Table of Contents

1.0 PURPOSE 3

2.0 SCOPE 3

3.0 PROCEDURE 3

3.1. Hierarchy of Control for Assessing Fall Hazards 3

3.1.2. Fall Hazard Assessment. 3

3.1.3. Training 3

3.1.4. Unprotected Edges, Sides and Wall Openings 4

3.1.5. Personal Fall Arrest Systems (PFAS) – Components and Design 4

3.1.6. Personal Fall Arrest Systems (PFAS) – Safe Usage 5

3.1.7. Personal Fall Arrest Systems (PFAS) – Inspections 7

3.1.8. Guardrails, Nets, and Floor Openings and Covers 7

3.1.9. Nets. 8

3.1.10. Floor Openings and Covers. 8

3.1.11. Grating/Decking/Floor Removal 9

3.1.12. Portable Ladders. 9

3.1.13. Portable Ladders – Inspections 10

3.1.14. Fixed Ladders 11

3.1.15. Rope, Chain, and Cable Ladders (Non-Rigid Ladders) 11

3.1.16. Ballymore Hydraulic Ladders 12

3.1.17. Fixed Industrial Stairs 12

3.1.18. Lifting of Personnel. 13

3.1.19. Work in Pipe Racks 13

3.1.20. Work on Roofs 13

3.1.21. Working Over or Near Water 13

3.1.22. Specialized Systems 13

3.1.23. Rescue 14

3.2. Responsibilities 14

3.2.1. All Personnel 14

3.2.2. Engineering 15

3.2.3. Safety 15

3.2.4. Management 15

3.2.5. Warehouse 15

4.0 DEFINITIONS 15
5.0 REFERENCES 17
6.0 ATTACHMENTS 17
7.0 REVISION HISTORY 18
ATTACHMENT A – EXAMPLE EQUIPMENT AND HARDWARE CHECKLIST 19
ATTACHMENT B – GRATING/DECKING/FLOOR REMOVAL FORM 20
ATTACHMENT C – DANGER FLOOR OPENING 100% TIE-OFF REQUIRED 22
ATTACHMENT D – DANGER HOLE DO NOT REMOVE COVER 23
ATTACHMENT E – ANNUAL LADDER INSPECTION REPORT 24

1.0 PURPOSE

The purpose of this procedure / program is to ensure that fall hazards are assessed and that personnel are protected from injury. It is to minimize the potential for injuries that result from falls from elevated work locations. This procedure ensures that the proper precautions are taken while working on or from scaffolding, ladders, fixed industrial stairs, unguarded edges, floor openings, pipe racks, aerial lifts, etc.

2.0 SCOPE

This applies to all Galveston Bay Refinery (GBR) employees, contractors, visitors and vendors that are exposed to fall hazards at GBR.

3.0 PROCEDURE

3.1. Hierarchy of Control for Assessing Fall Hazards

3.1.1. There is an order for addressing and assessing fall hazards. When determining the best method to protect employees from a fall hazard, one must attempt the following solutions in order.

3.1.1.1. Hazard Elimination – The best choice for protecting workers from fall hazards is to change the task, process, controls, or other means to eliminate exposure to the hazard.

3.1.1.2. Passive Fall Protection – Fall protection that does not require the wearing or use of personal fall protection equipment (Installing a guardrail or covering a floor opening).

3.1.1.3. Fall Restraint – The prevention of a fall by using a tether (lifeline or lanyard) attached to a user's body holding device that prevents him/her from reaching an unprotected edge or unprotected opening.

3.1.1.4. Fall Arrest – A system designed to stop a person from striking a lower level or obstruction if a fall occurs. Requires the use of a full body harness, a connecting means, a suitable anchorage, planned rescue procedure and proper training of all users.

3.1.1.5. Administrative Controls – Work practices or procedures that are designed to prevent exposure to a fall by signaling or warning an authorized person to avoid approaching a fall hazard.

3.1.2. Fall Hazard Assessment – A plant-wide fall hazard assessment must be conducted to determine locations of existing fall hazards. The assessment must be performed by fall protection qualified persons, owning department designees and the safety department. Determination of the need for additional assessments must be made on an as needed basis.

After determining the locations of hazards GBR must develop a strategy for correcting hazards. This strategy should involve correcting hazards based on level of severity and must use the hierarchy of control for addressing the hazards.

3.1.3. Training - Training is required for employees whose work operations may involve working on an elevated working surface.

3.1.3.1. A training program will be written and provided for each employee who might be exposed to fall hazards. The program will provide instructions to employees and should enable them to recognize when fall hazards exist.

The training should also instruct employees in the procedures to be followed to minimize these hazards.

3.1.3.2. Competent person training should be made available to personnel selected to fulfill this role and provided as deemed appropriate to assist with the selection and safe use of personal fall arrest systems.

3.1.3.3. Retraining must be provided when periodic reviews reveal inadequacies in employees' knowledge or use of this procedure. Retraining must also be provided when a change in an employees' assignment introduces them to new fall hazard – new equipment presents new hazards.

3.1.3.4. The training department will maintain all training records

3.1.4. Unprotected Edges, Sides and Wall Openings

3.1.4.1. Every open-sided floor or platform 4 feet or more above an adjacent floor or ground level shall be guarded by a standard railing on all open sides except where there is an entrance to a ramp, stairway, or fixed ladder. The railing shall be provided with a toe-board wherever there is exposure to falling materials beneath the open sides. See 29 CFR 1910, Subpart D - Walking-Working Surfaces (1910.21-23). Unless a safety net is used as prescribed in the construction safety standard, or an employee is protected by a perimeter guardrail or is working off a portable ladder, the employee shall be safeguarded by a fall restraint system such as a safety belt or a fall protection system such as a harness and self-retracting lanyard or tie off.

