Lifting Operations and Rigging

1. Purpose

By following this policy and operating lifting devices in a safe and responsible manner, injuries and property damage can be prevented.

2. Scope

This policy applies to all persons who operate cranes (e.g. mobile, stationary, overhead), aerial cages, any other mechanical lifting devices with associated rigging, and other equipment used for lifting, such as backhoes, excavating equipment, truck-mounted hoists, other hoists, and chain falls. The use of non-conventional equipment for lifting can only be performed if the attachments are correctly designed and approved components per the manufacturer. The policy does not apply to forklifts, manlifts, personnel-elevating work platforms, earth-moving equipment, or similar equipment used in its intended manner and without rigging. If any situation arises not specifically covered by this policy, a lifting plan shall be developed and approved by the DOM before proceeding.

3. Minimum Requirements

	Minimum Requirements	Supporting Documentation
1.	Lifts shall be evaluated for their criticality in the planning stage of the job or by the Lift Operator prior to the execution of the lift. All lifts identified as a Category 2 or 3 (Critical) Lift require a completed Lift Checklist and PTW. In addition to the Lift Checklist and PTW, all Category 3 Lifts require a completed L2 HITRA.	Sections 7 and 8
2.	All Category 2 and 3 Lift Checklists shall be issued by an Asset Operator or Asset Operator Designee and shall be received by a Performing Authority. *Self-permitting is prohibited.*	Section 7 and 8
3.	All individuals serving in roles defined within this policy shall be competent to execute those roles according to this policy.	Section 9
4.	All personnel performing work on behalf of USPL have the responsibility and authority to stop any lifting operation they consider to be unsafe.	Section 6

4. Definitions

Anti-two-block device—A device designed to warn the crane operator that the hook block is about to hit the boom head, which could have serious consequences (damage to the crane or cable breakage, causing the load to fall).

Asset Operator (AO)—A BP employee who is responsible for the operation of the asset where work is being performed. The Asset Operator shall be accountable for the asset equipment being in a safe condition for the scope of work to be performed. The Asset Operator or an Asset Operator Designee (if used) is responsible for the completion of the PTW form.

Asset Operator Designee (AOD)—A BP employee or contractor individual who is authorized to issue ATWs and / or permits on behalf of the Asset Operator.

Note: Reference the Permit to Work policy for additional information

Blind lift – a lift where at any point in time during the lifting operation, the operator cannot directly see the load.

Chain fall—An example of a hoisting device consisting of a chain suspended from or laid over a fixed structure such as a beam, or on well built saw horses resting on well supported joists used to lift heavy objects, such as steel beams and vehicle engines. Depending on the situation there are many other temporary rigs that be improvised for lifting heavy objects with the tool. This principle is very similar to a block and tackle.

Checklist Issuance—The act of the Asset Operator or Asset Operator Designee issuing a Checklist to a Performing Authority. Checklist Issuance is documented in Section A of the PTW form.

Note: Reference the Permit to Work policy for additional information.

Crane—Power-operated equipment that can hoist, lower and horizontally move a suspended load. Such equipment includes, but is not limited to: Articulating cranes (such as knuckle-boom cranes); crawler cranes; floating cranes; cranes on barges; locomotive cranes; mobile cranes (such as wheel-mounted, rough-terrain, all-terrain, commercial truck-mounted, and boom truck cranes); multi-purpose machines when configured to hoist and lower (by means of a winch or hook) and horizontally move a suspended load; industrial cranes (such as carry-deck cranes); dedicated pile drivers; service/mechanic trucks with a hoisting device; a crane on a monorail; tower cranes (such as a fixed jib, i.e., "hammerhead boom"), luffing boom and self-erecting); pedestal cranes; portal cranes; overhead and gantry cranes; straddle cranes; side boom cranes; derricks; and variations of such equipment.

Entity Lifting Authority – Provide governance and expert advice for all lifting operations for the Entity. Refer to FAQ for current designee.

Free rigging—The direct attachment to or placement of rigging equipment (e.g. slings, shackles, rings) onto the tines of a powered industrial truck (e.g., forklift) for a below-the-tines lift. This type of lift does not use an approved lifting attachment.

Heavy Lift Crane – a crane that requires an assist crane during assembly and erection on-site, any crane performing a lift that is above the normal weight or complexity performed by the Entity.

Job Site—Within visual proximity of the work being performed.

Lifting—Any lifting operation using fixed or mobile equipment. Lifts are categorized into one of three categories, based on the complexity of the lifting operation. (Refer to Appendix VI – Lift Categorization Table)

Category 3 (Critical) Lifts - requirements and examples:

- The approach/removal slew path for the lift is obstructed.
- The lift involves a mobile crane with utilization >=75%.

  Note: In no case shall the lift exceed 90% of the charted capacity of the crane except when load testing a crane, which requires a critical lift checklist.
- The lift involves lifting personnel.
- The lift will have boom clearance < 3ft.
- The lift will be over live plant with crane/rigging utilization >=70%.
- The lift could be affected by proximity hazards (e.g. public road, within 20 feet of energized electrical lines or substations, etc.).

  Note: In no case shall a lift be conducted closer than 10 feet from an energized electrical line or substation. Refer to Electrical Safety Policy for additional information.
- The lift is a tandem/multiple crane lift in which at least one crane cannot take the weight of the full load.

Note: A tandem lift with two cranes does not apply to pipeline lowering or raising on the Right of Way, but it does apply to pipeline pulling associated with a horizontal directional drill regardless of whether cranes or other lifting devices are used.

- The load has a Center of Gravity (CoG) above the lifting point, or a high CoG with the potential to become unstable.
- The lift will occur at a location where the load bearing capacity of the foundation material is unknown and cannot be measured.
- The lift will exceed the Entity maximum allowable lift ground bearing capacity (GBC).

  Note: If matting is used to stabilize the lifting equipment, or the ground is otherwise stable, the lift does not need to have a GBC calculation.
- The load is extremely valuable ($500K - $5M) or irreplaceable.
- The load contains hazardous material.

  Note: Residual material in process equipment does not constitute hazardous material.
- The lift involves jacking tank walls/roofs or any load that is not self-supporting.
- The load is a non-rigid object (e.g. tank shell).
- The lift is non-returnable (i.e. not landed back to its original location).
- The lift requires a heavy crane to be built onsite.
- The lift involves Concrete Tilt Panel erection.
- Any lift made while a diver is in the water.
- Use of any boom or boom extension with a combined length greater than 99 feet.

Category 2 (Complex) Lifts - for medium complexity lifting operations and examples:

- The lift is blind (and) or conducted over an occupied confined space, or within a trench or excavation.
- The load is unevenly distributed/eccentric, whereby the suspension point is not directly above the load CoG.
- The load has an offset CoG without special slings to compensate, or is an awkward shape or has a large sail area.
- The lift requires slings to be used at an angle of below 60 degrees from horizontal.
- The lifting points are not certified.
- The lift is directly over live plan inside a facility, with crane utilization <70%.
- If the load passes over any process equipment, exposed live piping in a facility, or a live underwater pipeline.

  Note: Connecting hoses to ships and barges is excluded from this criteria.
- An excavator, forklift or telehandler with temporarily installed attachments will be used to lift a slung load.
- The load is fragile or its integrity uncertain or is difficult to sling.
- The lift involves jacking tank walls/roofs or any load that is self-supporting.
- The lift is a tailing operation (horizontal to vertical) and both cranes can individually take a full weight of the load.
- Any lift exceeding 25,000 pounds.

Category 1 (Routine) Lifts - for routine/simple lifting operations and examples:

- None of the Category 3 or Category 2 lifts apply, i.e. the load is pre-slung or very easily slung, with no external factors that complicate the operation.
- The lift is routine in nature (i.e. occurs at least once per month during maintenance, or is repeated over longer periods during project work).
- The site team is experienced and has performed a similar lift recently.

Lifting Competent Person – A BP employee or contractor supervisor who identifies and coordinates all lifting requirements, tasks, and resources needed to execute a safe lift. The LCP role can be fulfilled by a member of the workforce, commonly the lift operator.

Lifting device—For the purpose of this policy, a mechanical device designed to raise, lower, pull, and/or transfer a load. Lifting devices may be fixed (e.g., overhead floor-operated crane) or mobile (e.g., mobile crane, boom truck). Lifting devices are typically powered (e.g. electric, hydraulic, air) but may be manual (e.g., small hoist, pulley blocks).

Lift Engineering Specialist – A BP or contract employee who provides technical overview and guidance for lifts (typically only critical lifts). Refer to FAQ for current designee.

