1.0 PURPOSE

This procedure illustrates and specifies the sequence, methods, procedures and responsibilities for performing Rig Moves in all Saudi Aramco on-shore rigs.

2.0 SCOPE

All SAR & Contractor Rigs loading/moving/offloading within Aramco facilities, on Saudi Aramco jobsites outside of operating facilities or, off Saudi Aramco property.

3.0 REFERENCES

GI: Saudi Aramco General Instruction
MOT: Ministry of Transportation
PDD: Power Distributions Department
R&HED: Roads and Heavy Equipment Department
SATD: Southern Area Transportation Division
SEC: Saudi Electric Company
SAR Saudi Aramco Rigs
A) GI 2.702 Moving Drilling Rigs, High Clearance Equipment/Loads, or Operating Cranes Under or Near Power-Lines.
B) GI 7.028 Crane Lifts: Types and Procedures
C) GI 7.029 Inspection, Use and Maintenance of Below-the-hook Lifting Equipment For Cranes.

4.0 DEFINITIONS

4.1 Critical Lift:

All Lifts conducted near power lines, loads weight more than 40 tons, load exceeding 85% of rated crane capacity, tandem lifts, right lifts that require prior Manager approval.

4.1.1 Critical crane lifts include, but are not limited to, the following examples and restrictions/requirements:

4.1.2 Any part of a crane whose boom or boom attachment is working within 10 meters (33 feet) of any hydrocarbon and/or pressurized piping areas. This includes cranes having to suspend a load over vessels, piping, and/or equipment containing hydrocarbons, steam, or other pressurized liquids.
4.1.3 Any part of a crane whose boom or boom attachment is working within 10 meters (33 feet) of any populated/traffic areas. This includes cranes having to suspend a load over pedestrians, vehicle traffic, occupied construction equipment, and/or occupied buildings.

4.1.4 Any crane lift that requires an attachment(s) to the main boom.

4.1.5 Any load 40 tons or greater.

4.1.6 Any load that exceeds 85% of the crane’s rated load capacity or manufacturer’s specifications for that specific lift.

4.1.7 Any crane lift with explosion/fire/high heat hazards.

4.1.8 Any crane working near energized power-lines. When working less than 1-1/2 fully extended boom lengths from energized power-lines, designated signalman shall ensure the following minimum distances are maintained:

**Line Voltage Absolute Limit of Approach**
- Up to 50,000 volts 3.0 meters/10 feet
- 50,000 to 250,000 volts 6.1 meters/20 feet
- Over 250,000 volts 7.6 meters/25 feet
- Local work permit procedures shall be followed when work is performed within the above limits (Refer to GIs 2.100 and 2.702). Power Distribution Department concurrence shall be required on all Critical Lift Plan forms for cranes whose booms, when calculated at full extension and with attachments, could be operating within 10 meters (33 feet) or less of energized power-lines.

4.2 **Critical Lift Plan:**
Document that identifies a specific load and the operating restrictions. Pertinent information includes all weights on hook blocks and attachments.

4.3 **Power-Line:**
Overhead, non-insulated electrical conductor.

4.4 **Rig Crew:**
Personnel that are operating the rig. They include; drillers, floormen, roustabout, rig mechanics and rig electricians.

4.5 **Rig:**
Drilling and/or Workover rig and all auxiliary components.
4.6 **Rigger:**
An individual certified by Saudi Aramco to fit lifting apparatus around a load. Saudi Aramco rigger categories are Rigger-I/rigging competent person, Rigger-II and Rigger-III.

4.7 **Signalman:**
Person who has been assigned the responsibility to warn and stop drivers or crane operators when high clearance equipment or loads may come in contact with power-lines and/or other obstructions to insure safe movement of the equipment and/or loads.

5.0 **RIG MOVE ROUTE APPROVAL PROCEDURE**

Wellsites will initiate the Rig Move Route Survey to the next location for each Onshore Drilling Rig according to the latest Approved Drilling Schedule.

The process of approving the rig move chart as shown in the flow chart attachment #1 is as follows:

5.1.1 Clearance is OK, then wellsites will notify PDD (By fax refer to section 8.12).

5.1.2 If clearance is insufficient then:

5.1.2.1 Wellsites will construct diversion or excavate under the cable to give the necessary clearance.

5.1.2.2 If it is not possible to do item (5.1.2.1.), Wellsites will arrange with the responsible Department (PDD or SEC) for power to be cut off and the cable lifted or removed for Rig to pass, Rig Foreman should inform Wellsites about the approximate date and time Rig will reach to the overhead cable.

5.1.2.3 For PDD contact personnel and Telephone numbers refer to attachment #1.

5.2 Passing over pipeline, Wellsites will check if A new crossing is required or an existing crossing exists.

5.2.1.1 If there is an existing crossing, Wellsites will coordinate with the proponent to upgrade if needed according to the Rig specification.
5.2.1.1.2 If new crossing is needed then, Wellsites will coordinate with the Proponent to construct new crossing.

5.3 Rig route condition; Wellsites will determine the condition of Rig Route and if it is satisfactory or not.

5.3.1 If the Rig Route has no power line or pipeline to cross and the road condition is satisfactory, then Wellsites will submit preliminary Rig Route to the Rig Liaisonman.

5.3.2 If the Rig Route needs upgrading, Wellsites will ensure that the necessary up-grade is completed as required.

5.4 When all of the above items are complete, Rig Liaisonman shall coordinate a joint meeting with Wellsites, PDD and Transportation, 7 days prior to Rig Move.

5.5 Wellsites representative will lead the group through the proposed Rig Route and;

5.5.1 Any concerns or issues will be rectified by the responsible party. Re-visits will be required to ensure all issues have been rectified.

