

TABLE OF CONTENTS

1.0	PURPOSE AND SCOPE	2
2.0	IMPLEMENTATION	2
3.0	RESPONSIBILITIES.....	2
3.1	Roles and Responsibilities	2
4.0	PROCEDURE	11
4.1	General Requirements.....	11
4.2	Critical, Special, and Ordinary Lifts.....	14
4.3	Lifting Point Inspection Preparation for Critical and Special Lifts	22
4.4	Field Inspection.....	22
4.5	Structural Analysis.....	23
4.6	Inspection of Existing Permanently Installed Lifting Points	24
4.7	Special Load Handling.....	25
4.8	Equipment Used in Construction	26
4.9	Permanent Plant Handling Equipment.....	26
4.10	Freight Container Lifting	26
4.11	Package, Storage, and Load Handling Plan	26
5.0	DEFINITIONS.....	26
6.0	RECORDS	28
7.0	SOURCES.....	28
7.1	Requirements	28
7.2	References.....	28

TABLE OF FIGURES

Figure 1 - Verification of Lifting Point Structural Integrity Process	30
Figure 2 - Inspection of Permanent Lifting Points Process.....	33

1.0 PURPOSE AND SCOPE

(7.1.1, 7.1.2, 7.1.3, 7.1.4, 7.1.5, 7.1.6, 7.1.7)

This procedure defines the process for conducting hoisting, rigging, load handling, and transport activities for the Tank Operations Contractor (TOC), and describes organizational roles and responsibilities for implementing the TOC Hoisting and Rigging (H&R) Safety Program. Load handling includes both vertical lifting and horizontal load movement. The types of lift planning/load handling activities are categorized as ordinary, special, and critical lifts.

This procedure also provides instructions to ensure ordinary lifts are performed safely and for preparing (H&R) instructions (critical lift plans [CLPs], and special lift plans [SLPs]). In addition, this procedure defines the engineering process to ensure the structural integrity of permanently installed lifting attachments and the integrity of the lifted item.

TFC-CHARTER-31 provides the H&R committee charter.

H&R activities within the scope of this procedure must comply with DOE/RL-92-36, "Hanford Site Hoisting and Rigging Manual," (HSHRM) and this procedure.

TFC-PLN-02, Part II, Chapter 2.15 is applicable to hoisting, rigging, and transport for the TOC. Lift classifications (A, B, and C) from TFC-PLN-02 are incorporated into this procedure using the crosswalk developed by Engineering, Quality Assurance, Safety, and Procurement in RPP-RPT-59465.

2.0 IMPLEMENTATION

The procedure is effective on the date shown in the header and applies to the TOC and subcontracted organizations that operate H&R equipment (permanent plant handling equipment, mobile equipment, etc.) or perform hoisting, rigging, load handling, and transport activities for the TOC on Government-owned property, the Hanford Site, or as stated in contract requirements. This procedure shall not be retroactive and this update provides clarification to how work has been being completed.

3.0 RESPONSIBILITIES

3.1 Roles and Responsibilities

3.1.1 Hoisting and Rigging Safety Subject Matter Expert

- Provides guidance in interpretation of DOE/RL-92-36 and development of TOC-specific H&R safety requirements.
- Provides oversight of training and qualification guidelines for TOC and subcontractor personnel identified to perform H&R activities at or for the TOC in conjunction with the TOC Training department.
- Serves as co-chairperson for the TOC H&R Committee in accordance with [TFC-CHARTER-31](#).

- Serves as the TOC safety program representative and voting member of the Hanford Site H&R Committee.
- Serves as the TOC safety program point of contact for review, communication, submittal, and approval of revisions to the HSHRM.
- Participates in incident/accident investigations including, but not limited to, forklifts, H&R equipment or services, and subsequent corrective action development.
- Performs oversight of site services and TOC construction subcontractors providing H&R equipment or services for the TOC.
- Assists with Engineering led assessments.

3.1.2 Hoisting and Rigging Engineering Subject Matter Expert

- Provides guidance in technical interpretation of DOE/RL-92-36 and development of TOC-specific H&R requirements.
- Assigns Qualified Rigging Engineers as needed to support TOC H&R activities.
- Provides critical or special lift determination if necessary.
- Serves as co-chair of the TOC H&R Committee.
- Serves as the TOC Engineering program representative and voting member of the Hanford Site H&R Committee.
- Serves as the TOC Engineering program point of contact for review, communication, submittal, and approval of revisions to the HSHRM.
- Distributes H&R bulletins, lessons learned, and other significant H&R information.
- Participates, as needed, in incident/accident investigations involving H&R equipment or services, and subsequent corrective action development.
- Provides rigging engineering services as required, including structural evaluation of items to be lifted, lift point evaluations, and lift plan design in accordance with applicable engineering instructions and procedures.
- Maintains the lifting point database.
- Reviews CLPs and SLPs.
- Reviews and approves all H&R equipment procurements.
- Assigns personnel to perform annual H&R assessments.

3.1.3 Qualified Rigging Engineer

- Assists in the development of H&R bulletins, lessons learned, and other significant H&R information.
- Participates, as needed, in incident/accident investigations involving H&R equipment or services, and subsequent corrective action development.
- Provides rigging engineering services as required, including structural evaluation of items to be lifted, lift point evaluations, and lift plan development in accordance with applicable engineering instructions and procedures.
- Assists in maintaining the lifting point database.
- Generates, reviews, and approves CLPs and SLPs.
- Assists in performing annual H&R assessments.

3.1.4 Maintenance Organization

- Assigns a TOC H&R Lead Equipment Custodian to maintain accountability of company-owned and leased H&R equipment, and ensures required maintenance, repair, and inspections are current for equipment in use.
- Assigns assistant equipment custodians to the Lead Equipment Custodian as necessary to meet H&R equipment maintenance and accountability requirements as described in Section 3.1.11.

3.1.5 Manager of Construction

- Establishes and communicates expectations, reviews, approves, and provides oversight for construction subcontracts involving H&R equipment or services.
- Enforces construction subcontractor compliance with H&R requirements stipulated in DOE/RL-92-36, and additional TOC requirements contained within or referenced by this procedure.
- Ensures a qualified H&R equipment custodian(s) is appointed to make sure H&R equipment used by construction subcontractor personnel is properly inspected, maintained, and tagged.
- Ensures training and qualification of construction subcontractor personnel performing H&R activities for TOC comply with DOE/RL-92-36.
- Participates (or designates a representative) as a core member the TOC H&R Committee in accordance with [TFC-CHARTER-31](#).
- Participates in incident/accident investigations involving construction subcontractor H&R activities or services, as necessary.

- Involves H&R Engineering subject matter expert (SME) and H&R Safety SME in work planning, event investigations, and problem resolution as necessary.

3.1.6 TOC Organizations

- Conduct all H&R activities in compliance with DOE/RL-92-36, and additional TOC-specific H&R requirements identified or referenced in this procedure.
- Conduct documented (e.g., Management Observation Program [MOP], Peer Safety Observation Program [PSOP]) field oversight of crane, rigging, and forklift activities.
- Notify the shift office, H&R Engineering SME, and H&R Safety SME of any abnormal H&R event, and prior to any critique, fact-finding meeting, or incident investigation whenever possible.
- Review determination to return equipment (e.g., crane, hoist) to service following an abnormal event or equipment malfunction/repair. This review should include contacting the H&R Engineering SME and H&R Safety SME to assist in resolving questions or concerns prior to allowing affected equipment to resume operation in TOC facilities.
- Notify shift office of a crane or hoist returning to service in TOC facilities following any abnormal H&R event involving the crane or hoist.
- Include the H&R Engineering SME and H&R Safety SME in work planning, event investigations, and problem resolution as necessary. Designate a representative from each respective organization to participate as core members of the TOC H&R Committee in accordance with TFC-CHARTER-31.
- Designate individual(s) as the primary point of contact between the TOC and the Site Services Contractor regarding crane and rigging contract issues.
- Assign H&R asset manager to provide day-to-day scheduling of site services mobile crane support for operations, projects, and construction and commissioning activities.
- Initiate an investigation of events involving H&R activities and/or equipment, and participate in or oversee causal analysis identification and corrective action development as necessary.

