**TITLE:**

Safe Rigging and Lifting Procedure

**PURPOSE**:

1. To provide guidelines and to define the requirements necessary to ensure all crane lifts in the refinery are completed safely.

2. To provide a means to ensure that loads are not lifted without a check of the lifting equipment being used and that the equipment is being used within its design limits.

3. To insure that all persons assigned to a rigging job are competent in their duties and that only skilled and experienced operators are utilized.

**SCOPE**:

1. This procedure defines requirements, limitations, and responsibilities for making crane lifts in the Murphy Oil Meraux refinery.

2. This procedure applies to all persons, including all visitors and contractors, working on Murphy Oil Meraux refinery, property.

**DEFINITIONS**:

1. A “normal lift” is any lift that does not exceed 85% of the rated capacity of the crane used for the lift as determined from the crane manufactures’ load charts for that crane for “routine” lifts. Routine lifts are those lifts normally made in the refinery or tank farms for maintenance or replacement functions of existing equipment and minor new construction in existing units and tank farms.

2. A “construction” lift is any lift at less than 85% of the rated crane capacity at the stated fall range and within the battery limits of a new, non-operating unit under construction. When any of the “critical” lift criteria are met for this category, then it becomes a “critical” lift.

3. A “critical” lift is any lift exceeding the criteria for a “normal” or “heavy” lift, or involves unusual risk to personnel or to equipment. “Critical” lifts include, but are not limited to, the following criteria:

a. Any lift exceeding 50,000 pounds.

b. Any lift 85% or greater of crane’s capacity

c. Any lift of more than 3,000 pounds over live process lines, equipment or buildings. Any lift of any magnitude over occupied buildings is critical. All buildings should be evacuated prior to lifting activity.

d. Any multi-crane lift using a tail crane or additional lift crane.

e. Any lift in which any part of the crane or load approaches within ten feet of an energized aerial electric power line.

f. Any lift may be classified as critical by the affected Department Managers.

g. Lifting of personnel shall be considered a “critical lift”.

4. The ”fall range” is the length of the boom plus the longest dimension of the load.

5. A “process line” for purposes of this procedure means any line in the refinery containing hydrocarbons or toxic or flammable materials. Water, cooling water, and plant air lines (for this procedure) are not considered process lines. This means that in most cases cooling tower fan motors and gearboxes, reloading sand and salt filters, and catalyst replacement will not be “critical” lifts provided they do not meet any of the other criteria for a critical lift. Operations may establish boundary areas for these situations with Maintenance.

6. The “Lift Coordinator” is the person representing Murphy Oil supervising the lift. The Lift Coordinator determines when all preparations are complete and makes the decision when to start the lift.

**REQUIREMENTS**:

 **Rigging and Lifting Plan**

1. The more conservative lift classification shall be selected where there may be conflicting classification criteria.

**2**. “Normal” lifts do not require the lift plans of this procedure be filled out.

 3. “Construction” lifts require a copy of the crane manufacturer’s load chart(s) be in the construction contractor’s office and a copy to the Murphy Oil Construction Coordinator. If the “fall range” of any construction lift encompasses any operating lines or equipment, the Operations Department is to be notified.

It is the intent of the category that a single project lift plan may be prepared to cover the entire period of construction. Then, the only additional notifications to Operations required are when different cranes are brought onto site, change in placement, change of the fall range or the lift is “critical”.

4. “Critical” lifts require the lift plans of this procedure to be filled out completely. A plot plan showing crane placement and swing radius must be provided. The crane manufacturer’s load chart for the crane being used must be provided. Critical lifts shall have lifting plans approved by a registered professional engineer. The appropriate department manager or their designee will review and approve all contractor prepared lifting plans.

5. The company making the lift is responsible for the preparation the lift plan. Compliance with this procedure does not relieve the contractor of any liability associated with any crane lift.

6. Accuracy of the load weight must be considered when developing the lift plan, unless a scaled weight is provided.

 10% increase in weight will be required for new loads and a 25% increase will be required for equipment in the field.

 The calculation and assumption should be captured on a spreadsheet / worksheet and reviewed with appropriate department manager or their designee prior to the pre-lift meeting; if uncertainties arise they must be resolved prior to the meeting.

