## 1.0 PURPOSE

1.1 To assure safe design construction, testing, use and maintenance of manbuckets and boatswain's chairs and the safe hoisting of manbuckets and boatswain's on the load line of cranes or derricks.

## 2.0 SCOPE

2.1 The Marathon manbucket will only be used on Michigan Refining Division property. Contractor manbuckets must meet regulatory specification for construction before being brought onto Marathon property.

2.2 Boatswain's chairs for inspection of stacks are also covered by this procedure.

2.3 This procedure applies to all persons, including all visitors and contractors, working on Michigan Refining Division property.

## 3.0 GUIDELINES

3.1 Usage

3.1.1 The use of a crane or derrick to hoist employees on a Suspended Personnel Platform (SPP) is prohibited, except when the erection, use, and dismantling of conventional means of reaching the work site, such as a personnel hoist, ladder, stairway, aerial lift, elevating work platform or scaffold would be more hazardous, or is not practical because of structural design or work site conditions.

3.1.2 Contractors are not allowed to use Marathon's manbucket unless approved by the Maintenance Manager.

3.1.3 Information on the use of cranes concerning clearance from electrical power lines, weather conditions and limitations, and idle cranes can be found in the Rigging and Lifting Procedure.

3.2 CRANES AND DERRICKS

3.2.1 Operation

3.2.1.1 Hoisting of the SPP shall be performed in a slow, controlled, cautious manner with no sudden movement of the crane, derrick or SPP. Vertical line speeds are not to exceed 75' per minute during hoisting with personnel in the SPP.

3.2.1.2 Load lines shall be capable of supporting, without failure, at least seven times the maximum intended load. When rotation resistant rope is used, the line shall be capable of supporting, without failure, at least ten times the maximum intended load.

3.2.1.3 Load and boom hoist drum brakes, swing brakes, and locking devices such as pawls or dogs shall be engaged when the occupied SPP is in a stationary working position.

3.2.1.4 The load line hoist drum shall have a system on the power train other than the load hoist brake, which regulates the lowering speed of the hoisting mechanism. Torque converter coupled drum control, hydraulic control and other means are acceptable for

3.2.1.5 controlled load lowering. Disabling of these controls is prohibited. Free fall is also prohibited.

3.2.1.6 The crane shall be uniformly level within one percent of level grade and located on firm footing. Cranes equipped with outriggers shall have them fully extended following manufacturer's specifications when hoisting the occupied manbucket.

3.2.1.7 The total weight of the loaded SPP and related rigging (slings, shackles, etc.) shall not exceed 50 percent of the rated capacity for the radius and configuration of the crane or derrick.

3.2.1.8 The use of machines having live booms (booms in which the lowering is controlled by a brake without aid from other devices which slow the lowering speeds) is prohibited.

3.2.2 Instruments

3.2.2.1 Cranes and derricks with variable angle booms shall be equipped with a boom angle indicator, readily visible to the operator.

3.2.2.2 Cranes with telescoping booms shall be equipped with a device to clearly indicate to the operator, at all times, the boom's extended length, or an accurate determination of the load radius to be used during the lift shall be made prior to lifting personnel.

3.2.2.3 The use of a crane or derrick without an anti-two-blocking device installed is prohibited. Anti-two-blocking devices prevent the load block from contacting the boom tip ("two-blocking" which can sever the hoist line).

3.3 PERSONNEL PLATFORM (Manbucket)

3.3.1 Design

3.3.1.1 The personnel platform and suspension system shall be designed by an engineer or other qualified person competent in platform design.

3.3.1.2 The suspension system shall be designed to minimize tipping of the platform due to movement of employees occupying the platform.

3.3.1.3 The personnel platform itself, except the guard rail system and body belt/harness anchorages, shall be capable of supporting, without failure, its own weight and at least five times the maximum intended load.