Lift Operator—A BP or contract employee who has appropriate experience and formal training (classroom and hands-on) in the operation of stationary or mobile lifting devices and has met the requirement of a Rigger. For offshore operator qualifications, refer to API RP 2D; for onshore operator qualifications, refer to ANSI/ASME B30.

Lift plan—Documents that plan for a safe lift by requiring the appropriate personnel to review and approve all criteria involved in the lift.

Live piping or pipeline—Any piping or pipeline that contains hazardous materials and the valves are open.

Live Plant- can include process equipment and piping that is still in service and connected to the process, or that still contains hazardous materials in quantities that are potentially hazardous to personnel, or that has not been isolated. Examples are pipes, vessels, overhead electrical lines and electrical cables, substations.

Minimum Acceptable Approach Distance (MAAD) –

- 3m (10ft) for Low/Medium/High Voltage up to 33kV
- 6m (20ft) for High Voltage 33kV-200kV

Non-returnable lift – a lift in which the possibility of replacing the lift to the point from which it was lifted is removed as part of the lifting process and the load cannot be returned if a problem occurs.

Tandem/Multi Crane Lift –two or more cranes are attached to the load and one or more of the cranes cannot support the full weight of the load individually.

On-site—Physically being on the property or within the property fence line where work is being performed.

Operator (Appliance Operator) – A person operating any powered lifting equipment/plant.

Outrigger blocking—Small supports placed under each outrigger pad to increase outrigger stability. Outrigger blocking shall be at least three times larger in area than the outrigger pad.

Performing Authority—A BP employee or contractor individual who receives a permit issued by the Asset Operator or Asset Operator Designee.

Process equipment—Any equipment that contains hazardous materials, e.g. tanks, pumps, valves, VRUs.

Rigger—A BP or contractor employee deemed a qualified Rigger. The person is skilled in sling and rigging hardware identification and inspection, use of rigging equipment, and basic hitch configurations.

Rigging drawing—A detailed drawing that indicates exactly what type, size, and configuration (including lengths and angles) of rigging is to be used for making a lift.

Rated load—Maximum load designated by the manufacturer for which a crane or individual hoist is designed and built.

Signal Person (Spotter)— A person with appropriate background and formal training and who is responsible for communicating with the Lift Operator so the load is lifted, moved, and placed without interference to or from surrounding obstacles.

Shall—Is used where a provision is mandatory.

Should—Is used where a provision is preferred.

Tailing Lift – the operation of rotating an object from vertical to horizontal or vice versa, usually by utilizing one crane taking the full load and a second (tail) crane to assist, for e.g. lifting a column from a trailer in the horizontal plane and rotating to vertical to install.

5. Roles and Responsibilities

5.1. Asset Operator or Asset Operator Designee

A. Shall issue Lift Checklist to the Performing Authority.

Note: Refer to the Permit to Work policy for additional information on roles and responsibilities.

B. Shall be available (e.g., on-site or by phone) for lifts that will pass over live equipment or piping.

C. Shall determine if changes can be made to the PTW and/or Checklist if conditions are exceeded or if the PTW and/or Checklist should be cancelled and a new PTW and/or Checklist issued.

1. If the Asset Operator determines that changes to the PTW or Checklist can be made, he/she shall document their approval of the changes by initialing the changes where they are documented on the PTW or Checklist .

D. Shall review the Level 2 HITRA to verify that the scope is appropriate, Checklists have been identified and that it has been properly approved.

E. Shall ensure maximum allowable Ground Bearing Capacity (GBC) is set, if required.

Note: The maximum allowable ground bearing capacity is typically set by Engineering Specialists or local Regulations.

Note: Verification of the GBC may be completed by: 1). Consulting the Entity's engineering drawings and/or previous soil studies or 2). Conducting Penetrometer tests or subsurface investigations (test digs, core drill, etc.) as close to the locations of load-bearing points as required if drawings are not available.

F. Shall ensure the maximum allowable GBC is not exceeded without engineering assessment, irrespective of ground conditions.

5.2. Entity Lifting Authority (ELA)

A. Shall provide governance and expert advice for lifting operations for the Entity.

B. Establish processes and controls to verify that all Lift Plans and operations have been assured and potential risks to equipment, personnel and plant have been addresses.

C. Can be a regional position, typically someone in engineering.

D. The ELA is not required to be involved in all lift executions (this is the responsibility of the Lifting Competent Person) except in the case of complex Category 3 critical lifts.

E. Should have a good understanding of operational hazards.

F. Should have knowledge and access to review all country/state regulatory requirements that pertain to lifting operations.

G. Should be independent of the lifting contractor or work group.

H. Should be properly trained.

5.3. Lift Engineering Specialist (LES)

A. Provide technical overview and guidance for lifts, if requested. This role can be used on an as needed basis.

B. Can be a BP or contractor position.

C. May provide provision of external expert assessment and advice on the capacity of the lifting equipment and any special rigging requirements.

D. May provide advice and acceptance of the design, inspection and testing of lifting points.

E. May provide advice on the stability of the load during lifting and any subsequent orientation changes in the lifting activity.

F. May provide guidance on the acceptable ground bearing loads imparted by the lifting equipment during the lift and the suitability of the ground upon which the lifting equipment is placed.

5.4. Lift Operator

A. Training and Certification:

1. Shall meet USPL training requirements prior to operating manually powered equipment, or powered equipment with a rated capacity of 2000 lbs or less.

2. Shall meet USPL training requirements and OSHA requirements (per CFR Title 29 Subtitle B Chapter XVII Part 126 Subpart CC 1926.1427 Operator training certification and evaluation) prior to operating powered equipment with a rated capacity of more than 2000 pounds.

B. Shall verify that overall lift conditions are acceptable.

C. Shall verify that riggers and signal persons understand their roles in the lift.

D. Shall perform the daily pre-use inspection of the lifting devices per the manufacturer's recommendations.

E. Shall review the lift plan and verify all required controls are in place and effective, including the following:

1. Lifting device is properly positioned.

2. Equipment is properly configured.

3. Proper footing is being used.

4. Proper rigging is being used.

5. The anti-two-block system is operational (if applicable).

6. No overhead obstructions exist.

F. Shall remain at the controls while a load is suspended, unless required to by another written policy such as helicopter landings on platforms while a lift in is progress.

G. Shall execute the lift in accordance with the developed lift plan or the equipment manufacturer's operating instructions.

H. Shall obey the signals of the Signal Person (if used) and stops the lift if contact with the Signal Person is broken.

I. Shall monitor the wind speeds to ensure they conform with the manufacturers' limits or local regulations, whichever is more stringent. Where wind speeds are greater than those recommended by the manufacturer/local site guidance, crane operation shall be stopped.

J. Shall work with the rigger to ensure ground conditions are appropriate for walking loads i.e. level ground, traveling forward uphill, and reversing downhill to ensure no potential increase in radius.

5.5. Lifting Competent Person (LCP)

A. Typically, a contractor supervisor position that identified and coordinated all lifting requirements, tasks and resources needed to execute a safe lift.

B. Should have knowledge and experience to inspect lifting equipment to verify its continued fitness.

C. Should also act as the assembly/disassembly supervisor and direct the assembly and disassembly activities associated with heavy lift cranes.

D. Shall perform risk assessments and foundation/load bearing studies.

E. Shall be involved in the development Lift Plans.

5.6. Performing Authority

A. Shall accept issued Lift Checklists from the Asset Operator.

B. Shall verify that all workers involved in the lift have signed the Lift Checklist to acknowledge their agreement to abide by the conditions documented on the checklist.

C. Shall observe the Category 2 and 3 lift to verify that the work is performed within the conditions documented on the Lift Checklist.

D. Shall reassess the job site and revalidate the checklist before work can resume if checklist work is interrupted or if the job site is left unattended, or if necessary, cancels the checklist and returns it to the AO / AOD.

E. Shall stop work, suspend the permit and notify the AO / AOD if permit conditions are exceeded

Note: Refer to the Permit to Work policy for additional requirements.

5.7. Rigger

A. Shall sling, unsling, and guide loads under the direction of the Lift Operator.

B. Shall conduct visual rigging inspections before and after each lift.

C. Shall inspect loads and verify that the load will be stable when lifted.

D. While in a process area or off a designated roadway the rigger shall walk the load staying in clear view of the operator and to warn others of the operation taking place.

E. If reversing a crane in a process area, the rigger shall walk beside the load and guide the operator, ensuring they can still be seen by the operator.

F. Shall be properly trained.

5.8. Signal Person

A. Shall have background and formal training (classroom and practical) that provides required knowledge and ability to perform in the role.