7. All “critical lifts” shall be scheduled to minimize interference with other work in the area.

8. A copy of the Rigging and Lifting Plan shall be kept with the pink copy of the Safe Work Permit at the jobsite. Copies of the lift plan shall be in the Maintenance office or contractor’s field office.

9. All concerned parties involved with a “heavy or critical” lift shall meet before the lift with appropriate Operations personnel, Lift Coordinator, rigging foreman, lift equipment operators, flagman, project engineer (as required) and the Safety Representative. The meeting will explain the lift and work plans to Operations and other concerned parties so they can prepare any special operation procedures/instructions or precautionary measures needed.

10. Lift plans prepared for removal of a particular piece of equipment may be used to reinstall that item. An equipment specific lift plan may be used as long as there are no changes in the lift weights, rigging or crane placement and the crane is as large as or larger than the one used for developing the plan.

11. A lift plan can be used for the placement of more than one piece of equipment if conditions and or circumstances allow it. The lift plan shall be calculated for the most extreme or severe case, the heaviest load, the greatest lift radius, greatest boom length. The lift plan should list all of the equipment that has been considered during the planning stage.

12. Communications during a lifting operation is a critical concern and must have the following issues resolved during the planning stage; determine what type of communications between the operator(s) and the rigging crew will satisfy the conditions and location. Can hand signals be used or will radios be required. Who will the flagman be (must have name at the pre-lift meeting). If more than one crane is required how will the operators know when the flagman is flagging or radioing him. The flagman must attend the pre-lift meeting.

13. The contractor shall consider and cover in addition to the primary lift the following during the pre-lift meeting: Where will the crane be setup, will the erection of the primary crane require a second or support crane, what are the lifting requirements during erection and staging of the equipment, what are at the routes of access in and out of the area.

**Work Permit**

1. Operations shall be notified on the Request for Work Permit if crane boom or load will be over “process lines” or piperacks.

2. To ensure that all nonessential personnel are safely outside the fall range during “critical lifts,” it is the Lift Coordinator’s responsibility to notify appropriate Murphy Oil Operations in advance of any “critical lift.”

3. Excluding man basket lifts, all nonessential work within the fall range of the “critical lift” shall be suspended until lift is complete.

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

**Electrical Hazards**

1. A crane capable of having its structure or load elevated near or above energized overhead power lines, 50 Kv or less, shall maintain a clearance of at least ten feet between the lines and any part of the crane or load. For lines rated over 50 Kv, the crane structure or load shall maintain a minimum clearance of ten feet plus 0.4 inch for each 1 Kv over 50 Kv or twice the length of the line insulator, but never less than ten feet.

2. Sufficient personnel shall be designated to observe clearance of the equipment and give timely warning for all operations where it is difficult for the Operator to maintain the desired clearance by visual means.

3. Prior to working near transmitter towers where an electrical charge can be induced in the lift equipment or materials being handled. The following precautions shall be taken when necessary to dissipate induced voltages:

a. The equipment shall be provided with an electrical ground directly to the upper rotating structure supporting the boom; and

b. Ground jumper cables shall be attached to material being handled by boom equipment when electrical charge is induced while working near energized transmitters. Crews shall be provided with non-conductive poles having large alligator clips or other similar protection to attach the ground cable to the load.

c. Combustible and Flammable materials shall be removed from the immediate area prior to operations.

d. Use tag lines which are non-conductive.

4. A qualified electrical engineer or their designee shall be contacted when the crane structure or load is within close proximity to the allowed clearances to advise or any precautions to take (i.e., deenergize the lines, install barriers, etc.).

**NOTE: Any overhead line must be considered energized unless it is disconnected and physically grounded.**

 **Rigging**

1. Slings and shackles shall not exceed their specified load rating.
2. Lifting lugs must be designed with a safety factor of three with respect to the yield strength.

3. The holes in lifting lugs must be drilled, machined or punched out. Cutting holes with a torch is prohibited.

4. All slings utilized in a “heavy” or “critical” lift should be permanently tagged with load rating by the manufacturer.

5. All slings, shackles, lifting lugs and other lift hardware shall be inspected for broken or damaged components prior to use.