NOTE: An exception is when the employer can demonstrate that it is infeasible or creates a greater hazard to use these systems; the employer's qualified person shall develop and implement a fall protection plan (Form PPE-7A) which meets the requirements of paragraph (k) of OSHA 1926.502.

3.1.4.2. For maintenance or construction activities (including truck unloading) on a surface with an unprotected side or edge or construction a leading edge which is six feet or more above a lower level shall be protected from falling by the use of guardrail systems, safety net systems, or personal fall arrest systems (PFAS).

3.1.5. Personal Fall Arrest Systems (PFAS) - Components and Design

3.1.5.1. Personal fall arrest systems include, but are not limited to anchorage points, harnesses, lanyards, rope grab systems, deceleration devices, connecting devices, self-retracting lanyards (SRLs) and buckles.

3.1.5.2. Anchorage points used for attachment of fall protection components must be independent of any anchorage being used to support or suspend platforms and capable of supporting 5,000 pounds per employee attached to it.

NOTE: Questions as to the stability of an anchorage point shall be directed to a Qualified Person.

3.1.5.3. D-rings and snap hooks must have a minimum tensile strength of at least 5,000 pounds. They must be proof-tested to a minimum tensile load of 3,600 pounds without cracking, breaking or taking permanent deformation, the load rating shall be permanently marked on the gate of the snap hook.

3.1.5.4. Fall protection equipment, including lanyards, vertical lifelines, and body harnesses must meet ANSI Standard Z359.1-1992. This number must be

imprinted or otherwise permanently attached to the equipment to certify that it meets the minimum requirements of the standard.

3.1.5.5. Snap-hooks shall be an auto-locking type to prevent unintentional disengagement due to rollout of the snap-hook and have a 3,600 pound rated gate. **Non-locking snap-hooks are prohibited.**

3.1.5.6. Connectors must meet ANSI Standard Z359.1-1992. They must have a corrosion resistant finish, and all surfaces and edges should be smooth to prevent damage to interfacing parts of the system.

3.1.5.7. Rope grabs on vertical lifelines can be used when it is impractical to use a lanyard. When vertical lifelines are used, each worker must be attached to a separate lifeline.

3.1.5.8. 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. Those that do not limit free fall to two feet or less shall be capable of sustaining a minimum tensile load of 5,000 pounds applied to it in the fully extended position.

3.1.5.9. Horizontal Lifelines must be designed, installed, and used under the supervision of a Qualified Person as part of a complete fall arrest system. Before designing a horizontal or vertical lifeline, contact the HESS department.

3.1.5.10. Ropes and straps used in lanyards, lifelines, and strength components of harnesses must be made of synthetic fibers or wire rope.

3.1.5.11. Fall protection equipment must only be used for personnel protection and not for the movement of materials.

3.1.5.12. PFAS and components subjected to a fall or full load shall be immediately removed from service and turned into the safety department.

3.1.5.13. Positioning devices, including ladder-climbing devices, must be rigged so as not to permit a free-fall of more than 2 feet.

3.1.6. Personal Fall Arrest Systems (PFAS) – Safe Usage

3.1.6.1. Any time a worker is working in an area where there is a potential to fall 6 feet or more, (unless working off of a stairway, ramp, run or other walk way above 4 feet, see section 3.1.4), approved types of fall protection equipment must be used. This includes, but is not limited to harness and lifeline, lanyard, self-retracting lifeline, deceleration device.

NOTE: Positioning devices (e.g. body belts) must not be used for fall protection.

NOTE: When working outside of railings or within five feet of water where no railings are present, a personal floatation device must be worn.

3.1.6.2. Free fall distance must never exceed 6 feet, unless equipment has been specifically designed for a greater free fall distance. This equipment must be used only when all other options are infeasible.

3.1.6.3. The calculated clearance for the PFAS used must be completed when selecting the correct PFAS. This is the vertical distance required to arrest a fall before the user strikes the ground or the nearest hazard.

NOTE: The user, competent people, and qualified people shall understand clearance requirements of individual systems.

3.1.6.4. Personnel using a personal fall arrest system must practice 100% tie off.

NOTE: Retractable lifelines or lanyards must not be used where they create a swing hazard. In these situations, a horizontal lifeline system or other acceptable means must be engineered.

3.1.6.5. Self-Retracting Lanyards (SRL) are recommended when:

3.1.6.5.1. Employees and contractors are at risk of contacting a lower level in the event of a fall.

3.1.6.5.2. There is less than 18 feet of clearance for a fall hazard.

3.1.6.5.3. Self-Retracting Lanyards (SRL's) must meet ANSI Z359.14.

3.1.6.6. SRL's Leading Edge (LE)

3.1.6.6.1. SRL's anchored below the user's dorsal D-ring must be approved by the manufacturer for such use. A fall while anchored below the dorsal D-ring with an unapproved SRL can result in failure of the equipment.

3.1.6.6.2. SRL's utilized for leading edge work must be approved by the manufacturer for such use. A fall from a leading edge while using an unapproved SRL can result in failure of the equipment.

3.1.6.7. A lanyard can be tied back to itself only if specifically designed to do so. Only shock absorbing lanyards should be used.

NOTE: Shock absorbing lanyards cannot be used with SRLs.

3.1.6.8. Knots in lifelines or lanyards can reduce their strength by up to 50% and shall not be permitted.

3.1.6.9. Lanyards must never be lengthened by connecting two or more together.

3.1.6.10. Unless snaphooks are designed for the following connections they must not be engaged to: each other, directly to webbing or wire rope, to a D-ring to which another snaphook or other connector is attached or to any object that is incompatibly shaped, such that unintentional disengagement could occur by the connection.

