaffolding that is not green tagged.

3 Requirements:

3.1 Fall protection is required whenever employees are potentially exposed to falls from heights of six feet or greater to lower levels. This includes work near and around excavations. Use of guard rails, safety net, or personal fall arrest systems should be used when the standard methods of protection are not feasible or a greater hazard would be created. Due to the many variables for utilizing fall protection equipment/systems, the following shall be used to ensure each job has been evaluated and proper components and precautions have been taken:

3.2 When purchasing equipment and raw materials for use in fall protection systems applicable ANSI and ASTM approved equipment shall be used.

3.3 The following are minimum standards for Company employee personal fall protection systems:

- ❑ Connectors shall be drop forged, pressed or formed steel, or made of equivalent materials.
- ❑ Connectors shall have a corrosion-resistant finish, and all surfaces and edges shall be smooth to prevent damage to interfacing parts of the system.
- ❑ D-rings and snap hooks shall have a minimum tensile strength of 5,000 pounds.
- ❑ D-rings and snap hooks shall be proof-tested to a minimum tensile load of 3,600 pounds without cracking, breaking, or taking permanent deformation.
- ❑ Snap hooks shall be sized to be compatible with the member to which they are connected to prevent unintentional disengagement of the snap hook.
  - ✓ Only a locking type snap hook designed and used to prevent disengagement of the snap hook by the contact of the snap hook keeper by the connected member shall be used.
- ❑ Horizontal lifelines shall be designed, installed, and used, under the supervision of a qualified person, as part of a complete personal fall arrest system, which maintains a safety factor of at least two.
- ❑ Lanyards and vertical lifelines shall have a minimum breaking strength of 5,000 pounds.
  - ✓ Where vertical lifelines are used, each employee shall be attached to a separate lifeline.
- ❑ Lifelines shall be protected against being cut or abraded.
- ❑ Self-retracting lifelines and lanyards which automatically limit free fall distance to 2 feet or less shall be capable of sustaining a minimum tensile load of 3,000 pounds applied to the device with the lifeline or lanyard in the fully extended position.
- ❑ Self-retracting lifelines and lanyards which do not limit free fall distance to 2 feet or less, rip stitch lanyards, and tearing and deforming lanyards shall

be capable of sustaining a minimum tensile load of 5,000 pounds applied to the device with the lifeline or lanyard in the fully extended position.

- ❑ Anchorages used for attachment of personal fall arrest equipment shall be independent of any anchorage being used to support or suspend platforms and capable of supporting at least 5,000 pounds per employee attached, or shall be designed, installed, and used as part of a complete personal fall arrest system which maintains a safety factor of at least two and under the supervision of a qualified person.
- ❑ Systems used by an employee having a combined person and tool weight in excess of 310 pounds shall be modified to provide proper protection for such heavier loads.
- ❑ The attachment point of the body harness shall be located in the center of the wearer's back near shoulder level, or above the wearer's head, except when climbing.
- ❑ Body harnesses and components shall be used only for employee protection and not to hoist materials.
- ❑ Personal fall arrest systems and components subjected to impact loading shall be immediately removed from service and shall not be used again for employee protection until inspected and determined by a competent person to be undamaged and suitable for reuse.
- ❑ Provide for prompt rescue of employees in the event of a fall or assure that employees are able to rescue themselves.
- ❑ Personal fall arrest systems shall be inspected prior to each use for wear, damage and other deterioration, and defective components shall be removed from service.
- ❑ Personal fall arrest systems shall not be attached to guardrail systems, nor shall they be attached to hoists unless prior approval is obtained from a competent person.
- ❑ If and when a personal fall arrest system is used at hoist areas, it shall be rigged to allow the movement of the employee only as far as the edge of the walking/working surface.

3.4 Stopping a Fall:

3.4.1 The arresting force on an employee stopped by a fall shall be limited to a maximum arresting force of 1,800 pounds when wearing a body harness.

3.4.2 The fall arrest system shall be rigged such that an employee can neither free fall more than 6 feet, nor contact any lower level.

3.4.3 The fall arrest system shall bring an employee to a complete stop and limit maximum deceleration distance an employee travels to 3.5 feet.