6. The safe working load of spreader bars should be marked on the equipment. Documentation of load testing or capacity certification shall be provided for fabricated spreader bars.

**Training**

1. All personnel whose duties include rigging shall be trained in proper methods of rigging.

2. Equipment operators shall be certified to operate the equipment they are assigned to operate.

**Weather Conditions**

1. In event of sustained winds of 20 mph or greater, unless restricted by the specific crane manufacturer’s restrictions, any crane working with a boom tip height greater than 30 feet will suspend hoisting and retract boom (if hydraulic) to less than 30 feet. Lattice type cranes will suspend hoisting, and tie off the load and block/ball to a stationary object (A-frame, foundation, pillar, etc.). Tying the boom to the carrier is not acceptable.

2. In the event of sustained winds of 35 mph, all cranes will suspend hoisting. Hydraulic cranes will retract and lower booms to grade or cradle the boom. Lattice boom cranes will lower the boom to grade, where possible. If the boom cannot be lowered (Transilift, multiple boom crane), the boom will be directed downwind and the load line tied off to a permanent structure.

3. Wind speed information may be obtained from the anemometer reading in the Main Office or from the weather radio in Security.

4. “Heavy” or “critical” lifts shall not be made during electrical storms.

 **Idled Cranes**

1. If a crane is to be without an operator for longer than 3 calendar days, the following procedures will be followed:

 a. Hydraulic cranes will retract the boom to less than 30 feet and shut down the crane.

 b. If retracted boom is greater than 30 feet, the boom will be lowered to grade or cradled.

 c. Lattice boom cranes will be lowered to grade where possible.

 d. If the boom cannot be lowered (Transilift, multiple boom crane), the load line will be tied to a permanent structure.

2. Propane cab heaters must be shut off whenever the operator is away from the crane.

**Cranes and Derricks**

1. All cranes or other lift equipment shall have passed a thorough annual inspection. A current inspection certificate shall (there shall be no deficiencies) be presented to the Lift Coordinator prior to the equipment being put into service.

2. Hoisting shall be done in a slow, controlled, cautious manner with no sudden movement of the crane or derrick.

3. The crane shall be leveled within tolerance of manufacturer’s requirements and located on firm ground. Cranes with outriggers shall have them extended in accordance with manufacturer’s directions. Crane mats are required for most critical lifts, as outrigger pads normally do not provide enough surface area to get soil or pad loading below allowables for the surface. **Note that asphalt and concrete paving between the road and process equipment may not support the same loads as roadways**. Be reminded that many crane accidents have occurred when the outrigger pad broke through the paving as the load was being swung.

3.1 For critical lifting with loads of 50,000 pounds or greater, probing is required under all outrigger or track mats located on concrete or asphalt. Trenching or probing is required. Probing requires as many holes as necessary to verify that voids do not exist, at a minimum of one hole per 20 square feet of matting. If a void is found, more probing or trenching shall be performed to identify void. Either repair must be made or equipment must be moved to solid ground before lift can be performed. All probing holes shall be plugged with a quick-drying epoxy.

3.2 Maximum ground bearing pressure for matted cranes shall not exceed 1000 pounds per square foot. Cranes requiring pilings shall be reviewed and accepted by a professional engineer.

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

5. 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 shall be used during the lift.

6. All cranes shall be equipped with a functioning anti two-block device. If a special situation arises that dictates that the device will not be able to be used, all personnel involved in the lift should be aware of the potential of two-blocking problems where the hoist line may be severed if the load block contacts the boom tip. Disabling the anti two-block device will require approval of the Lift Coordinator prior to execution.

7. Crane hook shall be equipped with a safety catch or other device that eliminates the hook throat opening.

8. The person(s) manning the tag line(s) cannot have concurrent assignments.

9. The crane or derrick operator shall remain at the controls at all times when the crane engine is running.

10. The load 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 lift shall be halted until communication is restored and safe movement is ensured.