3.1.7 Field Work Supervisors

- Stop work in the event hazardous conditions develop that may endanger personnel, equipment, or facilities:
 - If a load is suspended from a crane, minimal action is taken. Place the load/crane in a safe condition and preserve the scene for further investigation.
 - Contact shift office.

- Verify personnel are appropriately trained and qualified to perform assigned H&R activities.
- Enforce the expectation that all H&R work is to be performed in accordance with established requirements and procedures.
- Verify all cranes, forklifts, and rigging equipment have been inspected and operationally checked (as applicable) prior to use (see Section 4.1).
- Ensure co-located work does not affect lift activities or travel path.
- Verify permanently attached lifting points have been inspected.
- Contact a Qualified Rigging Engineer for assistance in mitigating unresolved H&R or lifting point concerns prior to making the lift(s).
- Review and approve CLPs and SLPs.
- Confirm with the designated leaders (DLs)/lift director and crane operator the weight of the load(s) to be lifted and the load chart rating of the crane at the maximum intended radius.
- Assign trained and qualified DLs/lift director in accordance with DOE/RL-92-36.
- Verify form A-6003-884 is complete for critical and special lifts, and all required signatures are present before allowing the lift to be performed.
- Perform pre-job briefings in accordance with [TFC-OPS-MAINT-C-02](#).
- Promptly notify the Lead Equipment Custodian whenever any problems are identified involving cranes, forklifts, or other H&R equipment.
- When performing an ordinary lift, assist the DL and crane operator in filling out the Mobile Crane – Ordinary Pre-Lift Checklist as appropriate (A-6007-153) and sign.

3.1.8 Designated Leaders/Lift Directors

DLs shall meet the training requirements for a critical lift DL described below, and perform additional functions described in Section 2.2.4 of DOE/RL-92-36.

DLs/lift directors are required for H&R activities requiring more than one person, special lifts, critical lifts, and are responsible for directing field H&R activities (refer to DOE/RL-92-36). Normal forklift truck material handling operations do not require a DL/lift director.

DLs shall be trained and knowledgeable about the equipment operation and activities to be performed and qualification is based upon the equipment they will be directing. DLs shall meet the training requirements listed in DOE/RL-92-36.

DLs/lift directors are also responsible for the following:

- Completing the appropriate “Pre-Lift Checklist” contained in A-6003-884 (Section 3) for special and critical lifts prior to making the lift.
- Ensuring only approved equipment within calibration/inspection frequencies is used.
- Performing all lifts as designed and approved, or pausing the work to appropriately mitigate any concerns with the existing plan or procedure.
- Ensuring that the preparation of the ground conditions needed to support crane operations has been completed before crane operations commence when mobile cranes are used. Notifying the Field Work Supervisor (FWS) if there are concerns pertaining to ground conditions.
- Performing pre-lift and pre-job requirements in accordance with DOE/RL-92-36.
- Confirming with the FWS and crane operator the weight of the load(s) to be lifted and the load chart rating of the crane at the maximum intended radius.
- Ensuring the center of gravity has been properly determined and that all directions in CLPs and SLPs are followed.
- When performing an ordinary lift, assist the FWS and crane operator in filling out the Mobile Crane – Ordinary Pre-Lift Checklist (A-6007-153) and sign.

3.1.9 Assembly/Disassembly Director

- Directs both the assembly and/or disassembly of H&R equipment (cranes), including installing or removing counterweights, jibs, etc.
- Ensures procedures for assembly and disassembly are appropriately developed (if not the manufacture’s procedure), are current, and are properly implemented.
- Ensures that the preparation of the ground conditions needed to support crane assembly and/or disassembly operations have been completed.
- Ensures assembly and/or disassembly personnel understand their tasks, the hazards of the tasks, and any hazardous positions or locations to avoid, and the use of fall protection, if required.

3.1.10 TOC Hoisting and Rigging Lead Equipment Custodian

- Obtains training and qualification to perform the duties and functions of the position as defined in Section 4.0 of DOE/RL-92-36 by attending course 042870.
- Is responsible for each crane, hoist, lift truck, below-the-hook lifting device, rigging hardware, and all other H&R equipment that requires scheduled maintenance, storage inspection, and record keeping.

- Maintains a master list of TOC owned and leased H&R equipment.
- Tracks and schedules required maintenance and inspection of TOC owned and leased H&R equipment.
- Provides oversight to subcontractor equipment custodians.
- Maintains an equipment-tagging program for TOC owned and leased H&R equipment.
- Performs the functions and responsibilities of Forklift Truck Custodian as described in Chapter 6 of DOE/RL-92-36.
- Performs additional duties as listed in Chapter 2 of DOE/RL-92-36.
- Interfaces with facility/area custodians to ensure inventory is inspected and readily available.

3.1.11 TOC Hoisting and Rigging Facility/Area Equipment Custodians

- Obtain training and qualification to perform the duties and functions of the position as defined in Section 4.0 of DOE/RL-92-36 by attending course 042870 (or equivalent).
- Are responsible for each crane, hoist, lift truck, below-the-hook lifting device, rigging hardware, and all other H&R equipment in the assigned area that requires scheduled maintenance, storage inspection, and record keeping.
- Provide current equipment list for crane, hoist, lift truck, below-the-hook lifting device, rigging hardware, and all other H&R equipment in the assigned area to the TOC Lead Equipment Custodian.
- Maintain readily retrievable records for each crane, hoist, lift truck, below-the-hook lifting device, rigging hardware, and all other H&R equipment in the assigned area.
- Ensure that a copy of all maintenance or modification records are given to the TOC Lead Equipment Custodian for the master storage.
- Ensure equipment is tagged correctly.
- Perform the functions and responsibilities of Forklift Truck Custodian as described in Chapter 6 of DOE/RL-92-36.
- Perform additional duties as listed in Chapter 2 of DOE/RL-92-36.
- Notify the Lead Equipment Custodian if assets do not pass inspection or maintenance.

3.1.12 Safety

- Performs field oversight of crane, forklift, and other H&R operations and equipment to ensure safe and compliant performance. Documents observations on the Safety and Health Field Surveillance Report, MOP, and/or Action Request (AR) as applicable.
- Performs the duties of the responsible safety organization as defined in Section 2 of DOE/RL-92-36.
- Reviews and approves CLPs and SLPs to ensure all industrial safety aspects of the work have been considered, and to identify possible discrepancies in the plan, as specified in Chapter 3 of DOE/RL-92-36.
- Safety professionals who review and approve SLPs and CLPs must have completed qualification card 350676.
- Reviews and approves H&R documentation as is required in DOE/RL-92-36.
- Participates in H&R assessment activities as requested.
- Performs incidental safety inspections of TOC and subcontractor cranes, forklifts, and other H&R equipment (including cranes provided by site services).
- Verifies crane operators training and evaluation (crane's size and configuration) in accordance with OSHA 1926.1427.

3.1.13 Quality Assurance

- When requested by H&R Engineering, participates in surveillances/assessment activities with H&R representatives.
- Supports H&R activities through work package instructions.
- Documents surveillances in accordance with TFC-ESHQ-Q_PP-P-02.