B. Shall function as the sole signaler at any given time (but anyone can give the stop signal).

C. Shall have a direct line of sight of the load and make sure the load never passes over anyone.

D. Shall adhere to a clear, agreed-upon, standard set of signals for communicating with the Lift Operator, or if out of the Lift Operator's direct line of sight uses agreed-upon verbal commands by radio.

E. Shall give proper signals or verbal commands to the Lift Operator to help guide the load along a clear path from initial lift point to final resting point.

F. Shall control the job site access to prevent other personnel from walking under a load, into and out of the exclusion zone, and personnel movement in the exclusion zone.

G. Shall verify that no overhead obstructions exist.

H. Shall guide loads when the Lift Operator does not have a view of the load.

I. Ensure that no part of the lifting equipment, rigging or load enters the minimum acceptable approach distance, when applicable.

6. General Requirements

6.1. General Requirements

A. Manufacturer's labels, e.g. operating instructions, hazard warnings, and rated load capacities, shall not be defaced.

B. Guards and other safety devices shall be in place and operable before any lifting device is used.

C. All personnel performing work on behalf of USPL have the responsibility and authority to stop any lifting operation they consider to be unsafe.

D. People shall not stand, pass, or work directly under a suspended load.

E. The requirement for taglines (when used) shall be identified in the Lift Plan.

F. The operator shall always stop the engine(s) on any mobile crane before leaving it unattended.

G. Wherever a lift could endanger personnel, a horn or similar warning device shall be sounded to warn personnel in the area that a lift is taking place.

H. Any crane or mechanical equipment, fixed or moving, that is capable of having parts of its structure elevated near energized overhead electrical lines shall be operated so that a clearance of 20 feet is maintained or a Signal Person is required.

I. Where contact with uninsulated energized overhead lines is possible, the lines shall be deenergized and visibly grounded (See Electrical Safety Policy).

J. If mobile lifting equipment is being used within the distance of the maximum reach plus 20' of a powerline, on-the-ground warning signs shall be placed at the site to alert all personnel of the overhead hazard (See Electrical Safety Policy for requirements).

K. Cranes that can operate at variable boom lengths shall have a crane-specific load chart setting out how the crane lifting capacity varies depending on how the crane is set up (i.e. how far the boom is extended and the angle of the boom).

L. The counterweight swing radius of the crane should be properly barricaded to ensure no personnel are in the affected area.

M. While making lifts, cranes equipped with outriggers shall have them deployed according to the manufacturer's instructions.

N. Outrigger load spreading mats should be in place if stabilization outriggers are in use.

O. In the case of synthetic matting materials, or equipment that has synthetic outrigger pads, adequate grounding should be installed/provided. The use of plywood, pallets, or scrap shall not be allowed.

P. On truck-mounted cranes, no loads shall be lifted over the front area except as approved by the crane manufacturer.

Q. Signal Persons shall be utilized in the following situations:

1. The Lift Operator cannot see the load.
2. The Lift Operator cannot see the path of travel of either the load or the crane.
3. The Lift Operator cannot see the load landing area.
4. The Lift Operator is too far from the load to judge distance accurately.
5. The lifting device is working within 20 feet of live power lines or equipment.

R. Signal Persons or Riggers shall control access to lift areas when lifts could endanger personnel. No one, except those directly involved with performing the lift, is permitted to enter the area without notifying and receiving acknowledgment from the Signal Person or Rigger.

S. When Signal Persons use hand signals, the hand signals shall be those prescribed by the applicable ANSI standard, and an illustration shall be posted at the job site.

1. The crane operator shall provide and post the hand signal chart.

T. When Signal Persons are used with operators of lift devices other than cranes, the Lift Operator and Signal Person shall agree on the type of hand signals or verbal commands to be used. If a movement is to take place for which a signal or command has not been discussed prior to the operation, the lift shall stop and the appropriate signal or command shall be agreed upon before the lifting operations may resume.

U. When traveling or rotating a crane with a load, a tag or restraint line shall be used if swinging of the load is hazardous, e.g., the load could contact another object or swing out beyond the radius at which it can be controlled. When used near electrical equipment, taglines shall be a nonconductive type.

V. A manual measurement of the lifting radius shall be performed to set the correct crane position if a crane does not have a radius indicator.

W. When other mobile equipment is used for lifting, commercially available or built from an approved engineering design attachment devices shall be used.

X. Free rigging is prohibited. If the lift equipment has the manufacturer approved lifting attachment installed on the tines/forks, it is not free rigging.

Y. Personnel-elevating work platforms shall not be used as cranes.

Z. In no case shall the lift exceed 90% of the charted capacity of the crane except when load testing a crane is conducted by or under the direction of a qualified third-party lifting equipment vendor, which does not require a lift Checklist.

AA. CFR Title 14 Part 77.9 requires a company to notify the administrator of the FAA where any construction or alteration could interfere with airport flight operations. One criteria states notification is required if the height of a structure or equipment within 20,000 feet of an airport exceeds a 100:1 distance to height ratio. For example, a crane used 2 miles from an airport that is more than 105.6 feet high (5280 ft/mile x 2 miles / 100 = 105.6 ft) would trigger the reporting requirement.

6.2. Exclusion Zones

A. A lift shall not be permitted unless an Exclusion Zone is in place and understood by the workforce.

B. The exclusion zone shall be sized based on risk.

6.3. Ground Conditions

A. Lifts shall be made from firm, level ground.

B. Entities shall set a maximum allowable Ground Bearing Capacity (GBC) and not exceed the maximum allowable GBC without engineering assessment..

C. Category 2 and 3 lifts require verification or calculation (if not already known) of the GBC before the Lift Plan can be authorized.

1. If required, GPR (Ground Penetrating Radar), or other industry approved methods for verifying the absence of subsurface features or voids, shall be specific to the load-bearing points in which equipment will be located.

7. Lift Requirements

7.1. Risk Assessment

A. Lifts shall be evaluated for their criticality in the planning stage of the job or by the Lift Operator prior to the execution of the lift. Determination of the lift complexity shall be made according to the definitions, the Lift Categorization Table , and have the appropriate risk assessment as follows:

Lift complexity	**Risk assessment**
Category 3 (Critical)	Level 2 HITRA, Permit to Work, Lift Checklist, relevant forms
Category 2 (Complex)	Permit to Work, Lift Checklist
Category 1 (Routine/Simple)	Risk assessed procedure or PTW

B. All lifts identified as a Category 3 and Category 2 lift require a completed Lift Checklist (see Appendix I).

C. Some complicated Category 3 lifts may require an Engineering Lift Study to determine how to lift the load. The Engineering Lift Study shall include the design of the load, the activities involved in the lifting operation, the technical aspects and calculations, and the specific lift environment and characteristics. A Lift Engineering Specialist should review and approve the study.

D. All lifts identified as a Category 2 (Complex) lift shall be risk-assessed by the Lifting Competent Person (LCP) as part of the Permit to Work process. A Category 2 lift cannot meet any of the criteria of a Category 3 lift. If it does, then it shall be classified as a Category 3 lift.

E. A Category 2 Lift Checklist can be revalidated for up to 7 days or the scope of work documented on the Checklist, whichever is shorter.

F. Category 1 (Routine) lifts may follow a risk assessed procedure, which may include a Job Safety Analysis of the lift. Category 1 lifts do not meet any of the criteria of Category 3 or 2 lifts.

Note: If a risk assessed procedure has not yet been developed for the specific task, the PTW should be utilized.

G. The Lift Operator shall not be permitted to leave his/her position at the controls while the load is suspended, unless required to by another written policy such as helicopter landings on platforms while a lift is in progress.

H. Wherever practical, loads shall be transported (“trucked”) to their next location, not “pick and carried” by a crane or forklift.

I. Whenever a crane load is “walked,” the load shall:

- Not exceed the Chart Rated Capacity for mobile operation.

- Be secured to the crane in a manner that ensures the load does not strike the ground or have excessive movement at any time whilst traveling.

7.2. Additional Requirements for Loads

A. The rigger should not directly handle loads whenever the bottom of the load is above waist height.

B. Taglines may be used to provide tension on a load as a means of control and should be made of a non-conductive material. At no point shall an employee be underneath a load.

C. For crane lifts, the operator shall not leave the controls any time the load weight is borne partially or fully, unstable or while the load is suspended, unless an emergency situation is announced in the vicinity of the lift and the suspended load is made safe.

D. Exposure to crushing or being trapped between a suspended load and fixed objects shall be taken into account.

E. Lift crew members shall not put themselves in danger by attempting to control a moving load.

F. Under no circumstances shall personnel ever place themselves under a suspended load.

G. Personnel shall maintain an accessible escape route at all times.

7.3. Lifting Personnel – Aerial Cage Use (Refer to Appendix IV)

7.4. Tailing, Dual, and Multi Crane Lifting

A. No load should be lifted simultaneously by more than one crane unless a single crane lift is not practical and the multiple crane lifting method ensures the load placed on each crane does not exceed its de-rated design capacity.