**Pre-Lift Meeting**

1. A pre-lift meeting attended by the crane or derrick operator, contractor representative, rigging crew or signal person, Safety representative, Operations representative, Maintenance Foreman, and the Lift Coordinator shall be held to review lift preparations, crane checks, and details of the job. This meeting should be held within forty eight (48) hours prior to the scheduled lift time. If there are any unresolved issues or concerns, they must be satisfied prior to making the lift. If the “fall range” of the lift encompasses operating lines, equipment or buildings, these should be identified at this time.

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

**Critical Lift Checklist**

1. The critical lift checklist 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.

2. The crane operator shall determine that all systems, controls, and safety devices are activated and functioning properly, that no interference exists, and that all moves necessary to reach those work locations will allow the operator to remain under limit of the crane’s rated capacity. The crane operator has the authority to refuse to lift any load, which he deems unsafe.

3. The Pre-Lift meeting and checklist shall be repeated whenever the crane is moved and set up in a new location or returned to a previously used location.

4. The completed checklist shall be scanned and attached to the TabWare work order.

**DOCUMENTS:**

The documents associated with a lift consist of lift plans, pre-lift checklists, drawings, plot plans, crane manufacturer’s load chart, and calculations. These documents should be available to those planning the lift and then filed with the other records of the lift.

Approved by: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

 Russell Colvin

 Manager Project Engineering

 Approved by:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

 William C. Turnage Jr.

 Manager of Safety Security

 Approved by: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

 Lynn Bourgeois

Refinery Manager

**THIS LIFT PLAN TO BE COMPLETED PRIOR TO MOBILIZATION OF EQUIPMENT AND RIGGING CRITICAL LIFTS**

**A.** **LIFT TYPE DESCRIPTION:**

Date of Lift \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Exact Location Unit, Equipment, Area, Etc.)\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Load Description\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Lift Description\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**B. CRANE OWNER AND PERSONNEL**

Murphy Lift Coordinator:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Crane Owner:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

The next items must be filled in if a contractor is performing this lift:

Project Contractor:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Contractor Supervisor Responsible for Lift:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Contractor Crane Owner:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Contractor Crane Operator:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**C. WEIGHTS**

**1. Load**

1. Equipment Condition New ( ) Used ( )

2. Weight Empty \_\_\_\_\_\_\_\_\_\_\_\_\_lbs.

3. Allowance for Unaccounted Material in Equipment \_\_\_\_\_\_\_\_\_\_\_\_\_lbs.

4. Allowance for Water in Refractory, lnsulation, Etc. \_\_\_\_\_\_\_\_\_\_\_\_\_lbs.

5. Other \_\_\_\_\_\_\_\_\_\_\_\_\_lbs.

**TOTAL WEIGHT OF LOAD (see notes)** \_\_\_\_\_\_\_\_\_\_\_\_\_lbs.

Note: If >3,000 pounds over process lines or equipment then lift is “critical”.

2. **Rigging**

a. Weight of Headache Ball \_\_\_\_\_\_\_\_\_\_\_\_\_lbs.

b. Weight of Block and hook \_\_\_\_\_\_\_\_\_\_\_\_\_lbs.

c. Weight of Rigging \_\_\_\_\_\_\_\_\_\_\_\_\_lbs.

e Deduction for Jib Erect ( ) Stored ( ) \_\_\_\_\_\_\_\_\_\_\_\_\_lbs.

f. Weight of Headache Ball on Jib \_\_\_\_\_\_\_\_\_\_\_\_\_lbs.

g. Weight of Cable (Load Fall) \_\_\_\_\_\_\_\_\_\_\_\_\_lbs.

h. Other \_\_\_\_\_\_\_\_\_\_\_\_\_lbs.

**TOTAL WEIGHT OF RIGGING** \_\_\_\_\_\_\_\_\_\_\_\_\_lbs.

3. Total Lift Weight (I and II) \_\_\_\_\_\_\_\_\_\_\_\_\_lbs.

Source of Load Weight:

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

(Nameplate, Drawings, Calculations, etc.)

Weights Verified by:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**D. CRANE SELECTION**

1. Crane Manufacturer and Type\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

2. Crane Capacity\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_tons

3. Lifting Arrangement (Planned)

**TOLERANCES**

a. Radius of Lift\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_feet+/-\_\_\_\_\_\_\_\_\_\_\_ft.