3.1.14 Training Department

- Performs training organization responsibilities as defined in Chapter 2 of DOE/RL-92-36.
- Periodically verifies that crane operator training programs meet the requirements of DOE/RL-92-36.
- Reviews and approves training equivalencies and establishes designators to identify equivalencies and document subcontractor H&R training.
- Tracks and schedules required training for personnel performing H&R activities.

- Provides assistance in the development of subcontractor training/qualification equivalency determinations and associated record retention methods.
- Provides training to subcontractors pertaining to working to TOC procedures.

3.1.15 Procurement Services

Ensures all H&R material procurements and statements of work are reviewed and approved by an H&R Engineering SME.

3.1.16 Interface Management

Involves Safety and Engineering SMEs in interface agreements with the Mission Support Alliance, LLC, for H&R support.

3.1.17 Production Planning and 222-S Laboratory Services Work Control

- Ensures that all planned H&R work is compliant with DOE/RL-92-36 and additional requirements established or referenced in this standard.
- Ensures that work planners and others involved with planning H&R activities are appropriately trained in established H&R requirements.

3.1.18 Crane Operator

- Assists in filling out the “Pre-Lift Checklist” (A-6003-884, Section 3).
- Performs operational tests as required.
- Maintains a certification by an operator testing organization that is accredited by a nationally recognized accrediting agency.
- Maintains training and evaluations in accordance with OSHA 1926.1427 and the HSHRM.
- Performs duties in accordance with HSHRM.

3.1.19 Rigger

- Assists in filling out the “Pre-Lift Checklist” (A-6003-884, Section 3).
- Performs duties in accordance with the HSHRM.
- Is trained in accordance with the HSHRM.

3.1.20 Signal Man

- Performs duties in accordance with the HSHRM.
- Is trained in accordance with the HSHRM.
- Should provide a clear way to distinguish themselves to the operator (e.g., Safety Vest)

3.1.21 Technical Approver

- Performs duties in accordance with the HSHRM.
- Is trained in accordance with the HSHRM.

4.0 PROCEDURE

Sections 4.1 and 4.2 are applicable to all lift classifications (ordinary, special, and critical).
Hoisting and Rigging: Lift Determination (A-6003-884, Section 1) shall be used to document special and critical lift determination.

4.1 General Requirements

1. Equipment users are required to know whom the equipment custodian is and how to make contact with the custodian. This information should be attached to the equipment or included as part of the tagging method.
2. Any assembly and/or disassembly or re-configuration of a crane (e.g., installation or removal of a jib, re-reeving wire rope, removing load block/hook or headache ball) must be overseen by an Assembly/Disassembly (A/D) Director (designated competent/qualified representative) of the equipment custodial company/organization.
3. When a mobile crane is initially set up for making a lift or series of lifts, or is reconfigured for a specific purpose (e.g., re-reeving wire rope and/or installing the jib) a full range operational check (no load) in the same configuration as will be used for the lift(s) shall be performed prior to making the actual lift or series of lifts (Lesson Learned IB-08-048).
4. To provide greater ground stability for the crane and protection of equipment. Outrigger mats must be used for all TOC work activities requiring the use of a mobile crane. Minimum requirements for the use of outrigger mats are determined using RPP-CALC-56716, "Soil Bearing Capacity for Crane Loads." A Qualified Rigging Engineer may be consulted to assist in determining outrigger mat sizing. This is required for lifted loads over 25,000 lbs.
5. Mobile crane travel within tank farm boundaries requires a minimum of two spotters and should be done with crane hooks restrained whenever practical. If travel must be done with a hook unrestrained to allow boom movement, at least one of the spotters must be a qualified crane signal person in order to assist in crane operation (e.g., boom movement) functions as necessary.
6. When planning for work with the potential to be within twenty feet of overhead lines, an Electrical Utilities site visit is required. Ensure all applicable requirements for working near overhead lines in DOE-0359, "Hanford Site Electrical Safety Program," are implemented.
7. Vehicular traffic shall be controlled using standard signs and signals when cranes are stopped on roadways used by other motor vehicles.

8. Lifts in close tolerance situations where the potential exists for binding or where an item may be stuck in place (e.g., excessive rust, corrosion, paint, or other adhesive forces) the lift must include some means of finer control, and not be lifted directly by the crane. Examples of finer controls are the use of chain hoist(s) with the crane, and/or incorporation of a load cell and not-to-exceed limits. If a lifted load is within 100 lbs. of the Recommended Not to Exceed (RNTE), finer controls must be used.
9. Temperature controls must be applied to lifting operations as follows:
 - No lifts will be performed in temperatures below 10°F (RPP-9551).
 - Rigging hardware used to perform lifts in temperatures below 30°F must have approval from the equipment manufacturer (Hanford Site Hoisting and Rigging Committee Bulletin, March 8, 2004).
 - A Qualified Rigging Engineer must be contacted for questions regarding temperature limitations.
10. Crane operations must only take place under the direction of a qualified signal person and all crane team members must remain attentive to the task at hand at all times (Lessons Learned IB-09-010).

Crane operators shall be familiar with unique features or characteristics of the specific crane they are assigned to operate prior to operation. This may require review of the crane and/or Load Moment Indicator (LMI) manual(s) as well as discussion with supervision or other crane operators. Any unfamiliarity with the equipment must be resolved prior to operating the equipment. Every operator shall complete the on-the-job training process for each crane, as well as an on-the-job evaluation for each class of crane.
11. At minimum sling angle from horizontal should be 45 degrees (60 degrees is preferred), unless there are extenuating circumstances that justify using an angle less than 45 degrees. An H&R Engineer SME's authorization is required for a sling angle of less than 45 degrees.
12. When signing the A-6003-884 (Section 3) form, if there is more than one individual's name printed on the different specialties signature page, circle the correct individual and sign the form.

4.1.1 General Requirements for Lift Planning

NOTE: The Hoisting and Rigging Lift Package (A-6003-884, Section 1) shall be used to assist in lift determination (special or critical lifts).

Field Work
Supervisor

1. Coordinate and supervise performance of lifts and load handling.
2. Verify that the H&R contractor has inspected and evaluated all lifting points as required by DOE/RL-92-36 and that all concerns have been adequately addressed and documented in the work package.

3. Contact a Qualified Rigging Engineer for any additional lifting point concerns.
4. Verify that required lift point tags have been installed and the information on the tags is correct.
5. Ensure all other lift point tags that are not in accordance with this procedure are removed.
6. Ensure pre-job briefings are performed in accordance with TFC-OPS-MAINT-C-02.
7. Ensure all lifts are performed in accordance with applicable procedures and instructions (e.g., DOE/RL-92-36 and this procedure).
8. For mobile crane set-up, size outrigger mats as required by RPP-CALC-56716, "Soil Bearing Capacity for Crane Loads."
9. For all critical or special lifts, ensure that form Hoisting and Rigging: Lift Determination (A-6003-884) is complete and all required signatures are present before performing the lift.
10. Verify the mobile crane load chart rating and mobile crane capacity in the intended configuration with the DL and crane operator prior to conducting the lift.
11. If the load being lifted is 80% or more of the mobile crane's maximum rated capacity or, 90% or more of the mobile crane's load chart capacity, ensure a CLP is used to perform the lift.
12. Ensure that the lift plan (if any) is consistent with the work package.

NOTE 1: If a lift plan is routed for approval in SmartPlant® Foundation (SPF), and a field revision is made to the lift plan, the Qualified Rigging Engineer shall revise the document in SPF.

NOTE 2: CLPs and SLPs are an integral part of the work package. Therefore, a change to a CLP/SLP is considered a change to the work package, and requires a USQ review per TFC-ENG-SB-C-03.

NOTE 3: Any field revisions to CLPs and SLPs are made in accordance with DOE/RL-92-36 Chapter 3.0, Section 3.5.2, "Lift Plan Field Revisions."