3.1.6.11. Tie-offs where the line passes over or around sharp edges can damage or reduce the strength of a lanyard or lifeline and must be avoided. A tie-off adapter strap should be utilized as an anchorage point when anchoring to structural members or piping.

3.1.6.12. Each individual climbing a ladder that has been equipped with the TO-100 fall arrest system located at Bay Plant shall follow safe work practices:

3.1.6.12.1. Visually inspect system components for wear, cracks, or damage.

3.1.6.12.2. Acquire this specific safety harness from operations if you do not have a chest d-ring on your safety harness. Note: Under no circumstances should the lanyard be attached to the back d-ring of a harness when utilizing this fall arrest system.

3.1.6.12.3. Once the lanyard is attached to your front d-ring, slide the cam into the track. The cam fits into the junction point of the track and can only be inserted one way.

3.1.6.12.4. The cam will slide alongside personnel while ascending and descending the ladder; should a slip of fall occur, the cam will catch and lock into place.

3.1.6.12.5. Junction points are available at each platform for personnel to enter or exit the system. Utilize further fall protection as needed once exiting the TO-100 fall arrest system.

3.1.7. Personal Fall Arrest Systems (PFAS) - Inspections

3.1.7.1. PFAS (e.g. harnesses, lanyards, connectors, SRLs, retrieval devices etc.) must be inspected by the person using it, prior to each use. Any defective components must be immediately removed from service, tagged and turned into the safety department. Replacement components should be ordered through the employee's supervisor in consultation with the HESS department.

3.1.7.2. Harnesses, lanyards and connectors for PFAS must have a documented inspection conducted on an annual basis. See Attachment A – Fall Protection Equipment and Hardware Checklist for an example.

3.1.7.3. SRLs, retrieval devices, lifelines and like equipment must be inspected by a competent or a qualified person on an annual basis. This inspection is in addition to inspections conducted by users prior to each use.

3.1.8. Guardrails, Nets, and Floor Openings and Covers – This section is to assist personnel with the ability to recognize appropriate use for guardrails. If personnel identify a potential need for guardrails, they should contact the HESS department and their supervisor.

3.1.8.1. Standard guardrails consist of a top rail, mid-rail, and posts and must have a vertical height of approximately 42 inches (3 ½ feet) from the walking/working surface. The mid-rail must be positioned approximately halfway between the top rail and the walking/working surface.

3.1.8.2. Guardrails must be capable of withstanding at least 200 pounds in any direction on any point of the top rail.

3.1.8.3. Each individual shall be protected from objects falling from higher levels by using one or more of the following methods:

3.1.8.3.1. Toe boards, screens or guardrail systems.

3.1.8.3.2. Canopy structures and keeping objects far enough away from edges so that they would not go over the edge if accidentally bumped or displaced.

3.1.8.3.3. Barricade the area to which object could fall, preventing individuals from entering the barricaded area, and keeping objects far enough away from the edges so that they would not go over the edge if accidentally bumped or displaced.

3.1.8.4. If vertical members are used in place of mid-rails, they must be spaced no more than 19 inches apart.

3.1.8.5. Guardrails must be surfaced to prevent injury to an employee from punctures or lacerations and to prevent the snagging of clothing.

3.1.8.6. When installing new mid-rails, steel banding or plastic banding shall not be used.

3.1.8.7. The ends of all top rails and mid-rails must not overhang the terminal posts, except where such overhang does not constitute a projection hazard.

3.1.8.8. When a guardrail has been temporarily removed, chains or wire rope capable of withstanding a load of at least 200 pounds in any direction may be installed/used. The chain or wire rope shall be taut and flagged at 6 foot intervals with high-visibility material.

3.1.8.9. When guardrails are used at a hoisting area or any other area that would require periodic removal of the guardrail to allow for work to be completed, a removable guardrail shall be placed across the opening when work is not taking place.

3.1.9. Nets – Not used frequently within the refinery. Safety nets require planning. Consultation with the HESS department is required prior to the use of nets.

3.1.10. Floor Openings and Covers – This section is written to assist personnel's ability to recognize approximate design and appropriate use of floor opening covers. If personnel identify the need to have a cover designed, they must contact their supervisor for assistance.

3.1.10.1. All unguarded floor openings/holes must be covered immediately when they are created. Temporary floor openings must be guarded with a cover, guardrail, or a continuous attendant.

3.1.10.2. All covers must be capable of supporting at least twice the weight of employees, equipment and material that may be imposed on the cover at any one time.

3.1.10.3. When a permanent floor opening is not in use, it must be closed with a cover, or a guardrail must be provided along all unprotected edges.

3.1.10.4. When guardrails are installed around floor openings used for the passage of materials, the opening must be guarded on two sides by permanent guardrails. Two sides may have removable guardrails to allow for the passage of materials.

3.1.10.5. Ladder ways must be provided with a gate to protect employees from a fall into them. Many areas of the plant have chains in such areas. As new

installations are made and/or chains are repaired replaced, gates must be used. Personnel working on platforms are responsible for ensuring gates/chains to ladder ways are closed.

3.1.10.6. Temporary covers must be installed and secured so as to prevent them from being removed or displaced. This means they must be nailed, bolted or otherwise fastened immediately. Covers must be marked with the words "hole" or "cover" to provide a warning to the hazard.

3.1.11. Grating/Decking/Floor Removal

3.1.11.1. Prior to the removal of any part of grating, decking, handrail or floor a Grating/Decking/Floor Removal Form (Attachment B) shall be completed and approved by the individuals indicated on the form.

3.1.11.2. A Job Safety Analysis shall be completed and signed by supervisor with considerations made for the prevention of tool drops, adverse weather conditions, emergency evacuation, etc.