3.3.2 Specifications

- 2400 lb. patented detachable test weight evenly distributes 200% test load.
- Maximum rated load capacity: 1200 lbs.
- Overhead protection 5'7" above the platform floor.
- Dimensions: 58" width x 58" length x 42" height.
- Built of .125" wall, 1.500" square tubular steel, with all edges smoothed.
- Access gate opens inward only, with positive restraining device.
- Sides enclosed with perforated steel from toeboard to mid rail.
- Four-leg sling assembly (dedicated for personnel hoisting only), of 1/2" 6x37 IWRC wire rope, secured to a master link and attached at top of basket.
- Fifth leg on sling assembly for tie-off to loadline above hook.
- Guardrail system complies with OSHA 29 CFR Part 1926.502, Subpart M.
- Grab rail system inside entire perimeter of platform.
- Fall arrest anchorage complies with OSHA 29 CFR Part 1926.502, Subpart M.
- Corrosion-resistant plastic data plate.
- Design specifications certified by professional engineers.
- AWS certified welding procedures.

3.3.3 Loading of Manbucket

3.3.3.1 The platform shall not be loaded in excess of its rated load capacity.

3.3.3.2 The number of employees occupying the platform shall not exceed the number required for the work being performed.

3.3.3.3 Personnel platforms shall be used only for employees, their tools and material necessary to do their work, and shall not be used to hoist only materials or tools when not hoisting personnel.

3.3.3.4 Materials and tools for use during a personnel lift shall be secured to prevent displacement.

3.3.3.5 Materials and tools for use during a lift shall be evenly distributed within the confines of the platform while the platform is suspended.

3.3.3.6 Marathon's square manbucket cannot have more than four (4) people on board at one time (rated capacity = 1,200 lbs.).

3.3.4 Rigging of Manbucket

3.3.4.1 When a wire rope bridle is used to connect the personnel platform to the load line, each bridle leg shall be connected to a master link or shackle in such a manner to ensure that the load is evenly divided among the four legs.

3.3.4.2 Hooks on overhaul ball assemblies, lower load blocks or other attached assemblies shall be of a type that can be closed and locked, eliminating the hook throat opening. Alternatively, an alloy anchor type shackle with a bolt, nut and retaining pin may be used.

3.3.4.3 Wire ropes, shackles, rings, master links and other rigging hardware must be capable of supporting, without failure, at least five times the maximum intended load applied or transmitted to that component. Where rotation resistant rope is used, the slings shall be capable of supporting without failure at least ten times the maximum intended load.

3.3.4.4 All eyes in wire rope shall be fabricated with thimbles.

3.3.4.5 Bridles and associated rigging for attaching the personnel platform to the hoist line shall be used only for the platform and the necessary employees, their tools and materials necessary to do their work, and shall not be used for any other purpose when not hoisting personnel.

3.4 PERSONNEL PLATFORM (Boatswain Chair)

3.4.1 Design

3.4.1.1 The seat of a boatswain's chair made of wood shall be not less than 12 by 24 inches and 1-inch thick with the underside reinforced by cleats fastened to prevent splitting. Other materials used shall be of equivalent strength and size.

3.4.1.2 Two N-inch, first quality manilla rope slings or synthetic rope of equivalent strength shall be reeved through the 4 seat holes so as to cross each other on the underside. Where an employee is using a heat or spark-producing process, such as gas welding or cutting, a protected M-inch wire rope shall be used in place of fiber rope.

3.4.2 Rigging

3.4.2.1 The tackle shall consist of bearing or bushed blocks and N-inch, first grade manila rope or its equivalent. The block shall be secured to roof irons, hooks or other objects that are secured. Tiebacks shall be installed at right angles to the face of the building and shall be secured to the roof hooks and the building.