Qualified Rigging
Engineer

13. Ensure that CLPs and SLPs are in accordance with DOE/RL-92-36.
14. Ensure any revisions to wording match revisions to sketches.
15. Periodically request that Quality Assurance complete a surveillance on subcontractors completing H&R operations.

NOTE 1: Tagging of items other than cover blocks (cover plates, shield plugs, etc.) is at the discretion of the Area Engineer and/or Design Authority.

NOTE 2: Step 16 is not required for disposed of cover blocks.

16. For first time lifts of cover blocks, request Quality Assurance representatives ensure metal lift point tags are installed on each cover block listing the following information:

- Work order number
- Weight of component in pounds
- Key block (if applicable)
- Test date.

- Designated Leader
17. Perform pre-lift and pre-job requirements in accordance with applicable procedures (i.e., DOE/RL-92-36, TFC-OPS-MAINT-C-02, and this procedure).
18. Perform all lifts as designed and approved.
19. Ensure the appropriate “Pre-Lift Checklist” A-6003-884 (Section 3) form is completed and approved for all special and critical lifts prior to the lift being performed and once per shift until the lift is complete.

4.2 Critical, Special, and Ordinary Lifts

This section includes guidelines, rules, and requirements applicable to lifting/load handling for performing critical, special, and ordinary lifts. This section also describes the planning and documentation required to perform load handling and lifts.

Load handling indicates the movement of any load weighing more than 100 pounds, with a center of gravity over three feet high. Whenever a person can be injured from a falling load, the load handling requires an evaluation by Safety and, if necessary, an engineering evaluation to verify structural integrity. Prior to performing any load handling activity, the weight and center of gravity must be verified and lifting attachment or load movement method must be determined. Other pertinent features necessary for safe handling must also be provided. All lifts shall provide for compliance with applicable federal (7.1.2), state (7.1.7), and local (7.1.4) regulations.

Once a CLP or SLP is completely signed off, it can only be changed by the “field change” process, according to DOE/RL-92-36, Chapter 3.0, or as a document revision.

4.2.1 Critical Lifts

Provides a detailed description of the exact lifting operation, including all aspects of the lift succession from start to completion. Ensure the work sequence, step-by-step instructions, are detailed as required to support the lifting operation sequence. If necessary, include the lifting required to rotate equipment.

A lift shall be designated “critical” in accordance with DOE/RL-92-36. In addition, any lift not subject to the following criteria may be designated critical as determined by the Facility/Project Manager, H&R Safety SME, or H&R Engineering SME. Hoisting and Rigging Lift Package (A-6003-884, Section 1) shall document critical lift determination in accordance with Chapter 3 of DOE/RL-92-36. Additional considerations and modifications to the requirements in DOE/RL-92-36 are as follows:

- The load being lifted is 80% or more of a mobile crane’s gross load chart rating (total maximum capacity of the crane). This is an additional requirement/modification to DOE/RL-92-36 requirement: 90% or more of the mobile crane’s load chart rating in any configuration for the maximum radius to be experienced.
 - The radius and lifted weight shall be verified by actual measurement and not by the LMI alone. This is an additional requirement set by the TOC.
- Multiple crane lifts where the load exceeds 50% of the capacity of any crane used in the lift based on the configuration and position of the crane as used for the lift. This is an additional requirement/modification to DOE/RL-92-36, which states lifts shall be determined critical if two mobile cranes are lifting the load and the load share equals more than 70% of one or both crane’s chart rating for the maximum radius that will be experienced. In no case shall two crane lifts be performed in excess of 75% of either crane’s load rated capacity at the planned radius.

4.2.1.1 Critical Lift Plan Development

Facility Manager/
Project Manager

1. Determine facility or project H&R and special load handling needs and scheduled work activities.
2. If a lift is considered critical based on criteria in the HSHRM and this procedure, the document the determination by completing and signing the Hoisting and Rigging Lift Package (A-6003-884, Section 1).
3. Designate an FWS having demonstrated supervisory experience in the hoisting, rigging, and transporting activities for which he is responsible, to the satisfaction of the responsible manager.
4. Relay the proposed H&R needs and requirements to the planner.

NOTE: The Facility Manager/Project Manager is the primary contact for lift determination. If Special Design Equipment is used, the H&R Engineering SME should be contacted. If high-hazard work is involved, the H&R Safety SME should be contacted.

Planner

5. Coordinate development of the CLP in accordance with the guidelines set forth in the Hoisting and Rigging Lift Package (A-6003-884) and this procedure.
6. Include the original CLP as part of the work package as the implementing document for the pre-job briefing and performance of the lifts(s).

Critical Lift Plan Preparer (Originator)/ Qualified Rigging Engineer/Area Engineer

7. Complete the Hoisting and Rigging Lift Package (A-6003-884, Section 2).

NOTE 1: All CLPs must be reviewed by an H&R Engineering SME.

NOTE 2: All final draft lift plans and final signed off lift plans shall be sent to the H&R Engineer SME and the H&R Safety SME.

Critical Lift Plan Preparer (Originator)/ Qualified Rigging Engineer

8. Using the completed A-6003-884 (Section 2) form as guidance and direction, prepare the CLP (Section 3).

9. Send the draft to the H&R Engineer SME for review.

10. Return the completed CLP to the facility/project planner.

Planner

11. Coordinate the routing of the completed CLP for approval.

12. At a minimum, ensure that the CLPs contain signatures from the following personnel:

- Technical Approver – Qualified person having technical knowledge of the H&R equipment, as designated by the responsible H&R contractor
- Originator
- Qualified Rigging Engineer/Checker
- Responsible FWS
- Qualified Occupational Safety Representative – normally a field safety representative
- Manager responsible for lift – normally the Facility or Project Manager
- Additional signatures as required by the Facility or Project Manager
- Construction Subcontractor Safety (when appropriate).

Qualified Rigging Engineer

13. Ensure the CLP includes all information required by DOE/RL-92-36 and this procedure.

(Independent
Checker)

14. Ensure the CLP contains sufficient detail, such as center of gravity, weights, sling locations, balance points, methods of attachment, ground loading, and other pertinent features considered necessary for safe handling, to govern handling operations, inspection thereof, and documentation in accordance with this procedure.
15. Ensure that CLP instructions include the following statement when items may be rusted in place or otherwise potentially stuck:

“Engineering has established the Recommended Not-To-Exceed Lifting Pull limit as xxxx lbs.”
16. For critical lifts, if test documentation is not available for permanently installed rigging hardware, ensure that appropriate supporting calculations, design media, inspection requirements, torque requirements, and H&R requirements are included prior to approving the CLP instructions.
17. Notify the Rigging Engineer for lift planning review.
18. Complete all applicable post-lift documentation (e.g., lessons learned).
19. Verify testing of components and equipment to ensure structural and mechanical capability of handling components and equipment.
20. Ensure in the CLP that all handling equipment in use has been subjected to frequent, periodic, or major inspection.
21. Document the evidence and the results of periodic and major inspections.
22. In the CLP, ensure that the handling equipment has been maintained in good operating condition per the established maintenance program.
23. Review the CLP instruction and determine if it is ready for implementation.
 - a. If it meets conditions for approval, sign and return the plan/instruction to the planner.
 - b. If it does not meet conditions for approval, return the plan/instruction to the planner with recommendations for a revision.

Safety & Health

24. Perform functions as the “responsible Safety organization” in accordance with DOE/RL-92-36.

- 25. Ensure subcontractor’s CLPs and critical lifts they perform are approved by the subcontractor’s internal safety organization prior to approval.
- 26. Review and approve by signing the CLP.
- Area Engineer 27. Ensure the CLP is consistent with the work package.
- Planner 28. Ensure the lift plan has the work package number.
- 29. Submit the work package for approval in accordance with [TFC-OPS-MAINT-C-01](#).