3.1.11.3. While completing the Safe Work Permit a Post Joint Jobsite Visit shall be required by the Owning Department.

3.1.11.4. A handrail meeting 3.1.8 fall protection requirements with appropriate signage (Attachment D) shall be erected at all approaches to the area where the grating, decking or flooring will be removed.

3.1.11.5. An individual will be assigned as the attendant while work is being conducted and will be responsible for keeping individuals not associated with the work tasks from the work area.

3.1.11.6. Any personnel crossing inside the handrail shall wear an appropriate personal fall arrest system.

3.1.11.7. If the fall distance is less than 4 feet, fall protection and the use of an attendant are not required. A hard barricade with signs must be installed prior to grating being removed.

3.1.11.8. The area below the opening that may be affected by overhead hazards shall be barricaded, attended and/or signs-posted to prevent access.

3.1.11.9. Floor openings shall be covered in accordance with 3.1.10 when required.

3.1.11.10. At the end of each shift the Owning Department shall conduct the Post Joint Jobsite Visit if required with the work group to ensure proper re-securing or covering of grating, decking, or floor openings.

3.1.11.11. Grating and Platform Survey Checklist shall be completed by the servicing group during the final Post Joint Jobsite Visit.

3.1.12. Portable Ladders – There are two keys to the safe use of a portable ladder: select the right ladder for the task and use the ladder properly.

3.1.12.1. Wooden ladders are prohibited. Metal ladders are not to be used in close proximity to electrical lines or within electrical control buildings like substations. Fiberglass ladders may be used in all areas and are the recommended type. It is important to avoid storing fiberglass ladders where there may be prolonged exposure to sunlight.

3.1.12.2. Determine how much weight the ladder will have to support. The ladder should be selected to be sufficient for your weight plus the weight of any

tools and materials you're carrying. Each ladder has a sticker to indicate the allowable loading. Ladders without this sticker may not be used in the refinery. All straight, extension and stepladders shall be a Type 1A Industrial rated.

3.1.12.3. Keep the ladder in good condition and visually inspect it prior to each use. Look for broken rungs, split side rails and loose connections. Any ladders that are in poor condition should be disposed of immediately.

3.1.12.4. Place the ladder so that the base is out one foot for every four feet of height.

3.1.12.5. If you'll step off of the ladder onto another surface, the ladder should extend three feet above the surface being climbed on to.

3.1.12.6. Barricade or set up cones at the ladder's base when using a ladder in an aisle or corridor.

3.1.12.7. Always face the ladder while climbing and descending. Use both hands when climbing. If you'll need tools or equipment while you are on the ladder, hoist them up when needed or wear a tool belt.

3.1.12.8. Don't stretch in order to reach something. Climb down and move your ladder. Place the ladder so the work can be done without leaning out more than 12 inches beyond the side rails.

3.1.12.9. Only one person is permitted on a ladder at any time.

3.1.12.10. Ladders must not be used as skids, braces, scaffold members, or for any other purpose than that for which they are intended.

3.1.12.11. Stepladders – Fully open stepladders and lock the spreaders before climbing. Do not stand or sit on the top two rungs.

3.1.12.12. Fall Protection is not required while working off a step ladder, unless on elevated platform adjacent to an unprotected edge.

3.1.12.13. Fall Protection is required while working at or above 6' off a straight / extension ladder when three points of contact cannot be maintained.

3.1.12.14. Handmade ladders are not permitted at the Galveston Bay Refinery.

3.1.12.15. Extension ladders – Secure the foot of the ladder firmly on a level surface before extending it. Do not separate extension ladders into their pieces or use pieces of an extension ladders that have been separated. Carefully raise the ladder. Extend it with the help of a co-worker. Secure the ladder at the top to prevent slippage. The first person to climb the ladder will secure it. Overlap each section depending on the ladder's length.

- Three foot overlap for 32-foot ladder
- Four foot overlap for 32 – 36-foot ladder
- Five foot overlap for 36 – 48-foot ladder
- Six foot overlap for 48-foot ladder

3.1.13. Portable Ladders - Inspections

3.1.13.1. In addition to visual inspections before each use, portable ladders must get a documented inspection every quarter or after any event that could affect their safe use, using the Pride System. If defects are found, the ladder must be taken out of service and tagged as unusable until the ladder has been

repaired. If the ladder is not capable of being repaired, it must be discarded or destroyed.

3.1.13.2. Each portable ladder must have an inspection tag attached and the inspection documented in PRIDE/RADAR or Attachment E Ladder Inspection Form or third party inspection group.

3.1.13.3. All repairs shall be in accordance with the manufacturer's recommendations. MPC employees shall not attempt to repair defective portable ladders due to liability issues.

3.1.14. Fixed Ladders

3.1.14.1. Cages must be provided on all fixed ladders longer than 20 feet unless the ladder is equipped with a ladder climbing device, the ladder is equipped with a self-retracting lifeline or each section of the ladder does not exceed 20 feet and has offset landing platforms with self-closing gates at each ladder transition.

3.1.15. Rope, Chain, and Cable Ladders (Non-Rigid Ladders)

3.1.15.1. Rope, chain and cable ladders (and any other form of non-rigid ladder) shall not be used within the site except where rigid metal ladders are not feasible, such as unique confined space entry applications.

3.1.15.2. Each use of rope, chain or cable ladders requires authorization from either the GBR Plant Manager, the GBR HESS Manager, or their delegates (Form PPE-7B), and the use of a fall arrest/protection system (e.g., retractable lifeline) if greater than six (6) feet.

3.1.15.3. Authorization will be documented using Form PPE-7B. A copy of the rope, chain or cable ladder authorization must be kept with the Safe Work Permit.