B. The design capacity of a crane shall not be the maximum rated capacity but the de-rated capacity relevant to the lift to be performed, and should be identified in the lift plan.

7.5. Lifting over live Plant

A. Lifting over live plant, regardless of the lift category, shall not be performed unless:

- No other feasible safe alternative exists
- Risks have been mitigated
- An Operational Contingency Plan is in place.

B. If the live plant includes electrical energy hazards where the source cannot be de-energized then:

- The grounding/earthing requirements for all equipment involved in the lift shall be clearly defined
- No part of the equipment, rigging or load, shall be allowed within the Minimum Acceptable Approach Distance (MAAD).

7.6. Lifting Points

A. Lifting points that require mechanical attachment, shall be certified either by the supplier of the equipment or a competent engineer.

B. Lifting points certified by a competent engineer shall be supported by a weld inspection and NDT (non-destructive testing).

7.7. Lifting from Uncertified Steel Structures

A. Examples of uncertified steel structures are scaffolding, suspension points, or anchoring points.

B. Lifting from uncertified steel structures shall only be performed after approval from a competent engineer.

8. Lifts

8.1. Category 3 (Critical) and Category 2 (Complex) Lift Checklists

A. A separate Lift Checklist shall be created for each applicable Category 3 and Category 2 lift except as noted below:

1. A single Lift Checklist, based on the worst-case situation, can be used where a crane is making multiple lifts from the same location utilizing the same load travel path.
2. If a crane is moved and then repositioned for a subsequent similar lift, the Lift Operator shall review the Lift Checklist to verify the conditions noted on the Checklist and any accompanying forms are still applicable.

B. A Lift Checklist developed in coordination with the LCP during the planning stage of a job and completed except for signatures shall be sent to the job site. The LCP shall verify the Checklist and any associated forms are accurate and complete. See Appendix V for a flowchart of the lifting process.

C. For Category 3 lifts, depending on the hazards associated with the Lift, the completed Lift Checklist shall include the following documents as appropriate:

1. An Aerial Cage Lift Plan (Appendix II) shall be completed if an aerial cage is to be used to hoist personnel.

   Note: Detailed requirements for lifts using aerial cages are provided in Appendix IV.

2. A Lifts over Live Process Equipment or Pipelines form (Appendix III) shall be completed if the lift is to take place over live plant, live process equipment, an exposed live pipeline, or a live underwater pipeline.

D. Category 3 and Category 2 lifts shall not be attempted without a complete, approved Lift Checklist, including, if applicable, attachments such as additional required lift plans or a pre-engineered lift plan. The Lift Operator responsible for the job shall assist in the completion of the Lift Checklist with the assistance of any necessary subject matter experts such as a Rigger or Project Manager.

Note: If a complex Critical Lift is planned, BP may require a detailed engineering lift assessment or a test lift prior to the execution of the lift.

E. Completed Lift Checklists and associated attachments per the Lifting and Rigging policy shall remain at the lift site for the duration of the lift.

F. A Category 3 Lift Checklist is valid for one work shift for individuals working under the Checklist, or for the duration of the scope of work documented on the Checklist, whichever period is shorter.

G. If Checklist conditions are exceeded, work shall be suspended until the Asset Operator determines if changes can be made to the Checklist or if the Checklist should be cancelled and a new Checklist issued.

8.2. Category 1 Lifts

A. Category 1 lifts do not require a Lift Checklist

B. Category 1 lifts require a Risk Assessed Procedure (RAP) or a PTW if a RAP is not developed or available.

8.3. Lift Checklist Approvals

A. Category 3 lift specific approval:

1. The BP person responsible for the Lift Checklist shall notify the District Operations Manager (DOM) of the proposed lift .

Note: The DOM and/or ELA may request/revise future notification requirements based on his/her personal risk assessment.

2. Category 3 Lift Checklists and supporting documentation shall be reviewed by the ELA . Approval can be indicated by e-mail confirmation from the ELA.

B. Category 2 lift specific approval:

1. All Category 2 lifts shall be approved by the LCP.

C. PTW issuance for Category 3 and Category 2 lifts.

1. By signing the PTW, the Asset Operator indicates the appropriate documentation and level of approval has been obtained for the lift to proceed and his/her understanding that the District Operations Manager has been notified as appropriate.

2. By signing the Checklist, the LCP, Performing Authority, Lift Operator, Rigger and Signal Person acknowledge:

a) their understanding of the Checklist conditions and precautions,

b) that they will instruct other individuals working under the PTW/Checklist to read and document their understanding of the PTW/Checklist,

c) they will stop work if they become aware of PTW/Checklist conditions being exceeded, and

d) they will notify the AO / AOD upon completion or interruption of the work.

D. Category 1 lift specific approval:

1. All Category 1 lifts are approved through application of an approved RAP or by the Lift Operator if a PTW is applied.

8.4. Pre-Lift Safety Meeting

A. Prior to making a Lift, the LCP shall hold a pre-lift safety meeting at the lift site with all personnel taking part in the lift.

B. The meeting shall include a review the scope of the approved Lift Checklist, PTW, L2Hitra if applicable and/or RAP and verification that all personnel taking part in the lift understand their respective roles.

C. The LCP, Performing Authority, Lift Operator if different from the Performing Authority, and, if applicable, the Signal Persons and Riggers shall sign the Lift Checklist for Category 3 and Category 2 lifts following the pre-lift safety meeting to indicate that they fully understand the scope of the lift, the permit requirements, and their roles.

9. Training and Competency

A. All BP employees serving in roles defined in this policy shall be trained and competent for their assigned roles as specified in the Training and Competency Matrix.

B. The LCP should have training and competence to plan and perform lifting operations to the defined level set by the ELA.

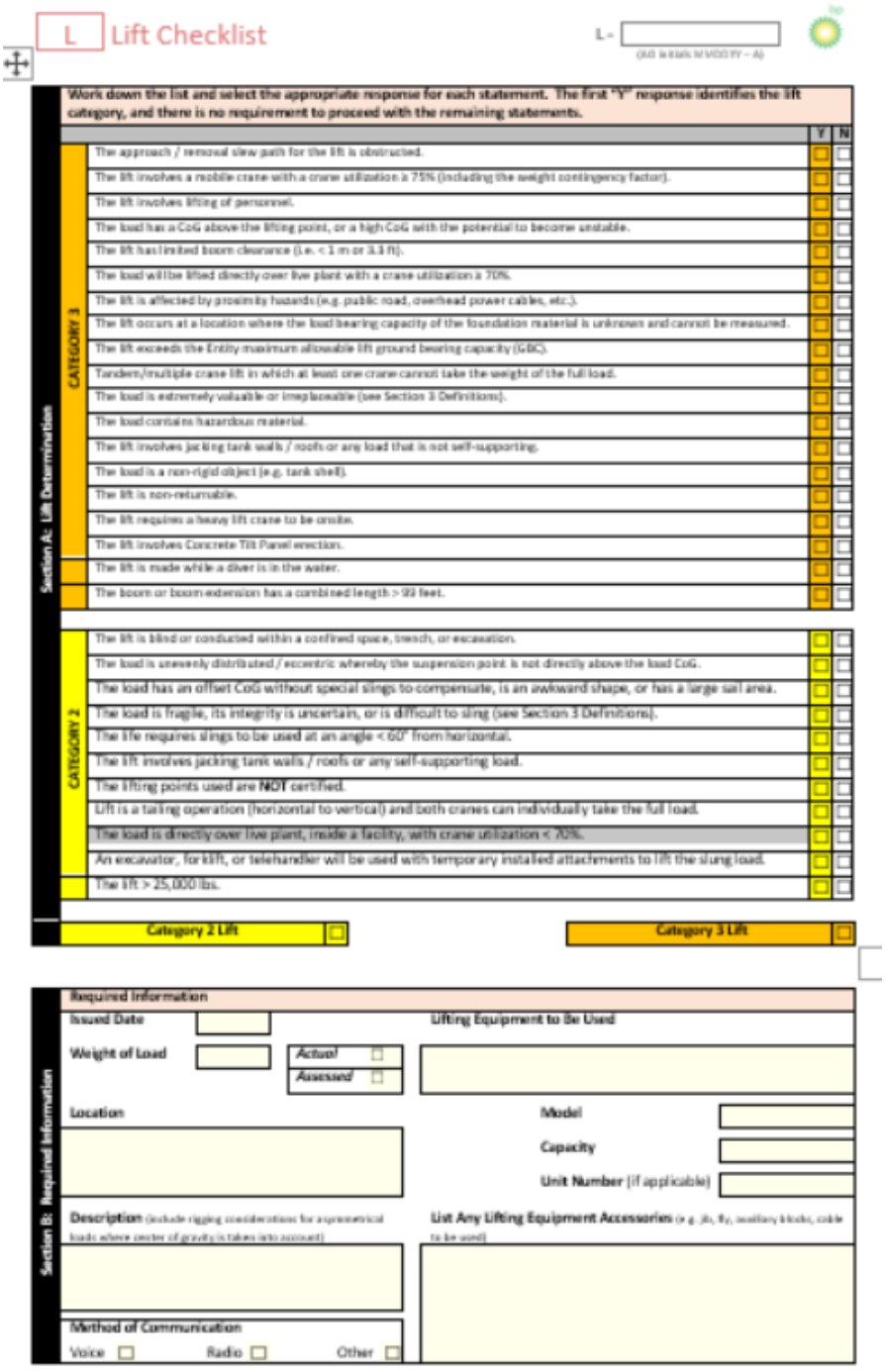
All contractors who perform work within the scope of this policy shall understand their specific roles and responsibilities and be able to verify training of their employees in specified roles. *Note:* Refer to the USPL Control of Work Training and Competency matrix for specific training requirements.