4.2.2 Special Lifts

SLPs are not a “step-by-step” instruction unless noted otherwise. The SLP provides pre-identification of load weight, load center of gravity, ground loading, lift attachment points, and minimum lifting hardware (e.g., slings, below-the-hook lifting devices, shackles, spacers, softeners) capacities that will be used for the lift or series of lifts of non-critical items.

A lift designated as a special lift in accordance with DOE/RL-92-36, shall be documented using the Hoisting and Rigging Lift Package (A-6003-884, Section 1). In addition, any lift or special load handling activity not subject to the following criteria may be designated as special, as determined by the Facility/Project Manager, H&R Safety SME, or H&R Engineer SME.

Special lift(s) shall include, but are not limited to the requirements set forth in Chapter 3 of DOE/RL-92-36 with the following modifications and clarifications:

- Existing concrete blocks that do not meet the requirements of an engineered and marked block and are configured in a position that prohibits the use of an approved lifting device, shall be lifted by implementing special lift criteria addressing hazards associated with a possible lift point failure (see DOE/RL-92-36, Attachment 3).
- Use of custom designed lifting hardware meets the intent of “Special Design Equipment.” See definition of “Special Design Equipment” in Section 5.0 of this procedure.
- Lifts requiring special handling instructions from the manufacturer will require at a minimum an SLP. This plan will help identify the rigging configuration, pick points, sling angle, or special center of gravity considerations. Lift point attachment evaluation criteria can be found in RPP-8360.
- Loads that are close to an existing building or operating equipment that if dropped or upset would cause damage to building or equipment. An example of this would be dropping a load on a double-shell tank pit and damaging the valves and jumpers inside.
- Non-routine rigging configurations being used, or items requiring special care because of size, weight, close-tolerance installation, or high susceptibility to damage require, at a minimum, an SLP to capture all of the nuances associated with lifting the lifted item.

4.2.2.1 Special Lift Plan Development

Facility
Manager/Project
Manager

1. Determine facility or project H&R and special load handling needs and scheduled work activities.
2. If a lift is considered special based on criteria in the HSHRM and this procedure, document the determination by completing and signing the Hoisting and Rigging Lift Package (A-6003-884, Section 1).
3. Relay to the area task planner the proposed H&R needs and requirements.

NOTE: The Facility Manager/Project Manager is the primary contact for lift determination.

Planner

4. Coordinate development of the Special Lift Instructions in accordance with the guidelines set forth in the Hoisting and Rigging Lift Package (A-6003-884), Section 2 and this procedure.
 - a. If Special Design Equipment is used, contact the H&R Engineering SME.
 - b. If high-hazard work is involved, contact the H&R Safety SME.
5. Include the original SLP as part of the work package as the implementing document for the pre-job briefing and performance of the lift(s).

NOTE 1: The Hoisting and Rigging Lift Package (A-6003-884, Section 2) will serve as the guidance and direction for preparing the SLP.

NOTE 2: Special conditions are included in the package, which is used to capture necessary information to be included in the lift plan, such as the use of spacers and spreader beams.

Special Lift Plan
Preparer (Originator)/
Qualified Rigging
Engineer/Area
Engineer

6. Complete the Hoisting and Rigging Lift Package (A-6003-884, Section 2).

Planner

7. Ensure that Sections 1 and 2 are completed on the A-6003-884 site form and is delivered to the Originator for development of the SLP.

Special Lift Plan
Preparer (Originator)/
Qualified Rigging
Engineer

8. Using the A-6003-884 (Section 2) form as guidance and direction, prepare the SLP (Section 3).
9. Return the form to the facility/project planner and the H&R Engineer SME.

10. Ensure that the SLP contains sufficient detail, such as center of gravity, weights, sling locations, balance points, methods of attachment (e.g., spreader beam), maximum hoist line speeds, ground loading, special considerations (e.g., spacers), and other pertinent information considered necessary for safe handling, to govern handling operations, inspection thereof, and documentation in accordance with this procedure.
- Planner
11. Coordinate the routing of the completed SLP for approval.
12. At a minimum, ensure SLPs contain signatures from the following personnel:
- Technical Approver – Qualified person having technical knowledge of the H&R equipment, as designated by the responsible H&R contractor
 - Originator
 - Checker/Qualified Rigging Engineer
 - Responsible FWS
 - Qualified Occupational Safety Representative – normally a field safety representative
 - Construction Subcontractor Safety (as appropriate)
 - Manager responsible for lift – normally the Facility or Project Manager
 - Additional signatures as required by the Facility or Project Manager.
- Qualified Rigging Engineer
13. Ensure that SLPs include the following statement when items may be rusted in place or otherwise potentially stuck:
- “Engineering has established the Recommended Not-To-Exceed Lifting Pull limit as xxxx lbs.”
14. For special lifts, if test documentation is not available for permanently installed rigging hardware, ensure that appropriate supporting calculations, design media, inspection requirements, torque requirements, and H&R requirements are included prior to approving the SLP.
15. Review the SLP and determine if it is ready for implementation.
- a. If the SLP meets the conditions for approval, sign and return the SLP to the planner.

- b. If it does not meet conditions for approval, return the SLP to the planner with recommendations for revision.

- | | |
|------------------------------------|--|
| Safety & Health | 16. Perform functions as the “responsible Safety Organization” in accordance with DOE/RL-92-36. |
| | 17. Ensure that the subcontractor’s SLPs and special lifts they perform are approved by the subcontractor’s internal safety organization prior to approval. |
| | 18. Review and approve by signing the SLP. |
| Area Engineer/
Design Authority | 19. Ensure the SLP is consistent with the work package. |
| Planner | 20. Submit the work package for approval in accordance with TFC-OPS-MAINT-C-01. |
| | 21. Ensure sufficient amount of appropriate, “Pre-Lift Checklist” forms (A-6003-884, Section 3) are included in the work package so that one can be filled out each shift. |

NOTE: Documentation for special lifts is retained in the Work Management System/Integrated Document Management System (IDMS) as part of the completed work package.

- 22. Complete all applicable post-lift documentation (e.g., lessons learned).

4.2.3 Ordinary Lift

Verbal instructions/lift planning are allowed when conducting an ordinary lift.

Items classified as ordinary lifts are those that may be handled with conventional equipment using sound rigging practice and performed by trained rigging personnel. When load handling is performed by non-rigging trained personnel, an evaluation by Safety and, if necessary, an engineering evaluation to verify structural integrity may be required. Included in this category are both construction and permanent plant items not included in CLPs or SLPs.

Consideration shall be given to center of gravity, weights, sling locations, balance points, methods of attachment, maximum hoist line speeds, ground loading, and other pertinent features considered necessary for safe handling.

Evidence that handling equipment is maintained in good operating condition per the established maintenance program is required for ordinary lifts.

For all ordinary lifts using mobile cranes, a Mobile Cranes – Ordinary Pre-Lift Checklist (A-6007-153) shall be completed. Upon completion of the ordinary lift, the checklist shall be emailed to ^WRPS Hoisting & Rigging. The H&R Safety SME reviews and then uploads a record copy in IDMS.

NOTE: Rigging hardware on the lifted items should be in compliance with ASME B30.26

Area Engineer/
Design Authority

2. Evaluate the field inspection report (in accordance with TFC-ENG-DESIGN-D-37).
 - a. Based on findings, perform the required actions to ensure that the identified lifting points can be safely used.

Qualified Rigging
Engineer

3. Evaluate corrective actions.
4. Approve ECNs in accordance with TFC-ENG-DESIGN-D-37.
5. Upload an electronic copy of this information into IDMS [Lifting Point database](#).