3.1.15.4. Any use of rope, chain or cable ladders must satisfy the following installation and safety requirements:

3.1.15.4.1. A "standoff" must be used to allow for a proper handgrip and foothold.

3.1.15.4.2. Rope, chain or cable ladders and the "standoff" must be capable of supporting a 250 lb. working load.

3.1.15.4.3. Rope, chain or cable ladders must be single length. They cannot be "spliced" together to achieve a greater length.

3.1.15.4.4. The rope, chain or cable ladder must be protected from sharp edges and abrasion that could cause the rope, chain or cable to fray or wear.

3.1.15.4.5. Rope, chain or cable ladders must be secured at the top and bottom, and be made as taut as possible.

3.1.15.4.6. To the extent possible, a rest platform should be available every 20 feet.

3.1.15.4.7. A fall arrest/protection system (e.g., safety harness and self-retracting lifeline) must be used if the fall potential is greater than six (6) feet.

3.1.15.4.7.1. The fall arrest/protection system must be installed and used in accordance with the manufacturer's instructions.

3.1.15.4.7.2. A snaphook retrieval line (e.g., rope) must be attached near the end of the automatic self-retracting lifeline (e.g., yo-yo) and readily accessible to employees and contractors when retrieving the device for use prior to moving up or down.

3.1.15.4.7.3. Individuals using rope, chain or cable ladders must be instructed in the proper technique for ascending and descending the ladder.

3.1.16. Ballymore Hydraulic Ladders

3.1.16.1. Ballymore equipment is considered to be a specialized ladder and is not to be used in place of scaffolding for overhead work by Servicing Groups. The work platform of the Ballymore is not large enough to safely perform work other than jobs usually done from a step or extension ladder.

3.1.16.2. Ballymore ladders should be used as a work platform and should not be used as an access ladder to access other work platforms or levels.

3.1.17. Fixed Industrial Stairs

3.1.17.1. Generally, fixed stairs must be provided for access from one structure level to another when operations require regular travel between the two levels, or if the carrying of tools or equipment by hand is normally required.

3.1.17.2. Riser height and tread width shall be reasonably uniform throughout any flight of stairs. All treads shall be reasonably slip resistant.

3.1.17.3. Stairways must have an angle between 30 and 50 degrees to the horizontal.

3.1.17.4. If any component of a stairway (i.e., a step, guardrail, tread, etc.) is damaged and will prevent safe usage, the top and bottom of the stairway should be blocked off and/or flagged. The stairway should not be used until the problem is fixed.

3.1.17.5. Standard railings shall be provided on the open sides of all exposed stairways and stair platforms. Handrails shall be provided on at least one side of closed stairways preferably on the right side descending. Railings shall be between 30 and 34 inches from the stairs, with midrails.

3.1.17.6. When ascending or descending a stairway, the following safety precautions should be used:

- Always have at least one hand on the guardrail/handrail at all times.
- Never carry anything up or down the stairs that obstructs vision or requires both hands.
- Never run up or down a stairway.

3.1.18. Lifting of Personnel – This section includes the fall protection requirements for aerial lifts. Additional information on aerial lifts is in the GBR-HESS-ME-03 Mobile Elevated Work Platform Procedure.

3.1.18.1. A safety harness and lanyard which is in compliance with this procedure shall be affixed to attachment points provided by the manufacturer.

3.1.19. Work in Pipe Racks

3.1.19.1. Safety harnesses with lanyards must be worn while working in or on pipe racks (100 % tie off). Minimize walking on pipe racks because of the unique potential fall hazard involved. Use ladders, scaffolds, aerial lifts, platforms, etc., to minimize the need to walk on pipe racks.

3.1.19.2. When able, retractable lanyards are the preferred method of fall protection over double lanyards.

3.1.20. Work on Roofs

3.1.20.1. Each employee engaged in activities on roofs (tanks, buildings) with unprotected sides shall be protected from falling by guardrail systems, safety net systems, PFAS, Warning Line Systems (WLS) and safety net system, or WLS and personal fall arrest system. Warning Line Systems used in conjunction with a safety monitor are only allowed for those working in the roofing trade and performing roofing work. Warning Line Systems may be used to alert non-roofers of the roof edge. Non-roofers are not allowed to be within 15 feet of the roof edge while unprotected.

3.1.20.2. All roofing work must have an established fall protection plan (Form PPE-7A) that follows OSHA standards and is approved by the Safety Department and Maintenance Department before the start of work if a guardrail system, fall restraint system or fall arrest system is not installed.

3.1.21. Working Over or Near Water

3.1.21.1. If utilizing PFD's with a full body harness, the full body harness shall be worn under the PFD. The type of PFD used shall not interfere with proper use of a full body harness and lanyard.

3.1.21.2. When 100% tie-off is maintained to a secure anchorage point and prevents workers from contacting the water, the employee has effectively removed the drowning hazard and PFD's are not required.

3.1.21.3. When working over or near water where the distance from the walking/working surface to the water's surface is greater than 25 ft. fall protection shall be required and PFD's are not required.

3.1.21.4. When working over water, PFD, lifesaving equipment and safety skiffs shall be used as required.

3.1.21.5. When working from/in machinery, aerial lift equipment or other movable work platforms over water, fall protection is not required however, PFD's are required.

3.1.22. Specialized Systems

3.1.22.1. Where conventional fall protection systems (i.e., guardrails, safety nets, PFAS) are infeasible, such as work on tank roofs and building roofs when anchor points are not available, specialized systems shall be used in conjunction with a Fall Protection Plan (Form PPE-7A). Infeasible means

that it is impossible to perform the work using conventional systems or that it is technically impossible to use any one of these systems to adequately provide fall protection.