## 3.5 TRIAL LIFT

3.5.1 A trial lift with the unoccupied SPP loaded to the rated capacity (1,200 lbs. for the square manbucket) shall be made from ground level or any other location where employees will enter the SPP, to each location at which the SPP is to be hoisted and positioned. This trial lift shall be performed immediately prior to placing personnel in the SPP. The operator shall determine that all systems, controls, and safety devices are activated and functioning properly; that no interference exist; and that all configurations necessary to reach those work locations will allow the operator to remain under the 50 percent limit of the crane's rated capacity. The trial lift shall encompass the entire swing radius for the intended work.

3.5.2 The trial lift shall be repeated prior to hoisting personnel whenever the crane or derrick is moved and set up in a new location or returned to a previously used location. Also, the trial lift shall be repeated when the lift route is changed unless the operator determines the route change is not significant.

3.5.3 After the trial lift, and just prior to hoisting personnel, the SPP shall be hoisted a few inches and inspected to ensure that it is secure and properly balanced. Employees shall not be hoisted unless the following conditions are determined to exist.

- Hoist cables shall be free of kinks.
- Multiple part lines shall not be twisted around each other.
- The crane hook shall be centered over the platform.
- The hoisting system shall be inspected if the load cable is slack to ensure all cables are properly stated on drums and in sheaves.

## 3.6 INSPECTION

3.6.1 A visual inspection of the crane or derrick, rigging, SPP, and the crane base support or ground shall be conducted immediately after the trial lift to determine whether the testing has exposed any defect or produced any adverse effect upon any component or structure.

3.6.2 Any defects found which create a safety hazard shall be corrected before hoisting personnel.

3.6.3 At each job site, prior to hoisting employees on the SPP, and after any repair or modification, the platform and rigging shall be proof tested to 200 percent of the platform's rated capacity (2,400 lbs. for the square manbucket) by holding it in a suspended position for five minutes with the load evenly distributed on the platform (this may be done concurrently with the trial lift). After proof testing, an Inspector or other competent person shall inspect the platform and rigging. Any deficiencies found shall be corrected and another proof test shall be conducted. Personnel hoisting shall not be conducted until the proof testing requirements are satisfied. Proof test records shall be maintained by the Inspection Department.

3.6.4 Non-destructive testing of all structural welds on the manbucket structure shall be inspected within one year prior to use.

## 3.7 WORK PRACTICES

3.7.1 Personnel shall keep all parts of the body inside the manbucket during raising, lowering, and positioning operations. Person in the Boatswain's Chair shall sit squarely in the seat while in motion.

3.7.2 Before personnel exit or enter the manbucket, it shall be landed or secured to the structure where the work is to be performed.

3.7.3 A safety line shall exist between the crane cable and the manbucket or Boatswain's Chair suspension system. Both ends of a secondary wire rope safety line shall be installed above the headache ball to a screw-pin shackle and pass through the SPP suspension system to prevent the SPP from falling if there is a failure of the main connection.

3.7.4 While the manbucket is in use, one person is to be assigned to maintain a tag line for the manbucket. (Note: The person manning the tag line cannot be a fire watch.) Tag lines are not required for Boatswain's Chairs.

3.7.5 The crane or derrick operator shall remain at the controls at all times when the crane engine is running and the SPP is occupied.

3.7.6 SPPs shall not be used during electrical storms or high winds. Hoisting of personnel shall be promptly discontinued upon indication of any dangerous weather conditions or other impending danger.

3.7.7 Personnel being hoisted shall remain in continuous sight of the operator or signal person. In those situations where direct visual contact is not possible, radio communication may be used. in these situations if communication stops, is interrupted or fails, the hoisting operation shall be halted until communication is restored and safe movement is ensured.

3.7.8 Personnel occupying a manbucket must wear a safety harness and lanyard appropriately attached to the lower load block or overhaul ball, or to a structural member within the platform capable of supporting a fall impact for employees using the anchorage. Personnel occupying a boatswain's chair must wear a safety harness and lanyard attached to the hoisting cable above the headache ball.