 (Maximum Distance --- Center of Load to Center Pin of Crane)

b. Boom length \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_feet+/- \_\_\_\_\_\_\_\_\_\_ft.

c. Boom Angle at Pick-up\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_feet+/-\_\_\_\_\_\_\_\_\_\_\_ft.

d. Boom Angle at Set \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_feet+/-\_\_\_\_\_\_\_\_\_\_\_ft

e. Height of  Boom\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_feet+/-\_\_\_\_\_\_\_\_\_\_\_ft

f. Rated Capacity of Crane Under Severest Lifting Conditions (from chart)

Over Rear\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_lbs.

Over Front\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_lbs.

Over Side\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_lbs

From Chart ‑‑‑ rated capacity of crane for this lift \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_lbs.

Maximum Load on Crane \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_lbs.

Lift is \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ percent of crane’s rated capacity

g. JIB

-Erected ( ) Stored ( )

-Is jib to be used? Yes\_\_\_\_\_ No\_\_\_\_\_

-Length of Jib\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ft.

-Angle of Jib\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

-Rated capacity of Jib (from chart) \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_lbs.

h. Attach plot plan showing location and orientation of crane (Figure No. 1)

i. Provide detailed description and lift plan scale drawing of how equipment/object will be lifted (Figure No. 2)

**E. RIGGING SELECTION**

**1. CABLE**

a. Number of parts of cable\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

b. Size and capacity of Cable \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**2. SIZING OF SLINGS/SHACKLES**

a. Sling Selection

-Type of arrangement\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

-Number of slings in hook‑up\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

-Sling size\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

-Sling length\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

-Rated capacity of sling, lbs.\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

-Shackle:  Pin Diameter\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_(inches) Capacity:\_\_\_\_\_\_\_\_\_\_\_\_\_\_(tons)

-Shackle attached to load by\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

-Number of shackles required in lift\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**3. RIGGING**

a. Provide description and sketch sling connection at hook-up to boom tip (show dimensions and sling angles) (Figure No. 3).

b. Attach vendor’s chart showing capacity of slings and shackles at different angles and sling configurations.

c. Can hook and block be safely installed over center of gravity of equipment? Yes\_\_\_\_\_ No\_\_\_\_\_

If no, explain: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**F. CRANE PLACEMENT**

1. Foundation arrangements and surface\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

2. Crane mats required? Yes\_\_\_\_\_ No\_\_\_\_\_

Describe\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

3. Electrical hazards in area? Yes\_\_\_\_\_ No\_\_\_\_\_

 Describe\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

a. Voltage of power lines\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

b. Distance of crane structure and load from power line\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

4. Obstacles or obstructions to lift or swing? Yes\_\_\_\_\_ No\_\_\_\_\_

Describe\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

5. Is a minimum swing clearance of 2’ maintained between the counterweight of the crane and any obstacles? Yes\_\_\_\_\_ No\_\_\_\_\_

6. Initial orientation of lift relative to machine: Front\_\_\_\_\_ Side\_\_\_\_\_ Rear\_\_\_\_\_

7. Swing orientation of lift relative to machine: Front\_\_\_\_\_ Side\_\_\_\_\_ Rear\_\_\_\_\_

8. Swing direction and degree (boom swing)\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

9. Matting surface area: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ sq. ft.

**G. OTHER**

1. Special instructions or restrictions for crane, rigging, placement, lift, etc. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**H. ATTACHMENTS**

The following diagrams must be attached as part of this plan (use next pages or attach drawing).

1. Crane Location Plot Plan ‑ Drawing Number\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

2. Rigging Configuration Diagram ‑ Drawing Number\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

3. Crane manufacturer’s load chart ‑ Drawing Number\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Multiple crane lifts require a separate lift plan for each crane.

Any changes in the configuration of the crane, placement, rigging, lifting scheme, etc., or changes in any calculations require that a new lift plan be developed.

**PLAN PREPARATION**

Prepared by\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Date\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Contractor Supervisor or Maintenance Supervisor\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Date\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Reviewed by:

Engineer\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Date\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Manager of Realibility and Turnaround\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Date\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

or

Maintenance Manager\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Date\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Copies of completed form are to be distributed to: Engineering Manager, Maintenance Manager, Contractor’s Trailer, Maintenance Area Office. A copy of the plan shall be with the pink copy of the Safe Work Permit at the jobsite.