3.4.4 The fall arrest system shall have sufficient strength to withstand twice the potential impact energy of an employee free falling a distance of 6 feet, or the free fall distance permitted by the system, which ever is less.

3.5 Protection From Falling Objects:

3.5.1 When employees are required to work in the near vicinity of others working with materials, tools, or equipment at elevated levels, Barricades around the immediate area of the overhead work shall be erected to prohibit employees from entering the barricaded area.

3.5.2 Employees performing work at elevated levels shall keep tools, materials, and equipment away from the edge to keep potential objects from falling over the side.

3.5.3 Where practical, tools, etc. shall be secured with rope, wire, etc. to keep them from falling.

3.6 Portable Ladders:

3.6.1 Three point climbing is required while ascending/descending ladders.

- ❑ While on ladders, both hands and one foot, or both feet and one hand shall always be in contact with the ladder.

3.6.2 Tools required to perform a task shall be transported by a mechanical carrier such as a tag line, suspended bucket or tool belt.

- ❑ Tools shall not be carried by hand while climbing.
- ❑ Hands must be free to grip the ladder.
- ❑ Tools shall not be carried in clothing pockets.
- ❑ Tools shall be pulled up to the job site only after reaching the area of work.

3.6.3 When work is to be performed from straight/extension ladders, fall protection shall be utilized when heights exceed 6 feet.

3.6.4 Straight ladders shall be tied off at the top to prevent them from moving.

3.6.5 A second person shall steady the ladder at the base while it is being tied off at the top by another employee.

3.6.6 Do not tie off fall protection equipment to the ladder.

3.7 Storage:

3.7.1 A dedicated storage area shall be provided for the storage of fall protection equipment and all components.

3.7.2 The storage area shall keep the equipment clean, dry, and free from oils, chemicals, paints, and excessive heat.

3.8 Inspections:

3.8.1 Fall protection equipment shall be inspected before each use for wear, damage, other deterioration, or other defects.

3.8.2 Quarterly inspections are required to be documented (See Attachment A).

3.9 Elevated Personnel Platforms:

3.9.1 Work performed, regardless of the nature of the work, from personnel platforms raised by forklifts, cranes, scissor lifts, etc., shall require the use of a full body harness and shall be connected to the platform.

3.10 Rescue:

3.10.1 Prompt rescue of employees shall be provided in the event of a fall.

3.10.2 The pre-planning stage prior to the beginning of each elevated work assignment shall be evaluated by the supervisor to provide rescue of employees involved in a fall.

3.11 Fall Protection Plan:

3.11.1 This option is available only to employees engaged in leading edge work who can demonstrate that it is infeasible or it creates a greater hazard to use conventional fall protection equipment.

- ❑ The fall protection plan shall conform to the following provisions:
- ❑ The fall protection plan shall be prepared by a qualified supervisor and developed specifically for the site where the leading edge work is being performed.
- ❑ The fall protection plan shall document the reasons why the use of conventional fall protection systems (guardrail systems, personal fall arrest systems, or safety net systems) are infeasible or why their use would create a greater hazard.
- ❑ The fall protection plan shall identify each location where conventional fall Protection methods cannot be used.
- ❑ These locations shall then be classified as controlled access zones.

3.12 Controlled Access Zones:

3.12.1 When used to control access to areas where leading edge or other operations are taking place the controlled access zone shall be defined by a control line or by any other means that restricts access.

3.12.2 When control lines are used, they shall be erected not less than 6 feet (1.8 m) nor more than 25 feet (7.7 m) from the unprotected or leading edge.

3.12.3 The control line shall extend along the entire length of the unprotected or leading edge and shall be approximately parallel to the unprotected or leading edge.

3.12.4 The control line shall be connected on each side to a guardrail system or wall.

- ❑ Control lines shall consist of ropes, wires, tapes, or equivalent materials.
- ❑ Each line shall be flagged or otherwise clearly marked at not more than 6-foot (1.8 m) intervals with high-visibility material.
- ❑ Each line shall be rigged and supported in such a way that its lowest point (including sag) is not less than 39 inches (1 m) from the walking/working surface and its highest point is not more than 45 inches (1.3 m).
- ❑ Each line shall have a minimum breaking strength of 200 pounds.