3.7.9 Hoisting of personnel while the crane is traveling is prohibited.

3.7.10 While in a manbucket, personnel shall only carry small amounts of tools and materials appropriate for the job. Example: impact wrench, wrenches, gaskets, bolts and blind to install a blind.

3.7.11 The "materials bucket" is designed to carry materials and equipment, it is not approved for personnel.

3.7.12 Those doing the lift shall meet in advance of the lift with appropriate Operations personnel and the Safety Representative. The meeting will explain the lift and work plans to Operations so they can prepare any special operation procedures/instruction or precautionary measures needed.

3.7.13 All nonessential work within the fall radius of SPP lifts shall be at an absolute minimum or halted.

3.8 SUSPENDED PLATFORM LIFTING PLAN (RSW-SAF-005-Form-01-DT)

3.8.1 The Lifting Plan is to be completed prior to mobilization of equipment and rigging onsite.

3.8.2 The Lifting Plan must be reviewed by a Marathon Engineering Department Representative, as well as a Maintenance or Engineering Department Manager.

3.8.3 A copy of the completed Lifting Plan shall be kept with the hard copy of the Safe Work Permit at the job site and turned in with closed permit for archiving.

3.9 PRE-LIFT MEETING

3.9.1 A meeting attended by the crane or derrick operator, signal person(s) (if necessary for the lift), personnel to be lifted, Operations representative, Safety representative, and the Supervisor/Engineering Coordinator shall be held to review the appropriate requirements of this procedure and the details of the job.

3.9.2 The pre-lift meeting shall be held prior to the trial lift at each new work location, and shall be repeated for any employees newly assigned to the operation.

3.9.3 Operations shall have in use any special instructions, procedures or precautionary measures before the load is lifted.

3.9.4 The “Lift Coordinator” is the Maintenance Foreman, Project Engineer, Engineering Coordinator or Contractor Supervisor coordinating the personnel making the lift. The lift coordinator acts as the liaison between all parties and makes the decision when to start the lift.

3.10 SUSPENDED PERSONNEL PLATFORM (SPP) USE CHECKLIST (RSW-SAF-005-Form-02-DT)

3.10.1 Check yes or no for all questions asked on the checklist.

3.10.2 The SPP check list is only a guide and minimum check of preparations, procedures and equipment so all involved know their tasks and are ready. Other checks should be made as required by the job.

3.10.3 The crane operator shall determine that all systems, controls and safety devices are activated and functioning properly and that no interference exist.

3.10.4 Pre-lift meeting attendees shall sign the form.

3.10.5 A copy of the completed checklist shall be kept with the hard copy of the Safe Work Permit at the job site and turned in with closed permit for archiving.

## 4.0 DEFINITIONS

4.1 There are no definitions relevant to this procedure.

## 5.0 REFERENCES

5.1 OSHA 29 CFR 1926.550(g) for Suspended Personnel Platforms Final Rule

5.2 OSHA 29 CFR 1926.451 - for Boatswain’s Chairs

5.3 MIOSHA R408.41237 (Rule 1237) - for Boatswain’s Chairs

## 6.0 ATTACHMENTS

6.1 Suspended Platform Lifting Plan, RSW-SAF-005-Form-01-DT

6.2 Suspended Personnel Platform Checklist, RSW-SAF-005-Form-02-DT

## 7.0 REVISION HISTORY

| Revision number | Description of change | Written by | Checked by | Effective date |
|---|---|---|---|---|
| 7 | Reformat | Safety | Safety | 10/20/2008 |
| 8 | Updated Document Number | E. Dvorak | L. Mazur | 12/30/2009 |
| 9 | Review and update of company name | S. Windom | L. Mazur | 10/31/11 |
| 10 | Review- reformatted to align with GEN-1014-DN. Replace in kind section 3.8 information found on lifting plan. | A. Anglin | Safety | 1-13-15 |
| 11 | Scheduled review no changes | T. Brown | A. Morales | 12-20-19 |