**CRANE LOCATION PLOT PLAN**

**FIGURE 1**

Date\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Sketch Prepared by \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Name Title

Brief Lift Description\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Plot Plan Sketch:

**Lift Plan Scale Drawing**

**FIGURE 2**

Date\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Sketch Prepared by \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Name Title

Sketch sling connection at hook-up to boom tip.

Show dimensions and sling angles.

**Rigging Diagram**

**FIGURE 3**

Date\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Sketch Prepared by \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Name Title

Pick up, travel, and set of object.

**PRE-LIFT CHECKLIST**

**Murphy Oil USA, Incorporated – Meraux Refinery**

Date\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Time\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Exact Location (Unit, Equipment, Etc.)\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Work Description\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Project Engineer or Maintenance Foreman Coordinating Lift\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Crane Owner\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

The next items must be filled in if a contractor is performing this lift:

Project Contractor:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Contractor Supervisor Responsible for Lift:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Contractor Crane Owner:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Contractor Crane Operator:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**1. Load Rigging YES NO**

Load weights match lift plan weights \_\_\_\_ \_\_\_\_

Slings free of defects \_\_\_\_ \_\_\_\_

Shackles match lift plan and free of defects \_\_\_\_ \_\_\_\_

Lifting lugs checked \_\_\_\_ \_\_\_\_

Holes in lifting lugs machined, not torch cut \_\_\_\_ \_\_\_\_

Rigging cables, spreaders checked \_\_\_\_ \_\_\_\_

Tag line(s) connected and checked \_\_\_\_ \_\_\_\_

**2. Crane Placement**

Foundation level and firm \_\_\_\_ \_\_\_\_

Location matches lift plan \_\_\_\_ \_\_\_\_

Crane matting acceptable \_\_\_\_ \_\_\_\_

Outriggers fully extended \_\_\_\_ \_\_\_\_

Counterweights in place and match lift plan \_\_\_\_ \_\_\_\_

Swing room checked (2’ clearance) \_\_\_\_ \_\_\_\_

Head room checked \_\_\_\_ \_\_\_\_

Trial movement of boom matches planned \_\_\_\_ \_\_\_\_

Boom swing and extension free of interference \_\_\_\_ \_\_\_\_

Safe distance from overhead power lines \_\_\_\_ \_\_\_\_

 **YES NO**

**3. Crane Condition**

Crane controls and safety devices functioning \_\_\_\_ \_\_\_\_

Cables and ropes free of defects \_\_\_\_ \_\_\_\_

All cables properly stated on drums and sheaves \_\_\_\_ \_\_\_\_

Load chart in crane \_\_\_\_ \_\_\_\_

Boom angle indicator \_\_\_\_ \_\_\_\_

Arrangements for anti-two-blocking \_\_\_\_ \_\_\_\_

**4. Communication**

Visual path clear for operator to watch load \_\_\_\_ \_\_\_\_

Visual path clear for signal person(s) to watch load \_\_\_\_ \_\_\_\_

Radios checked and working \_\_\_\_ \_\_\_\_

**5. Weather**

Wind conditions \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_. Okay to proceed? \_\_\_\_ \_\_\_\_

Pending storms \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_. Okay to proceed? \_\_\_\_ \_\_\_\_

**6. Operations Department Ready**

Nonessential work in full radius at minimum or halted \_\_\_\_ \_\_\_\_

Special precautions/procedures in use \_\_\_\_ \_\_\_\_

**7. Preparations Complete**

Lift Coordinator is satisfied all preparations are complete \_\_\_\_ \_\_\_\_

Lift may begin \_\_\_\_ \_\_\_\_

**8. Pre-Lift Meeting Attendees**

Crane Operator:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Rigging Crew:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Signal Person(s):\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Contractor Representative:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Engineering Representative:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Maintenance Foreman:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Operations Representative:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Safety Representative:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Lift Coordinator is:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

The above items are guidelines. Other items should be checked as required to eliminate hazards and have a safe lift. Return this completed checklist to the Safety Department..