10. References

1. ANSI/ASME B30 Safety Standards for Cableways, Cranes, Derricks, Hoists, Hooks, Jacks, and Slings.
   Note: B30 references a series of standards specific to lifting and rigging equipment.
2. API Spec 2C, “Specification for Offshore Pedestal Mounted Cranes,” 6th ed., 2004.
3. API Recommended Practice 2D, “Operation and Maintenance of Offshore Cranes,” 5th ed., 2003.
4. BP Operating Management System Guide, “Lifting Operations.”
5. OSHA, U.S. Department of Labor, 29 CFR 1926.1400, “Cranes and Derricks.”
6. BP Practice Lifting Operations D-P 3.2-0100

Appendix I
Lift Checklist

This example of the Lift Checklist is for reference only. For a downloadable version of the Checklist, go to the HSSE Policies folder in DRM. The electronic version may be filled out online or printed and completed as hard copy.



L Lift Checklist

L -

Work down the list and select the appropriate response for each statement. The first "Y" response identifies the lift category, and there is no requirement to proceed with the remaining statements.

Section A: Lift Determination

		Y	N
CATEGORY 3	The approach / removal slew path for the lift is obstructed.	☐	☐
	The lift involves a mobile crane with a crane utilization ≥ 75% (including the weight contingency factor).	☐	☐
	The lift involves lifting of personnel.	☐	☐
	The load has a CoG above the lifting point, or a high CoG with the potential to become unstable.	☐	☐
	The lift has limited boom clearance (i.e. < 1 m or 3.3 ft).	☐	☐
	The load will be lifted directly over live plant with a crane utilization ≥ 70%.	☐	☐
	The lift is affected by proximity hazards (e.g. public road, overhead power cables, etc.).	☐	☐
	The lift occurs at a location where the load bearing capacity of the foundation material is unknown and cannot be measured.	☐	☐
	The lift exceeds the Entity maximum allowable lift ground bearing capacity (GBC).	☐	☐
	Tandem/multiple crane lift in which at least one crane cannot take the weight of the full load.	☐	☐
	The load is extremely valuable or irreplaceable (see Section 3 Definitions).	☐	☐
	The load contains hazardous material.	☐	☐
	The lift involves jacking tank walls / roofs or any load that is not self-supporting.	☐	☐
	The load is a non-rigid object (e.g. tank shell).	☐	☐
	The lift is non-returnable.	☐	☐
	The lift requires a heavy lift crane to be onsite.	☐	☐
	The lift involves Concrete Tilt Panel erection.	☐	☐
	The lift is made while a diver is in the water.	☐	☐
	The boom or boom extension has a combined length > 99 feet.	☐	☐
CATEGORY 2	The lift is blind or conducted within a confined space, trench, or excavation.	☐	☐
	The load is unevenly distributed / eccentric whereby the suspension point is not directly above the load CoG.	☐	☐
	The load has an offset CoG without special slings to compensate, is an awkward shape, or has a large sail area.	☐	☐
	The load is fragile, its integrity is uncertain, or is difficult to sling (see Section 3 Definitions).	☐	☐
	The life requires slings to be used at an angle < 60° from horizontal.	☐	☐
	The lift involves jacking tank walls / roofs or any self-supporting load.	☐	☐
	The lifting points used are NOT certified.	☐	☐
	Lift is a tailing operation (horizontal to vertical) and both cranes can individually take the full load.	☐	☐
	The load is directly over live plant, inside a facility, with crane utilization < 70%.	☐	☐
	An excavator, forklift, or telehandler will be used with temporary installed attachments to lift the slung load.	☐	☐
	The lift > 25,000 lbs.	☐	☐

Category 2 Lift ☐ Category 3 Lift ☐

Section B: Required Information

Required Information

Issued Date

Weight of Load

Actual ☐ Assessed ☐

Lifting Equipment to Be Used

Location

Model

Capacity

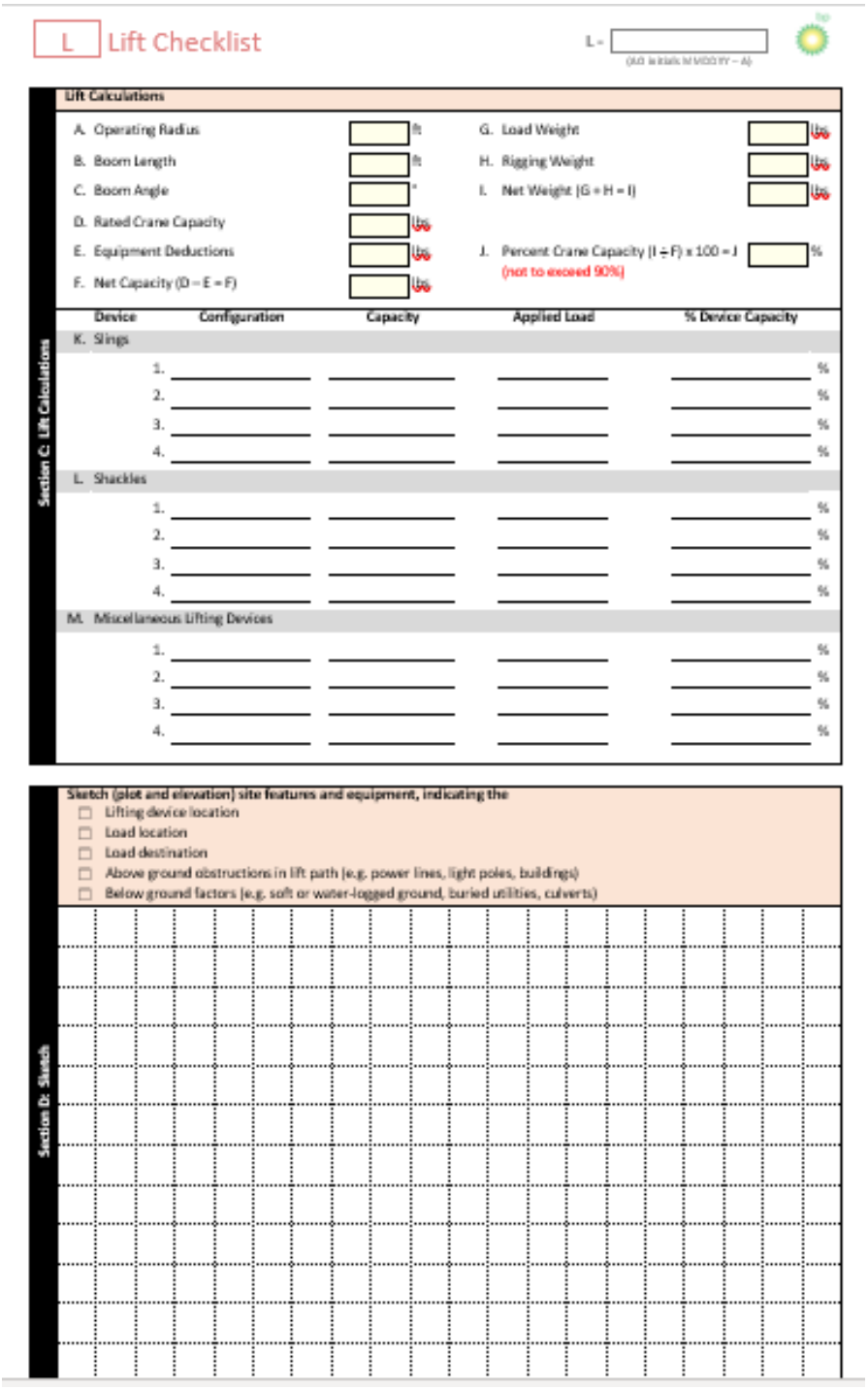
Unit Number (if applicable)