3.1.22.2. Prior to specialized systems being utilized, a Fall Protection Plan (Form PPE-7A) shall be submitted for review to the Safety Department. A member of the HESS safety professional staff should be consulted in those situations not specifically addressed by this policy and Form PPE-7A completed.

NOTE: At times, workers can be exposed to a fall capable of resulting in significant injury at lower heights (e.g., working off of platform as low as 4 feet without standard guardrail, working close to six feet off of the ground without a suitable overhead anchor point). In these situations, workers will use specialized fall protection systems, other than typical personal fall arrest systems (e.g., harness and six foot lanyard attached to acceptable anchor point). At lower heights, typical personal fall arrest systems may not be effective in preventing employees from falling onto, and making contact with lower levels. Examples include, but are not limited to:

- Installing scaffold guardrail and/or platforms
- Use of aerial lifts
- Self-retracting lanyards/"yo-yo" (the maximum arresting limits of many SRLs limit falls to less than 4 feet. One must check the self-retracting lanyard to ensure this before use).
- Fall Restraint – often shorter lanyards and self-retracting lanyards can be used as fall restraint, so as to prevent an employee from reaching the edge(s) where they would be exposed to a fall.

Unique fall hazards present themselves in the refinery. If the use of the listed suggestions cannot be put to use, consult your supervisor, safety professional and a qualified person to develop a workable fall protection plan (Form PPE-7A) for that particular job.

3.1.23. Rescue

3.1.23.1. As there is a hierarchy of control for eliminating/reducing fall hazards, there is a hierarchy of control that employees should use for rescue associated with falls from heights. Whenever employees will be working in elevated areas considerations must be given by the work party and the owning department as to how a fall victim would be rescued in the event of a fall.

3.1.23.2. Elimination – Naturally, the first method of ensuring there are no rescues needed would be to implement and use a fall restraint system (e.g. roof horizontal lifeline system that prevents fall from the roof).

3.1.23.3. Planned Rescue – Some individuals are trained in self rescue (e.g. confined space rescuers).

3.1.23.4. Response rescue – GBR ERT.

3.2. Responsibilities

3.2.1. All Personnel

Each individual has the responsibility to recognize fall hazards and take preventative measures. Each employee shall visually inspect personal fall protection equipment

(PFPE) before use, and shall use it in accordance with this practice and the manufacturer's instructions. Defective PFPE shall be immediately removed from service, tagged "DO NOT USE" and MPC equipment shall be returned to the warehouse. Contractors shall have procedures for disposal of defective equipment.

Personal fall protection systems and components which have been subjected to impact loading from the arrest of an employee's fall shall be immediately removed from service. Anchor points and lifelines shall not be used until inspected by a competent person and found to be undamaged and suitable to be used. Harnesses, lanyards and deceleration devices that have been subjected to impact loading shall be returned to the warehouse to be discarded. Retractable lifelines which have been subjected to impact loading shall be returned to the warehouse for handling per the manufacturer's instructions.

3.2.2. Engineering

Engineering is responsible for designing or verifying that anchor points and lifeline system standards are adequate to handle all fall arrest loads imposed by the attachment of PFPE. Fall protection needs shall be included in the detailed design and constructability of new and revamped facilities. Engineering is also responsible for designing or verifying guardrail or alternate fall protection systems.

3.2.3. Safety

The Safety Department is responsible for approving all MPC PFPE equipment.

3.2.4. Management

The Supervisor has overall responsibility to assure that the employee is a qualified individual. Management has overall responsibility to enforce the policy and verify that appropriate emergency procedures are in place for each work situation where a fall exposure exists.

3.2.5. Warehouse

The Warehouse is responsible to maintain an adequate inventory PFPE which meets OSHA standards. The Warehouse is also responsible for proper disposal of PFPE subjected to impact loading or returned as defective.

4.0 DEFINITIONS

4.1. Anchor Point – Refers to a secure point of attachment for lifelines, lanyards or deceleration devices, capable of supporting 5,000 pounds per worker.

4.2. Calculated Clearance – The calculated total amount of vertical distance that will be used by a fall arrest system that has fully deployed. Calculated/clearance is usually calculated using a worst-case scenario and is then compared to the available clearance.

4.3. Connector – A device, component or element of a personal fall arrest system that is used to couple parts of the system together.

4.4. Competent Person – A person who has been trained to receive this designation. A competent person is capable of identifying existing and predictable workplace hazards or working conditions which may be hazardous or dangerous to employees. A competent person has the authority to take prompt corrective measures to eliminate these hazards and conditions.

4.5. Deceleration Device – Any mechanism, such as a rope grab, ripstitch lanyard, automatic retracting lanyard/lifeline, etc., which serves to dissipate a substantial amount of energy during a fall arrest, or otherwise limit the energy imposed on a worker during fall arrest.

4.6. Energy (Shock) Absorber – A component whose primary function is to dissipate energy and limit deceleration forces, which the system imposes on the body during fall arrest.

4.7. Fall Protection Plan - Option 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 per OSHA 29 CFR 1926.502 (k). Form PPE-7A must be completed.

4.8. Floor Hole – An opening, gap, or void measuring less than 12 inches but more than 2 inches in its least dimension in a floor, roof or other walking/working surface through which persons may fall.

4.9. Floor Opening – An opening, gap or void measuring 12 or more inches in its least dimension, in any floor, roof or other walking/working surface through which persons may fall.

4.10. Free Fall Distance – The vertical displacement of the fall arrest attachment point on the employee's 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.

4.11. Guardrail – A barrier capable of withstanding a load of at least 200 pounds in any direction erected to prevent workers from falling to a lower level.

4.12. Harness (Full Body) – A component with a design of straps which is fastened about the person in a manner so as to contain the torso and distribute the fall arrest forces over at least the upper thighs, pelvis, chest and shoulders with means for attaching it to other components of systems (lanyard, lifeline or energy absorber).