4.5 Structural Analysis

Support Engineer

1. Perform structural analysis.
2. Determine lifting points in accordance with TFC-ENG-DESIGN-D-37.
3. Provide data to planner.

NOTE: Design verification for new items should be performed by moving the lifted item through its range of motion prior to delivery on site. This should be witnessed by a TOC engineer.

Analyst

4. Perform structural evaluation of lifting points in accordance with TFC-ENG-DESIGN-C-10, TFC-ENG-STD-06, and RPP-8360.

Area Engineer

5. Based on the structural evaluation, determine if the lifting point(s) is (are) adequate to lift the intended item (e.g., cover block, cover plate, shield plug).
 - a. Verify tags are in place as applicable.
 - b. If adequate, notify the planner and provide the planner with a copy of the analytical calculations.
 - c. If inadequate, contact the Engineering Discipline Lead-Civil/Structural for a resolution (RPP-9514).

Analyst

6. Record analysis as required by TFC-ENG-DESIGN-C-10.
 - a. Document computational calculations.

7. Release the record inspection report results and analysis per TFC-ENG-FAC SUP-C-03.
8. Upload an electronic copy of this information into the IDMS [Lifting Point database](#).

4.6 Inspection of Existing Permanently Installed Lifting Points

This section ensures that lifting points are inspected and that the inspection findings are correctly provided in the evaluation package (see Figure 2).

The Lifting Point Field Report by Engineer (A-6003-764) or Lifting Point Field Inspection Report by QA (A-6003-765) records the observed condition of existing lifting points for comparison to lifting point design documentation and supporting calculations.

Area Engineer or Designee

1. Evaluate if QA field inspection is needed.
2. If the decision is made to not use QA field inspection, photograph the lifting point(s).
3. Document observations in Lifting Point Field Report By Engineer (A-6003-764) as well as Field Inspection Document Index (A-6003-766).
4. Record in the Lifting Point database.
5. If a decision is made to use QA field inspection (A-6003-765), prepare inspection folder in the [Lifting Point database](#).

Quality Assurance Technician

6. If measuring and test equipment will be used in the inspection process, record the manufacturer, model, serial number, and calibration status in Section 6.0 of A-6003-765.
7. Using the documents specified by the planner in the Field Inspection Document Index (A-6003-766), perform an inspection of each lifting point (e.g., cover block, cover plate, shield plug) identified.

NOTE: The lifting point inspection report, by itself, does not determine if a lifting point is safe to use.

8. To the maximum extent practicable, complete an inspection report for each lifting point.
 - a. If any part of the QA inspection (A-6003-765) cannot be completed, record the reason for non-completion on the Lifting Field Inspection Report by QA (A-6003-765).
 - 1) Appropriately annotate the steps that will not be completed.

- b. If corrosion other than superficial surface rust is present, inform the Area Engineer/Design Authority.
 - c. Submit the completed Lifting Point Field Inspection Report to the Area Engineer/Design Authority.
- Area Engineer/Design Authority
- 9. Review the Lifting Point Field Inspection Report by QA for completeness and accuracy.
 - 10. Determine if additional inspection or non-destructive examination (NDE) is required.
 - 11. Specify any additional inspection or NDE in Section 5.0 of the Lifting Point Field Inspection Report by QA form (A-6003-765).
- NOTE: All additional inspection and/or NDE results shall be noted and recorded on the Lifting Point Field Inspection Report.
- 12. Return the Lifting Point Field Inspection Report by QA to QA if additional inspection or NDE is required.
 - 13. Sign the Lifting Point Field Inspection Report by QA when the report is complete.
 - 14. Forward the report to an analyst and put an electronic copy into IDMS.

4.7 Special Load Handling

This section ensures that the requirements for handling in RPP-8360 are met and good handling practices are followed.

Prior to the handling of an item requiring special load handling, it shall have been determined that the requirements of RPP-8360 have been implemented. Handling and moving clearances shall have been investigated.

Handling shall be in accordance with RPP-8360 and the following:

- 1. Qualification of responsible individuals shall be in accordance with DOE/RL-92-36.
- 2. Handling equipment to be used shall be identified, and its selection shall be based on its capability to handle the load. Loads handled shall not exceed the maximum safe handling loads of the equipment.
- 3. Manufacturer's instructions and conditions of operation should be followed for the handling equipment and items to be handled.
- 4. Work instructions should be issued for tasks that, because of their relationship to each other, must be accomplished in a certain sequence.

5. Plan should identify maximum safe loads and should describe specific methods of ensuring that safe loads are not exceeded. Load indicating devices shall be properly calibrated prior to load handling.
6. Confirm the adequacy of load support, including ground, structural system, or other support means.

4.8 Equipment Used in Construction

Hoisting, rigging, and transporting equipment that is to be used exclusively during the construction phase shall comply with the requirements of NQA-1, Subpart 2.15.

4.9 Permanent Plant Handling Equipment

Permanent plant handling equipment employed for handling nuclear facility items is equipment that is intended primarily for maintenance and operation of the nuclear facility that may also be used for construction. It may consist of standard manufactured components, commercial standard design equipment, or special designed equipment.

All handling activities with permanent plant handling equipment are subject to the requirements of this procedure.

4.10 Freight Container Lifting

Hoisting, rigging, and handling of freight containers (commonly called conex boxes) shall comply with the requirements stated in RPP-40736, "Freight Container Lifting Standard."

4.11 Package, Storage, and Load Handling Plan

A packaging, storage, shipping, and load handling (PSSH) plan shall be created for equipment being procured. The PSSH plan shall include all plans, procedures, and drawings that address how items will be packaged, stored, shipped, and handled. Guidelines for this can be found in RPP-8360.

5.0 DEFINITIONS

Commercial standard design equipment. Equipment that is available as an item of standard design and manufacture.

Critical component. Item classified as a Safety Class structure, system, or component (SSC). The TOC does not currently have any Safety Class SSCs in the Documented Safety Analysis (DSA).

First time lift. Any lift performed on a cover block that does not have a weight tag installed in accordance with this procedure.

Handled load. The weight of the item to be lifted plus the weight of any required rigging, such as lifting beam, slings, hooks, and blocks.

Handling. Hoisting, rigging, or transporting of items.

Hoisting and Rigging Engineering SME. Technical authority for information regarding the technical aspects of hoisting, rigging, load handling, and transport.

Hoisting and Rigging Safety SME. Safety interpretive authority for information regarding the safety aspects of hoisting, rigging, load handling, and transport.

Lift point tag. A round metal tag containing the date of inspection, and working load limit with analysis documentation number.

Operational-type test. Test that consists of moving equipment through its range of motion to ensure structural and mechanical capability. For example, letting out line to ensure there is enough line present on the drum, and that it is in operational condition.

Outrigger pad. Blocking that is placed under a crane's outrigger floats to provide greater stability for the crane.

Permanent plant handling equipment. Equipment that is intended primarily for maintenance and operation of the nuclear facilities that may also be used for construction. It may consist of standard manufactured components, commercial standard design equipment, or special designed equipment.

Permanently installed lifting point. Any lifting point that is a permanent part of the item to be lifted or a lift point that is left in place on the item to be lifted.

Qualified Rigging Engineer. An Individual qualified in accordance with one of the following:

Hoisting and Rigging Engineer – Nuclear	Course # 350949
Hoisting and Rigging Engineer – General	Course # 350948

Special Design Equipment. Equipment designed and built to specifications for a particular application, or for which no consensus standard exists. It may incorporate standard manufactured components and commercial standard design equipment, or may include a combination of nonstandard and standard components.