Description (include rigging considerations for asymmetrical loads where centre of gravity is taken into account)

List Any Lifting Equipment Accessories (e.g. jib, fly, auxiliary blocks, cable to be used)

Method of Communication

Voice ☐ Radio ☐ Other ☐



L Lift Checklist

L -

Section C: Lift Calculations

Lift Calculations

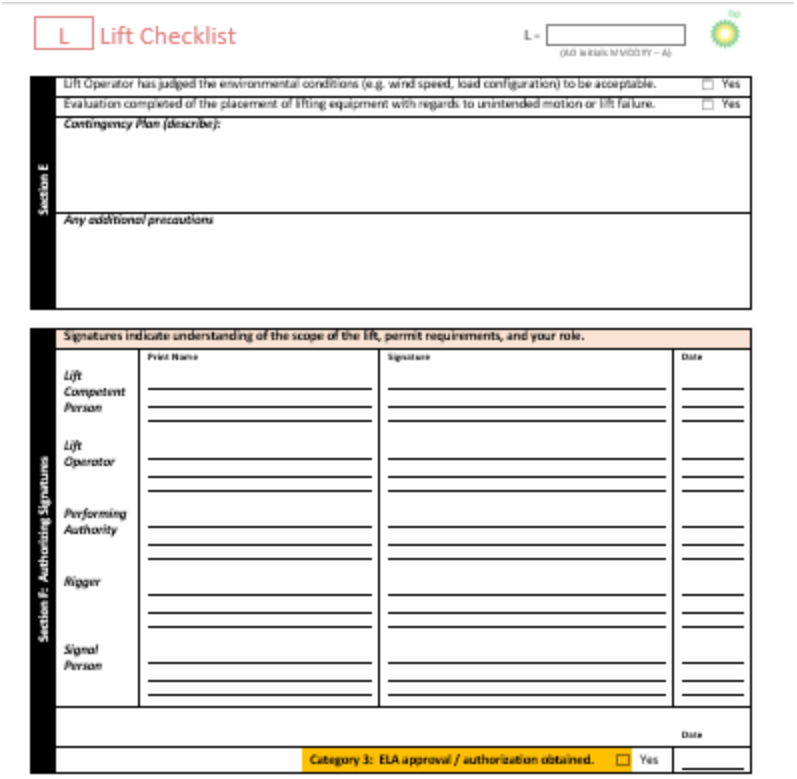
A. Operating Radius	ft	G. Load Weight	lbs
B. Boom Length	ft	H. Rigging Weight	lbs
C. Boom Angle	°	I. Net Weight (G + H = I)	lbs
D. Rated Crane Capacity	lbs		
E. Equipment Deductions	lbs	J. Percent Crane Capacity (I ÷ F) x 100 = J (not to exceed 90%)	%
F. Net Capacity (D – E = F)	lbs		

Device	Configuration	Capacity	Applied Load	% Device Capacity
K. Slings				
1.				%
2.				%
3.				%
4.				%
L. Shackles				
1.				%
2.				%
3.				%
4.				%
M. Miscellaneous Lifting Devices				
1.				%
2.				%
3.				%
4.				%

Section D: Sketch

Sketch (plot and elevation) site features and equipment, indicating the

- ☐ Lifting device location
- ☐ Load location
- ☐ Load destination
- ☐ Above ground obstructions in lift path (e.g. power lines, light poles, buildings)
- ☐ Below ground factors (e.g. soft or water-logged ground, buried utilities, culverts)



L Lift Checklist

L =

Section E

Lift Operator has judged the environmental conditions (e.g. wind speed, load configuration) to be acceptable.	☐ Yes
Evaluation completed of the placement of lifting equipment with regards to unintended motion or lift failure.	☐ Yes
Contingency Plan (describe):	
Any additional precautions	

Section F: Authorizing Signatures

Signatures indicate understanding of the scope of the lift, permit requirements, and your role.

	Print Name	Signature	Date
Lift Competent Person			
Lift Operator			
Performing Authority			
Rigger			
Signal Person			

Date

Category 3: ELA approval / authorization obtained. ☐ Yes

Appendix II
Lifts Using Aerial Cages Supplement

Aerial Cage Lift Plan

Note: This completed Aerial Cage Lift Plan must be attached to the Category 3 Critical Lift Checklist and must be maintained by the AO / AOD for the duration of the covered lift.

Job Name: _____ Date: _____ (Use mm/dd/yyyy)

Lift Description: _____

1. Brief description of the aerial cage lift and why this is the least hazardous method of accessing the work location:

2. A pre-lift safety meeting must be held to discuss hoisting procedures for the particular job to be done. All attendees must sign below where appropriate.

Lift Operator: _____ Signal Person: _____

Cage Occupant: _____ Tagline Operator: _____

Cage Occupant: _____ Tagline Operator: _____

Cage Occupant: _____ HSE Representative: _____

3. Prior to the hoisting operation, a Trial Lift/Proof Test must be conducted as follows (refer to Appendix V, Section 5, of the Lifting and Rigging safety policy and to the lift plan):

	Test 1	Units	Test 2 (if crane is moved, or the lift route is changed)
a. Longest Radius during Trial Lift/Proof Test		ft.	
b. Corresponding Boom Length		ft.	
c. Corresponding Boom Angle		ft.	
d. Rated Capacity at Longest Radius		lbs.	
e. Equipment Deductions (i.e., jib, fly, block, rope, etc.)		lbs.	
f. Net Capacity (d – e = f)		lbs.	
g. Weight of Cage, Workers, Tools, and Equipment		lbs.	
h. Percent of Crane Capacity (g ÷ f X 100, ≤50%)		%	

Note: After the Trial Lift/Proof Test, a visual inspection of the crane rigging, platform, and supporting ground shall be conducted to determine whether the testing exposed any defect or produced any adverse effect upon any component or structure, e.g. hoist ropes are free of kinks, multiple part lines are not twisted around each other, taglines are unobstructed, hoist drum lines are seated on drums and sheaves, the platform is level, and stabilizing mats are under outriggers.

I have reviewed and approved this plan.

Performing Authority (print and sign): _____ **Date:** _____ (Use mm/dd/yyyy)

Revision date: July 8, 2014

Appendix III

Supplement for Lifts Near Electrical Hazards

Supplement for Lifts near Electrical Hazards

Note: Attempts should be made to de-energize electrical lines prior to the lift. If this is impossible or impractical, all requirements set forth in this form must be met before the lift is executed.

Note: This completed checklist must be attached to the Lift Checklist and must be maintained by the Performing Authority for the duration of the permitted lift.

Job Name:

Performing Authority:

Minimum Acceptable Approach Distances

Required Clearances from Live Electrical Lines	
Nominal Voltage, kV (Phase to Phase)	Minimum Required Clearance ft.
up to 50	10
over 50 to 200	15
over 200	20

(From OSHA 29 CFR 1926.1408)

Requirements:

		Yes	N/A
1	An on-site pre-lift meeting has been held with everyone involved in the lift to discuss their role, and permit conditions and precautions.	☐	☐
2	Taglines are nonconductive.	☐	☐
3	A Signal Person has been designated to direct the lift.	☐	☐
4	The Signal Person's sole responsibility is to verify that the required clearance is maintained.	☐	☐
5	Personnel have been instructed not to touch the crane unless the Signal Person indicates that it is safe to do so.	☐	☐
6	The lift has been planned so that lifting will not be over energized power lines.	☐	☐

Form valid:

From: ☐ AM ☐ PM on (mm/dd/yyyy) To: ☐ AM ☐ PM on (mm/dd/yyyy)

Signatures (print and then sign name):

AO/AOD: Electrical Supervisor: (if applicable)

Lift Operator : Power Company Representative: (if applicable)

Signal Person(s): Rigger(s) :

Appendix IV

Lifts Over Live Process Equipment or Piping Supplement

Lifts Over Live Process Equipment or Piping Supplement

Note: This supplement must be completed if the lift is over live process equipment. The completed supplement must be attached to the Category 3 (Critical) Lift Checklist.

Job Name:

The following items must be completed during the job planning phase.