4.13. Horizontal Life Line – A component of a horizontal lifeline subsystem, which consists of a flexible line with connectors or other coupling means at both ends for securing it horizontally between two anchors or anchorage connectors.

4.14. Lanyard – A flexible line of rope, wire rope, or strap which generally has a connector at each end for connecting the body harness to a fall arrester, energy absorber, anchorage connector or anchorage.

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

4.16. Opening – A gap or void 30 inches or more high and 18 inches or wider, in a wall or partition, through which personnel can fall to a lower level.

4.17. Personal Fall Arrest System (PFAS) – A system used to arrest a worker in a fall from a working level. It consists of an anchorage point, connectors, a body harness and may include a lanyard, deceleration device, lifeline, or suitable combination of these.

4.18. Positioning Device – A body belt or body harness rigged to allow a worker to be supported on an elevated vertical surface, such as a wall, with both hands free while leaning.

4.19. Qualified Person – A person with a recognized degree or professional certificate as extensive knowledge, training, and experience in the fall protection and rescue field. Someone who is capable of designing, analyzing, evaluating, and specifying fall protection and rescue systems to the extent required by this standard (ANSI/ASSE Z359.0-2007).

4.20. Safety Monitor – A competent person designated to oversee work with a controlled access zone when a fall protection plan is used to reduce fall hazards. The safety monitor must be in close

proximity to the workers being protected and has no other duties other than "watching and warning."

4.21. Self-Retracting Lifeline or Lanyard – A connecting means that automatically adjust its length as the user moves toward and away from the anchorage. The SRL housing typically contains a spring-loaded drum on which a line is wound and unwound. The device has a mechanism to lock the drum if the user falls. SRL's must meet the requirements of ANSI Z359.14 standard.

4.22. Shock Absorbing Lanyard – A specially designed lanyard that elongates during a fall to significantly reduce fall arresting forces.

4.23. Type 1A Ladder – Extra heavy industrial ladder that will support 300 pounds.

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

4.25. Warning Line System – A system of ropes, wires, or safety chains to warn and keep workers away from a fall hazard. The distance between the warning and hazard will depend on the type of work and whether the warning line system is also used as a control line to mark the perimeter of a controlled access zone.

4.26. 100% Tie-Off – A method of transferring from one anchorage or fall arrest system to another using a y-lanyard or two connecting means. The user must remain connected to at least one anchorage/fall arrest system while advancing to connect to the next.

5.0 REFERENCES

5.1. OSHA 29 CFR 1926, Subpart M – Fall Protection (1926.500-503)

5.2. OSHA 29 CFR 1926.1053, Ladders

5.3. OSHA 29 CFR 1910, Subpart D - Walking-Working Surfaces (1910.21-23, 25-27)

5.4. ANSI Standard Z359.1 – 1992 – Safety Belts, Harnesses, Lanyards, Lifelines & Drop Lines for Construction and Industry.

5.5. GBR-HESS-PR-03 Safe Work Permit

5.6. GBR-HESS-ME-03 Mobile Elevated Work Platforms

6.0 ATTACHMENTS

6.1. Attachment A – Example Fall Protection Equipment and Hardware Checklist

6.2. Attachment B – Grating/Decking/Floor Removal Form

6.3. Attachment C – Danger Floor Opening 100% Tie-Off Required

6.4. Attachment D – Danger Hole Do Not Remove Cover

6.5. Attachment E – Annual Ladder Inspection Report

7.0 REVISION HISTORY

Revision Number	Description of Change	Written by	Approved by	Revision Date	Effective Date
0	Original issue. Supersedes GBR-HESS-PPE-07 and TRD RSW-0006-TC. Updated truck unlading guidelines, falling objects guidelines, ladder qualifications and inspection process, and guidance for working over water. Updated under MOC M20179954-001	T. Brown	C. Staats	10/27/2017	11/13/2017
1	Grating and Platform Survey Checklist added to Grating Removal Form under MOC 58417.	T. Brown	V. Meeks	3/6/2019	3/7/2019

Attachment A

EXAMPLE Fall Protection Equipment and Hardware Checklist

Harness Identificaion:_____

WEBBING		
Cuts	OK	DEFECTIVE
Fraying	OK	DEFECTIVE
Abrasions	OK	DEFECTIVE
Burns	OK	DEFECTIVE
Chemical Exposure	OK	DEFECTIVE
BUCKLES		
Deformed	OK	DEFECTIVE
Corrosion – Rust	OK	DEFECTIVE
Cracks	OK	DEFECTIVE
Chemical Exposure	OK	DEFECTIVE

Lanyard Identification_____

WEBBING		
Cuts	OK	DEFECTIVE
Fraying	OK	DEFECTIVE
Abrasions	OK	DEFECTIVE
Burns	OK	DEFECTIVE
Chemical Exposure	OK	DEFECTIVE
SNAPS		
Gate Works Freely	OK	DEFECTIVE
Double Lock Works Correctly	OK	DEFECTIVE
Deformed	OK	DEFECTIVE
Chemical Exposure	OK	DEFECTIVE
Corrosion - Rust	OK	DEFECTIVE
SHOCK ABSORBER	OK	DEFECTIVE

If defective is answered for any of the above questions, the equipment should be tagged as unusable and removed from service until the defect is corrected. If the defect cannot be corrected, the equipment should be destroyed and discarded. If equipment passes inspection the attached tag should be punched on the appropriate date.

Marathon Petroleum Company LP

SAFE WORK PERMIT # _____

ATTACHMENT B
GRATING / DECKING / FLOOR/ HANDRAIL REMOVAL FORM

DISPLAY THIS FORM WITH THE HARD COPY OF THE SAFE WORK PERMIT AT THE JOBSITE.
ATTACH THE FORM TO THE BACK OF THE PERMIT AT THE JOB'S END.