3.12.5 Only employees engaged in the related work shall be permitted in the controlled access zone.

3.13 Safety Monitoring System:

3.13.1 When the use of conventional fall protection equipment is deemed infeasible or the use of this equipment creates a greater hazard a "Fall Protection Plan" which includes a safety monitoring system shall be implemented by the supervisor.

3.13.2 Supervisors shall designate a competent person to monitor the safety of other employees. The competent person shall be required to:

- ❑ Recognize fall hazards;
- ❑ Warn employees if they are unaware of fall hazard or are acting in an unsafe manner;
- ❑ Be on the same working surface and in visual contact of working employees;
- ❑ Stay close enough for verbal communication; and
- ❑ Not have other assignments that would take his/her attention from the monitoring function.

3.14 Accident Investigations:

3.14.1 All accidents and near misses must be investigated according to The Company's accident investigation procedure.

- ❑ Changes to the fall protection plan shall be implemented as necessary.

3.15 Training:

3.15.1 Employees who may be exposed to fall hazards shall be trained to recognize the hazards of falling and understand the procedures to be followed in order to minimize these hazards.

3.15.2 The employee will be trained in the use and operation of fall arrest systems, inspections, and maintenance procedures.

3.15.3 Training must be conducted initially, and refresher training conducted annually or as needed due to deficiencies in training, changes in the workplace, changes in fall protection systems or procedures that render previous training obsolete, or
inadequacies in an employee's understanding of previous training.

3.15.4 Training must be documented in writing:

- ❑ Who was trained, when and dates of training.
- ❑ Signature of person providing training and date training was deemed adequate.

3.15.5 Training records shall be retained in the local office.

3.16 Equipment Requirements

3.16.4 On personal fall arrest equipment all D-Rings must be a minimum of 2 ¼ " inside diameter.

3.16.5 Pelican hooks are acceptable as a positioning device, but may not be used as a primary means of connection.

4 References:

4.1 29 CFR 1910.22, Walking and working Surfaces – General Requirements.

4.2 29 CFR 1926.500-503, Fall Protection.

5 Exhibits:

Attachment A – SAFETY HARNESS INSPECTION FORM

Attachment A

SAFETY HARNESS INSPECTION

Date:	Lanyard #:	Inspected by (print):

A safety harness could save your life. A full-body safety harness not only keeps you from striking the ground should you lose your footing, but distributes the impact of breaking your fall among your shoulders, chest and upper thighs. The Occupational Safety and Health Administration requires fall protection for employees working four feet above the ground. But a damaged safety harness is useless, and thorough inspection must be part of your pre-work routine.

Inspect the Webbing (daily & quarterly)

☐ **Accept** ☐ **Reject** The web body of the harness should be inspected daily. Bend all web surfaces, a section at a time, and look for damage. Any cuts, broken fibers or frayed edges will show themselves on close inspection, and each of these will compromise your protection. Broken fibers will show up as fuzzy spots in the webbing. Check all stitching; none should be torn or loose. Check the color of all parts; if anything is faded, it might also be weakened.

Inspect the Hardware (daily & quarterly)

☐ **Accept** ☐ **Reject** Any bent or loose parts should be replaced. No metal grommets should be bent, distorted or missing. All rivets should be tight and undamaged. Buckles should not have any sharp edges or bent parts. Check all D rings and metal loops for cracks or distortion. Check to make sure nothing is loose.

Inspect Ropes and Lanyards (daily & quarterly)

☐ **Accept** ☐ **Reject** Inspect the entire rope and lanyard for damage, taking your time. Broken fibers are dangerous. Also check the rope's diameter; any spots that are thinner than the rest of the rope usually mean stress or damage. The rope should be of uniform thickness along its entire length. For lanyard straps, check for any loose or broken stitching. Also inspect all clips for cracks or distortion.

When to Replace Parts

If you are involved in a fall and the harness catches you: You will probably want to replace the rope or lanyard, at the very least. If your equipment shows any damage, replace the safety harness. Even if you have any doubts about the integrity of the harness, it should be replaced. Take no chances.

Signature Required:

NOTE: Harnesses must be inspected prior to each use (documentation NOT required). Quarterly Inspections ARE required (use this form and keep on file in branch office).