- ☐ All alternatives, if any exist, for making this lift have been evaluated, and none is considered practical.
- ☐ Operations has reviewed and understands the scope of the lift in question.
- ☐ All isolation valves have been identified and are accessible for the live processes or pipelines over which the lift will take place.
- ☐ The lift area has been evaluated with respect to personnel placement to reduce exposure in case the load is dropped.
- ☐ Evacuation routes have been evaluated for potentially affected personnel in case the load is lost.
- ☐ Operations has developed a plan of action covering response in case the load is lost.

The following items must be completed prior to the lift.

- ☐ Wind direction has been evaluated for its effects on potentially leaking product in the event of a damaged or lost load.
- ☐ The plan of action for a damaged or lost load has been reviewed.
- ☐ Evacuation routes have been explained to all individuals involved with the lift in the event of a damaged or lost load.
- ☐ Personnel downwind of the lift have been notified of the lift in progress or cleared from any potential hazard area.
- ☐ An Asset Operator has been designated to remain available (e.g. on-site or by phone) for the duration of the lift.

Signature (print and then sign name): **How to Contact:**

Asset Operator / Asset Operator Designee

Appendix V
Aerial Cages

1. Aerial Cage Use

A. The use of aerial cages will be permitted only when other conventional means of reaching the job site such as ladders or scaffolding, are impossible or would be more hazardous than an aerial cage. The Performing Authority responsible for the job will determine the least hazardous means of access to an elevated location. The choice of appropriate access will be based solely upon safety criteria and not expediency, manpower, or cost.

B. Aerial cages will not be used as elevators when other appropriate access is available.

C. The aerial cage shall not be loaded beyond its rated load capacity or maximum intended load. Additionally, the total weight of the loaded cage and its associated rigging shall not exceed 50% of the rated capacity for the radius and configuration of the crane at its longest reach.

D. Cranes used for lifting aerial cages shall be equipped with an operational anti-two-block device to prevent contact between the ball and the boom tip. Bypassing the anti-two-block device is not permitted when an aerial cage is utilized.

E. The aerial cage manufacturer's limitations about the number of people lifted at one time shall be followed. Radio contact between the Lift Operator and the personnel in the basket shall be maintained at all times. One person in the cage, so appointed, shall utilize the ANSI hand signals to communicate with the Lift Operator in the event of radio failure. If the Lift Operator cannot see the personnel in the cage, then a Signal Person shall be appointed and stationed in a position that provides a clear view of the aerial cage and the Lift Operator.

   1. Other than when giving hand signals, occupants of the cage shall keep all parts of their bodies inside the cage during raising, lowering, and positioning.

   2. Each employee working out of a cage shall wear a safety harness with a lanyard attached to the cage and with no more than a 6 foot lanyard.

F. Materials and tools for use from a suspended cage will be evenly distributed throughout the cage and will be secured to prevent displacement during raising, lowering, and positioning.

G. Before employees exit or enter a hoisted cage that is not landed, the platform will be secured to the structure to be worked on unless securing it to the structure will create an unsafe situation.

H. The crane operator shall remain at the machine's controls at all times when the crane is running or the cage is occupied.

I. Hoisting shall be discontinued upon any indication of unsafe conditions.

J. Hoisting of employees while the crane is traveling is prohibited.

K. Aerial cages designed and constructed for hoisting personnel shall be used only for lifting employees, their tools, and the materials necessary to do their work. Aerial cages shall not be used to hoist unaccompanied materials or tools.

L. Before personnel are hoisted, the Lift Checklist along with the Aerial Cage Lift Plan (see Appendix II) shall be completed.

M. Load and boom hoist drum brakes, swing brakes, and locking devices such as pawls or dogs (if so equipped) shall be engaged when the occupied cage is in a stationary working position.

N. Standard cargo baskets shall not be used to lift personnel.

O. The aerial cage shall be fitted with the following:

- Internal handrails to prevent hands/fingers being trapped if the basket swings against an obstruction.
- Fitting with a roof to protect personnel, if there is a risk of falling objects.
- Fitting with slip resistant floor.
- Fitting with internal anchor points for safety harnesses.
- Fitted with inwardly opening doors and have a locking mechanism to prevent inadvertent opening.

P. If personnel are lifted over water, the following are required:

1. A personal floatation device shall be worn over the top of the fall arrest harness at all times.
2. The fall arrest harness lanyard shall remain clipped to the harness but detached from the aerial lift cage while personnel are over water.

Q. Aerial cages shall be inspected, maintained, and re-certified every six months or at a shorter interval if required by the supplier's guidelines or local regulations.

2. Aerial Cage Rigging

A. A sling shall be attached from the crane load-bearing cable, above the ball or hook, to the aerial cage frame.

B. All eyes in wire rope slings shall be fabricated with thimbles.

C. Two 3/8-inch (minimum) taglines shall be tied to opposite sides of the cage to guide the cage and prevent its swinging. Each tagline will be handled by one employee (minimum) on the ground or on a stable platform deck.

D. A review whether fitting a redundant sling to prevent a single point of failure is appropriate shall be conducted.

3. Aerial Cage Pre-Lift Safety Meeting

A. Prior to lifting any personnel in an aerial cage basket, a pre-lift safety meeting shall be conducted by the responsible Performing Authority and include, at a minimum, the Lift Operator, aerial cage occupants, Signal Person, Rigger, and an HSE representative. The pre-lift safety meeting shall be repeated each day, each time the crane is moved to a new location, and each time a new individual is involved with the lift.

B. The purpose of the pre-lift safety meeting is to review the scope of the lift and to verify that all individuals taking part in the lift understand their respective roles and responsibilities, as assigned by the responsible Performing Authority.

C. During the pre-lift safety meeting, a trial lift shall be conducted, as outlined in Section 5 below, and witnessed by all pre-lift safety meeting attendees.

D. The Lift Operator, LCP, cage occupants, Signal Person(s)/Rigger(s), persons manning the taglines, and an HSE representative shall sign the Aerial Cage Lift Plan (Appendix II) following the pre-lift safety meeting and trial lift indicating they have witnessed or participated in the trial lift and fully understand the scope of the lift and their roles as noted below:

1. The Lift Operator shall:
   a) Verify proper positioning of lifting device.
   b) Verify proper equipment configuration (i.e., boom length/radius, boom attachments, jib angles, parts of cable)

c) Verify that all necessary parts of the cable are present.

d) Verify that proper footing exists.

e) Verify that no overhead obstructions exist.

f) Verify that proper rigging exists.

g) Verify that the anti-two-block device is operational.

h) Verify that the overall lift conditions are acceptable.

2. The aerial cage occupant(s) shall:

a) Verify the scope of work to be conducted from the basket.

b) Verify radio contact with the Lift Operator.

c) Verify their understanding of hand signals to be used in the event of radio failure.

3. The Signal Person(s)/Rigger(s) shall:

a) Inspect the rigging and verify that it is acceptable.

b) Control job site access.

4. The personnel assigned to man the taglines shall:

a) Verify that they understand the travel path of the basket.

b) Maintain control of the basket at all times and prevent obstructions from interfering with the taglines.

5. The HSE representative shall:

a) Review the scope of the lift and verify that all safety concerns of those involved with the lift have been addressed prior to the execution of the lift.

E. Following the pre-lift safety meeting and the aerial cage trial lift, the Performing Authority shall sign the permit, indicating that all requirements of this policy have been met and the lift may proceed as planned.

4. Aerial Cage Trial Lift/Proof Test

A. At each job site, the aerial cage shall be put through a trial lift before personnel are hoisted. The trial lift shall be performed by loading the unoccupied cage to a minimum of 125% of its rated capacity and moving the cage to each work position to be reached from the crane set-up.