Date:		Starting Time:	_____a.m._____ p.m.
Company:		Date :	From _____ To _____
Location:			
Nature of Work:			
Observer (Name):			

Process Review – Consider Tool Drop Protection, Weather Conditions, Emergency Evacuation, etc. when completing Safety reviews.

☐ JSA Completed and Signed by Supervisor	☐ Barricades In Place
☐ Hazard Signs Posted (Attachment D or E)	☐ Personal Fall Arrest System
☐ Area Inspected	☐ Cover
☐ Attendant Assigned	☐ Cover Anchored Down
☐ Additional Hazards or Safeguards	

The penetration / hole must be covered or fixed handrails installed at all times.
The penetration / hole cover must be anchored / secured and have a sign in place at all times
"DANGER FLOOR OPENING 100% TIE-OFF REQUIRED" or "DANGER HOLE – DO NOT REMOVE COVER"

	Name	Signature	Date
Initiator			
Project Coordinator / Supervisor			
Owning Department Supervisor			
HESS Representative			

Handing Back a Safe Work Area – TO BE COMPLETED IN A POST JOINT JOBSITE VISIT (PJJSV)

Grating and Platform Checklist completed by Servicing Group?	☐ Yes	☐ No

*Grating and Platform Survey Checklist shall be completed during the Post Joint Jobsite Visit for Grating and Platform removals.
*Handrail removal does not require Grating and Platform Checklist to be completed.

Area Inspected – Completed by PJJSV	☐ Yes	☐ No

Owning Department Supervisor (Print Name):	
Signature:	
Date:	
Time:	

Grating and Platform Survey Checklist

Area:		**Date:**	
Unit:		**Comments:**	
Completed by (Name):			

Checklist Inspection Guidance

The load bearing edges are generally the long ends of the grating where the bearing ends of the bearing bars sit on the support steel or concrete.

Check for signs of excessive corrosion and physical damage to the grating, supports and grating clips

	Grating - General Conditions	Yes	No	Corrective Actions
1	Is the grating missing?			**If yes**, hard barricade area immediately, notify supervisor and enter a Safety Work Order if the hazard cannot be fixed immediately
2	Is the grating bent, bowed, not level, or flexes (greater than 1/4") when walked on?			**If yes**, hard barricade area immediately, notify supervisor and enter a Safety Work Order if the hazard cannot be fixed immediately
3	Is the grating supported on load bearing edges with at least 1" of overlap onto the supports?			**If no**, hard barricade area immediately, notify supervisor and enter a Safety Work Order if the hazard cannot be fixed immediately
4	Is the grating installed with the serrated-surface facing up?			**If no**, hard barricade area immediately, notify supervisor and enter a Safety Work Order if the hazard cannot be fixed immediately
5	For penetrations in the grating is a toe-board installed?			**If no**, hard barricade area immediately, notify supervisor and enter a Safety Work Order if the hazard cannot be fixed immediately
6	Is grating and support system corroded to a point where the integrity of the grating is compromised?			**If yes**, hard barricade area immediately, notify supervisor and enter a Safety Work Order if the hazard cannot be fixed immediately
7	Is the grating size and/or configuration such that the grating will not fall between the supports?			**If no**, hard barricade area immediately, notify supervisor and enter a Safety Work Order if the hazard cannot be fixed immediately
	Grating - Secured Down with Clips	**Yes**	**No**	**Corrective Actions**
8	Are at least 2 "tie down" clips installed on each support (e.g. 6-8 clips per grating section)?			**If no,** hard barricade area immediately, notify supervisor and enter a Safety Work Order if the hazard cannot be fixed immediately
9	Are grating clips tightened and secured in place?			**If no,** hard barricade area immediately, notify supervisor and enter a Safety Work Order if the hazard cannot be fixed immediately
	Grating - Welded in Place	**Yes**	**No**	**Corrective Actions**
10	Is the grating welded at a minimum of two places per support?			**If no,** hard barricade area immediately, notify supervisor and enter a Safety Work Order if the hazard cannot be fixed immediately

Attachment C

FLOOR OPENING
100% TIE-OFF REQUIRED!

ATTACHMENT D

HOLE
DO NOT REMOVE
COVER!

ATTACHMENT E

Annual Ladder Inspection Report

SAFETY MANUFACTURING SYSTEMS
LADDER INSPECTION REPORT

It is recommended that ladders for external use be inspected on an annual basis. More frequent inspection may be required depending upon the ladder location, use, workplace environment or as the result of any incident or exposure. Inspection records should be retained for the working life of the ladder. Note: Adequate risk assessment will give guidance on appropriate periods between inspections.

1. Company name / Workplace location_____
2. Owner of ladder _____
3. Type of ladder _____
4. Ladder identification number / tag ID _____
5. Normal place and type of use _____
6. Name of Inspector _____
7. Date & Time of Inspection _____
8. Date of next inspection _____

Ladder Inspection	Y	N
Is the ladder free from any modification, such as being painted, shortened, etc.		
Are the stiles (uprights) free of damage or excessive wear		
Are the rungs (steps) clean and free of damage or excessive wear		
Are all rungs (steps) and fittings in place (e.g. slip resistant feet on metal ladders, etc.?)		
Are the rungs and stiles secure and free from movement		
Is the ladder free from distortion or warping that could affect its stability		
Is the ladder free from damage such as cracks, corrosion, degradation, dents, etc.		
Are all fittings such as ropes, pulleys or hinges free from wear or damage		
Are all required labels and warning information legible and in place		

If the answer to any of the above checklist questions is NO, the ladder should be tagged with