Special load handling. Hoisting, rigging, or transporting of loads that require additional safety to protect the integrity of the load during handling due to its weight, cost, safety classification, hazard to personnel, critical schedule impact or facility damage that could result from handling mishap.

Standard manufactured component. Equipment that is available from several sources. This equipment is normally a catalog item, generally kept in stock, and normally used as a component of a handling system.

Temporary installed lifting point. Lifting points installed for specific lifts and subsequently removed. These lift points are considered rigging hardware and are addressed by DOE/RL-92-36 (e.g., temporarily installed swivel hoist rings and shouldered eyebolts).

6.0 RECORDS

The following records are generated during the performance of this procedure:

- Work Order package or released using a DRCF form per TFC-ENG-DESIGN-C-25, which may include the following:
 - Critical Lift Plan
 - Special Lift Plan
 - Hoisting and Rigging Lift Package (A-6003-884)
 - Lifting Point Field Inspection Report by QA form (A-6003-765)
 - Mobile Crane - Lifting Point Field Inspection Report by Engineer form (A-6003-764).
 - Mobile Crane – Ordinary Pre-Lift Checklist (A-6007-153).
 - Field Inspection Index (A-6003-766).

The record custodian identified in the Company Level Records Inventory and Disposition Schedules (RIDS) is responsible for record retention in accordance with TFC-BSM-IRM_DC-C-02.

7.0 SOURCES

7.1 Requirements

- 7.1.1 10 CFR 851, “Worker Safety and Health Program.”
- 7.1.2 29 CFR 1926 Subpart CC, “Cranes & Derricks in Construction.”
- 7.1.3 ASME NQA-1 2008 and 2009 addendum, “Quality Assurance Requirements for Nuclear Facility Applications.”
- 7.1.4 DOE/RL-92-36, “Hanford Site Hoisting and Rigging Manual.”
- 7.1.5 TFC-CHARTER-31, “Hoisting and Rigging Committee Charter.”
- 7.1.6 TFC-PLN-02, “Quality Assurance Program Description.”
- 7.1.7 WAC 296-155 Part L “Cranes, Rigging and Personnel Lifting.”

7.2 References

- 7.2.1 Lessons Learned Bulletin Number: IB-06-055, “Eyebolt and Swivel Hoist Ring Temperature Limitations.” Nov. 27 2006.
- 7.2.2 Lessons Learned Bulletin Number: IB-09-010, “Teamwork When Working With Cranes.” Feb. 9, 2009.
- 7.2.3 RPP-10975, “Simplified Lifting Bail Evaluation Process.”

- 7.2.4 RPP-16330, "Standard Lifting Point Rated Load Capacities."
- 7.2.5 RPP-40736, "Freight Container Lifting Standard."
- 7.2.6 RPP-8360, "Lifting Attachment and Lifted Item Evaluation, a Hanford Tank Operating Contractor Process."
- 7.2.7 RPP-9514, "Bail Repair and Load Testing."
- 7.2.8 RPP-9551, "Qualification Test of the Bail Repair Assembly & Bail Load Testing."
- 7.2.9 RPP-CALC-25074, "Crane Outrigger Pad loads over Waste Transfer Lines."
- 7.2.10 RPP-CALC-56716, "Soil Bearing Capacity for Crane Loads."
- 7.2.11 RPP-RPT-59465, "Compliance Crosswalk for NQA-1 Subpart 2.15 to TOC Engineering Procedures and Programs."
- 7.2.12 TFC-BSM-IRM_DC-C-02, "Records Management."
- 7.2.13 TFC-ENG-DESIGN-C-06, "Engineering Change Control."
- 7.2.14 TFC-ENG-DESIGN-C-10, "Engineering Calculations."
- 7.2.15 TFC-ENG-DESIGN-D-37, "Structural Integrity Verification of Lifting Points."
- 7.2.16 TFC-ENG-FAC SUP-C-03, "Technical Evaluations."
- 7.2.17 TFC-ENG-FAC SUP-C-23, "Equipment Identification and Data Management."
- 7.2.18 TFC-ENG-SB-C-03, "Unreview Safety Question Process."
- 7.2.19 TFC-ENG-STD-06, "Design Loads for Tank Farm Facilities."
- 7.2.20 TFC-ESHQ-Q_PP-P-02, "Quality Assurance Surveillances."
- 7.2.21 TFC-ESHQ-S_IS-C-07, "Powered Industrial Trucks."
- 7.2.22 TFC-ESHQ-S-STD-34, "Manual Material Handling Standard."
- 7.2.23 TFC-OPS-MAINT-C-01, "Tank Operations Contractor Work Control."
- 7.2.24 TFC-OPS-MAINT-C-02, "Pre-Job Briefings and Post-Job Reviews."
- 7.2.25 TFC-OPS-MAINT-C-11, "Maintenance and Administration of Tank Operations Contractor Hoisting and Rigging Equipment."

Figure 1 - Verification of Lifting Point Structural Integrity Process

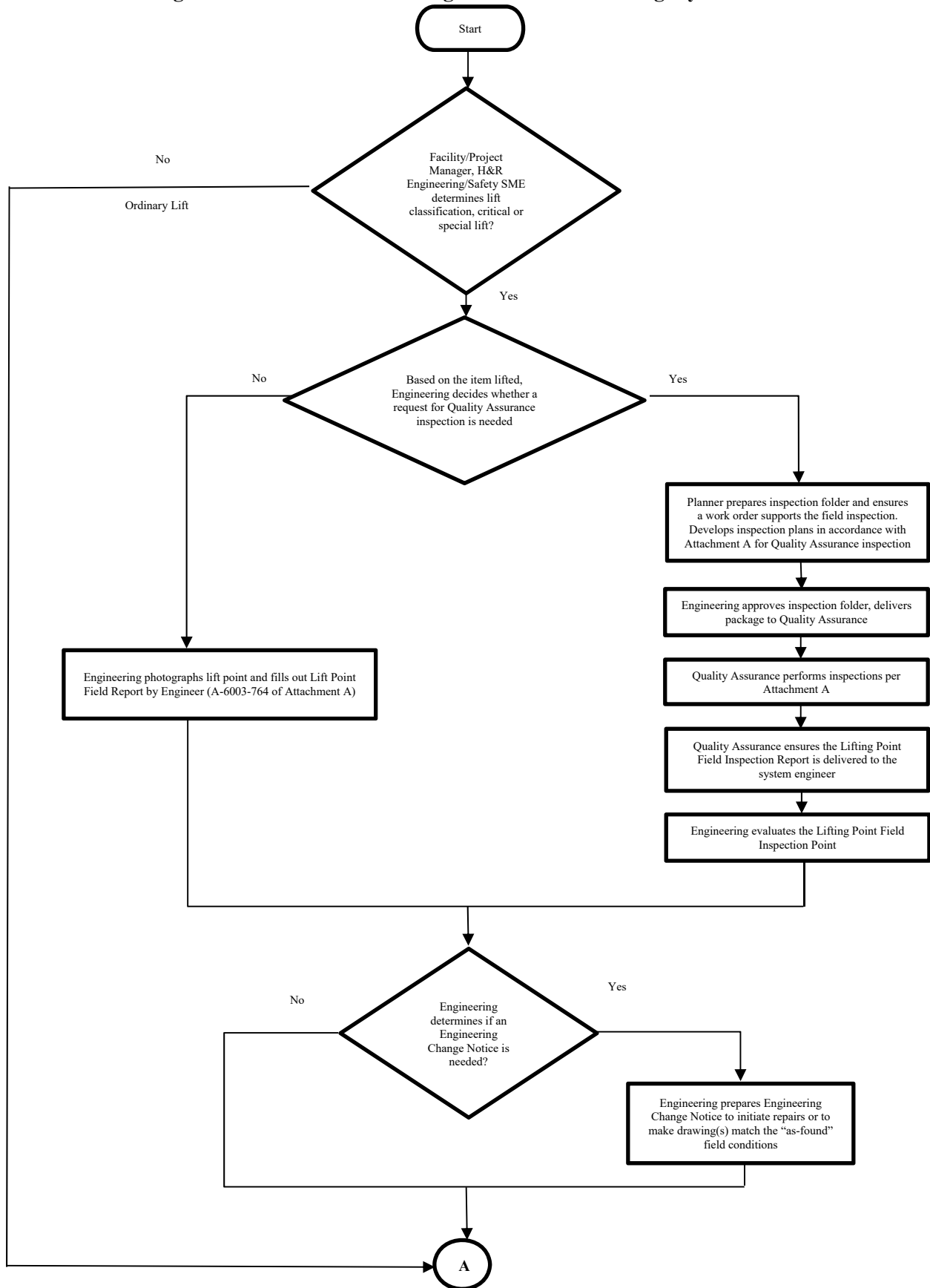


Figure 1 - Verification of Lifting Point Structural Integrity Process (cont.)