B. After the trial lift/proof test, the cage shall be suspended a few inches above the ground and inspected by the Rigger to verify it is secure and properly balanced. Employees shall not be hoisted unless the following conditions exist:

1. Hoist ropes are free of kinks.

2. Multiple part lines are not twisted around each other.

3. Taglines are unobstructed.

4. Hoist lines are seated on drums and sheaves.

5. Platform is level.

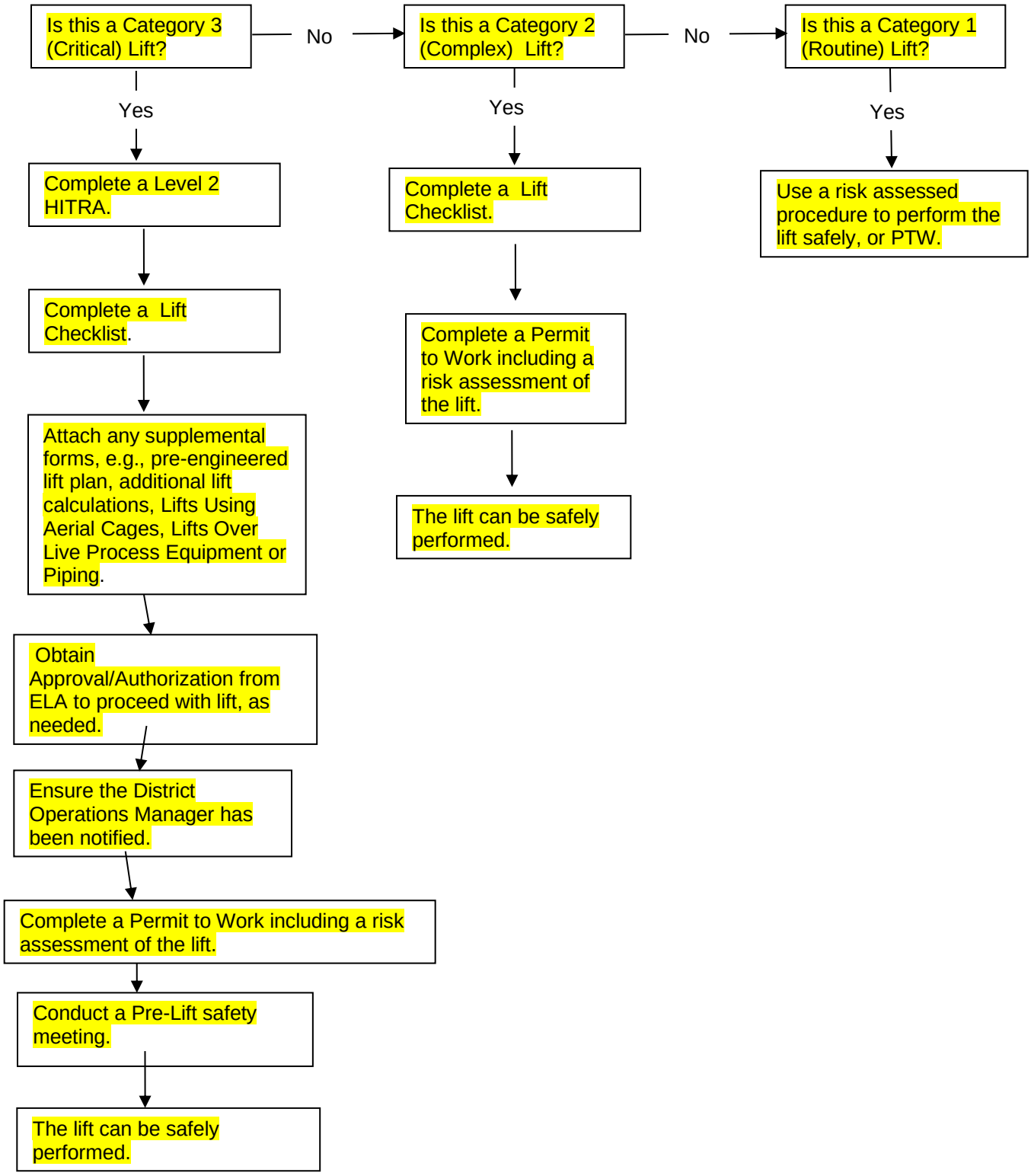
6. Stabilizing mats are under outriggers.

C. The crane rigging, cage, and supporting ground shall be inspected by the Lift Operator for any adverse conditions produced by the trial lift.

D. Any defects found during or after the trial lift shall be corrected and the trial lift repeated before approving the Aerial Cage Lift Plan (Appendix II).

E. The trial lift shall be performed whenever the crane is moved and set up in a new location or returned to a previously used location. Additionally, the trial lift will be repeated when the lift route is changed unless the Lift Operator determines that the route change is not significant.

Appendix VI
Lifting Flowchart



Appendix VII
Lift Categorization Table

Table 5 - Categorise: Lift Categorisation Document

Lifting Categorisation Document			
Start at the top of the Document, working down the list. The first question that is answered 'YES' provides the categorisation of the lift in the righthand column, there is no requirement to proceed further.			
	YES	NO	Category
Is the approach/removal slew path for the lift obstructed?			3
Does the lift involve a mobile crane with a crane utilisation ≥75% (including weight contingency factor)?			
Does the lift involve a fixed crane with a crane utilisation ≥90% (including weight contingency factor)?			
Is the fixed lifting system (overhead crane, runway beam or davit etc.) utilisation ≥95%?			
Does the lift involve lifting of personnel?			
Does the load have a CoG above the lifting point, or a high CoG with the potential to become unstable?			
Does the lift have limited boom clearance (i.e. <1m/3.3 ft)?			
Will the load be lifted directly over live plant, with a crane utilisation equal to or exceeding 70%?			
Is the lift over high HF Acid process equipment/plant on a HF Alkylation Unit?			
Could the lift be affected by proximity hazards (e.g. public road, overhead power cables etc)?			
Will the lift occur at a location where the load bearing capacity of the foundation material is unknown and **cannot** be measured?			
Will the lift exceed the Entity maximum allowable lift ground bearing capacity (GBC)?			
Is it a tandem/multiple crane lift in which at least one crane cannot take the full load?			
Is the load extremely valuable or irreplaceable (see Section 3 Definitions?			
Does the load contain hazardous material?			
Does the lift involve jacking tank walls/roofs or any load that is not self-supporting?			
Is the load a non-rigid object (e.g. tank shell)?			
Is the lift non-returnable**?**			
Does the lift require a heavy lift crane to be built onsite?			
Does the lift involve Concrete Tilt Panel erection?			
Does the lift involve using process pipework as a suspension point to bear any load?			
Is the lift blind or conducted within a confined space or trench or excavation?			2
Is the load unevenly distributed/eccentric, whereby the suspension point is not directly above the load CoG?			
Does the load have an offset CoG without special slings to compensate, or is an awkward shape or has a large sail area?			
Is the load fragile or is its integrity uncertain or is it difficult to sling (see section 3 Definitions)?			
Does the lift require Slings to be used at an angle of below 60° from horizonta ?			
Does the lift involve jacking tank walls/roofs or any load that is self-supporting?			
Are the lifting points to be used **NOT** certified?			
Is it a tailing operation (horizontal to vertical) and both cranes can individually take the full load?			
Will the load be lifted directly over live plant inside a facility, with a crane utilisation below 70%?			
Will an excavator, forklift or telehandler be used with temporary installed attachments to lift the slung load?			
None of the above apply to this lift i.e. the load is pre-slung or very easily slung, with no external factors that complicate the operation?			1
Is the lift routine in nature (i.e. occur at least once per month during maintenance, or are repeated over longer periods during TAR)?			
Is the site team experienced, and performed a similar lift recently?			

Appendix VIII
Lift Calculation Worksheet

The lift calculation worksheet below is available in DRM. This worksheet is an example of a lift plan that can be used, but does not dictate the required format.

Lift Calculation Worksheet

Date: Location:

Description of lifting operation (include rigging considerations for asymmetrical loads where center of gravity factors must be taken into account):

Weight of load (lbs): ☐Actual ☐Assessed

Lifting equipment and accessories to be used:

Model:

Capacity:

Unit number (if applicable):

List any lifting equipment accessories, e.g., jib, fly auxiliary blocks, cable to be used:

Lift Calculations

A.	Operating Radius	ft	G.	Load Weight (Attach weight ticket or certified shipping weight, if applicable.)	lbs
B.	Boom Length	ft	H.	Rigging Weight	lbs
C.	Boom Angle	°	I.	Net Weight (G + H = I)	lbs
D.	Rated Crane Capacity	lbs		(From load charts)	
E.	Equipment Deductions (e.g., jib, fly, auxiliary blocks, cable)	lbs	J.	Percent Crane Capacity (I ÷ F) x 100 = J (Not to exceed 90%)	%
F.	Net Capacity (D – E = F)	lbs			

K. Slings: Rigging diagram is required if sling angles are 85° or less.

	Configuration	Capacity	Applied Load	% Sling Capacity
1.				%
2.				%
3.				%
4.				%

L. Shackles:

	Configuration	Capacity	Applied Load	% Shackle Capacity
1.				%
2.				%
3.				%
4.				%

M. Miscellaneous Lifting Devices:

	Configuration	Capacity	Applied Load	% Device Capacity
1.				%

Site Plot Plan

Sketch (plot and elevation) site features and equipment, indicating the lifting device location, load location, load destination, aboveground obstructions in lift path (e.g., power lines, light poles, buildings), and known ground and belowground factors (e.g., soft or water-logged ground, buried utilities, culverts).