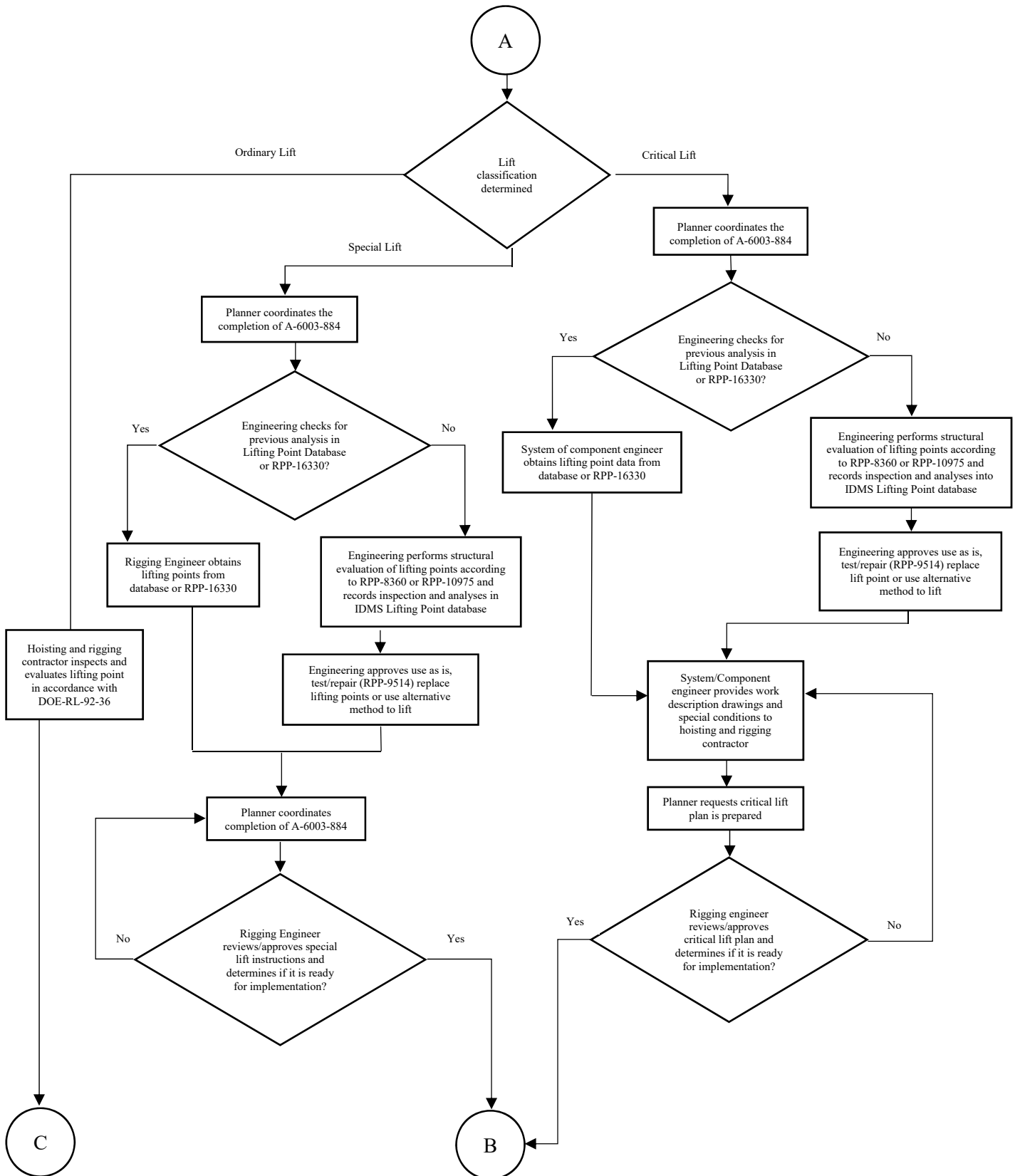


Figure 1 - Verification of Lifting Point Structural Integrity Process (cont.)

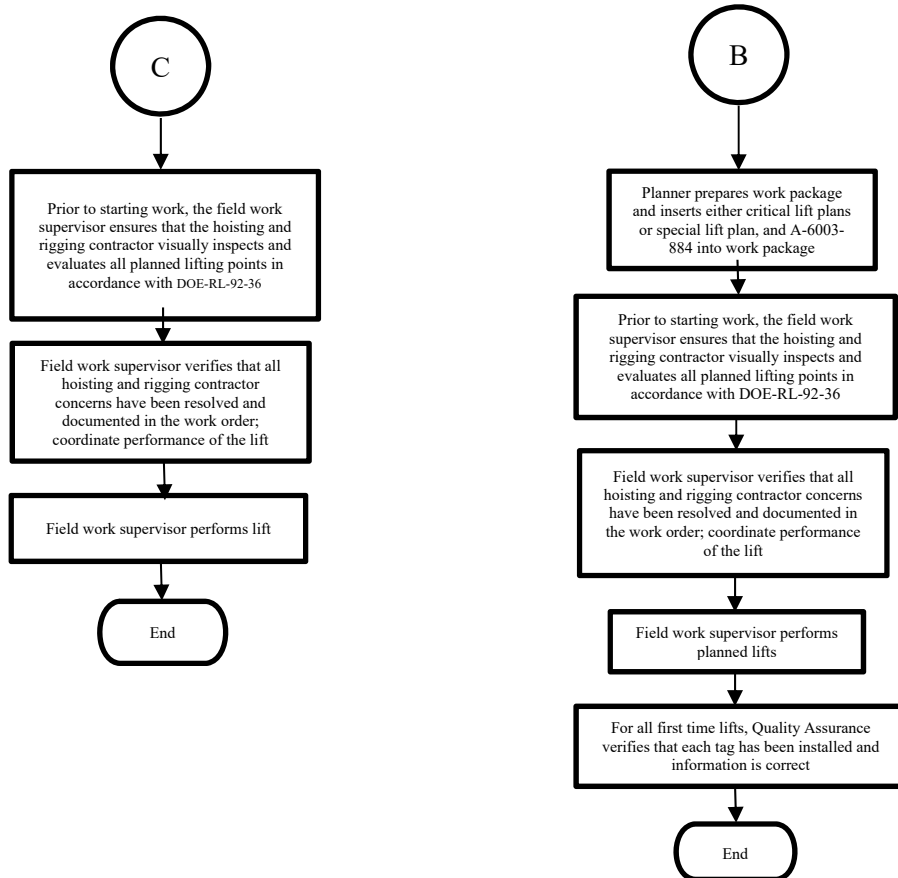


Figure 2 - Inspection of Permanent Lifting Points Process