5.5.2 If the route is acceptable, then all involved groups shall sign the pre-Rig Move checklist form as per GI 2.702 and obtain a copy of the Rig Route survey sheet and map.

6.0 Rig move routes shall be planned to avoid crossing any Saudi Government highways or railways. If it is necessary to cross a Saudi government highway or railway, only the authorized crossing point is to be used. SATD responsible for obtaining the proper Move permits from Coast Guard, Local Traffic Police and Royal Commission in Jubail or any other Government Agencies.

7.0 SATD RIG MOVE EQUIPMENT REQUIREMENT

SATD is responsible to provide the following equipment:

7.1 Required Trucks, Escort vehicles and Maintenance Road Service Truck. All vehicles shall be in good operating conditions.

7.2 Lifting Equipment. The lifting equipment will include sling wires, chains, shackles and bundles, all will be checked and certified in accordance with GI 7.029.
7.3 Cranes with sufficient capacity for each Rig. SATD will coordinate with RHED for crane deliveries that have a valid crane inspection sticker will all trailer needed to deliver the cranes.

8.0 SATD PERSONNEL RESPONSIBILITIES:

SATD will provide the required manpower to move Aramco owned land rigs. It will also coordinate with R&HED to provide crane operators,

8.1 Rig Move Supervisor

He shall be responsible to supervise the following activities include but not limited to:

8.1.1 Give instructions to all personnel performing the Rig Move.

8.1.2 Oversee the entire rig move operations and coordination with the Rig Liaisonman.

8.1.3 Loading/moving/off loading the critical lifts, such as Rig sub-base and mast, will be under the close supervision of the Rig Move Supervisor and Rig Liaisonman (no delegation is acceptable) and will be conducted as per the Load-out List.

8.1.4 Ensure that a “Lift Plan” is prepared and approved as per GI 7.028 for each critical lift. This operation must be under the close supervision of both the Rig Move supervisor and Rig Liaisonman.

8.1.5 Ensure all wide loads are moved in a convoy with a lead escort vehicle and a follow escort vehicle. Escort vehicles to be equipped with rotary beacon lights.

8.1.6 Ensure that rig move convoy avoids rush hours (0600 – 0800 hrs and 1500 – 1700 hrs) on all government highways and primary Saudi Aramco road network.

8.1.7 Conduct and document safety meeting at the beginning of each day of the rig move with all SATD drivers, Rig Liaisonman, Contractor drivers, SATD mechanics and the Convoy Leader to discuss all safety aspects and lessons learned from previous rig moves also to emphasize the safety during the rig move.
8.2 **Convoy Leader**

He shall be responsible to perform the following activities include but not limited to:

8.2.1 Ensure safe driving at all Rig Move stages through close supervision of drivers.

8.2.2 Enforce high truck utilization and distribute work evenly among drivers.

8.2.3 Escort the loaded truck/trailer in-group between old and new location following the Load-out List.

8.2.4 Ensure that traffic is allowed to get around wide loads whenever possible by pulling off to the side of the road at the specific points identified in the Rig Move Route map.

8.2.5 Ensure that none of the drivers leave the old location without his permission.

8.2.6 Contact the road services mechanic for any truck/trailer break down.

8.2.7 Assist the Rig Move Supervisor as needed.

8.2.8 Use only the approved and designated roads. No deviations from the Approved Rig Route are allowed.

8.2.9 Whenever possible, two convoy leaders should be present during rig moves.

8.3 **Crane Operators**

They shall be responsible to perform the following activities include but not limited to;

8.3.1 Make sure that all the crane outriggers are fully extended per crane manufacturer operating manual and supported by mats.

8.3.2 Pick and carry lift must be according to GI 7.028.

8.3.3 Follow the direction of the rigger in charge to make sure that the position of the signalman is in a safe clear view.
8.3.4 Conduct daily pre-user inspections of his crane and document said inspections on the SA9466 checklist. Report any mechanical or electrical crane defects to the nearest RHED maintenance facility.

8.3.5 Shall fully comply with GI 7.028, 7.029

8.4 Drivers’ Activities

They shall be responsible to perform the following activities include but not limited to;

8.4.1 Shall hook/load the Rig components on their trucks/trailers in a safe manner and as directed by the Convoy Leader and Rig Move Supervisor.

8.4.2 Shall ensure that loaded components are secured using chains/bundles/guard posts before traveling regardless of the distance.

8.4.3 Shall follow the designated route as instructed by the Rig Move Supervisor and Convoy Leader and never proceed with a load from the old location without their permission.

8.5 Riggers’ Activities

They shall be responsible to perform the following activities include but not limited to;

8.5.1 Play the role of signalman for the crane operator to perform crane lift.

8.5.2 Make sure that the components are safely distributed on trailers and assist the drivers to secure the loads.

8.5.3 Shall apply good lifting practices, ensure tag lines are used on each load, exhibit extreme caution when loading and off-loading trucks.

8.5.4 Make sure that all the lifting equipment is inspected and certified.

8.6 Road Service Mechanics

They shall be responsible to perform the following activities include but not limited to;

8.6.1 Repair any truck/trailer break down.
8.6.2 Accompany trucks/trailers convoy between old and new locations.

8.6.3 Check/inspect the trucks/trailers before loading to reduce the number of breakdown trucks.

9.0 SAUDI ARAMCO RIG PERSONNEL RESPONSIBILITIES

9.0 Rig Liaisonman Responsibilities

9.1.1 The Rig Liaisonman shall obtain the Rig Move preliminary Route map along with the route survey sheet from Wellsites Division (2 weeks prior to drilling Rig Move and no less than 4 days prior to workover rig move). The map will show;

9.1.1.1 Designated Rig Move Route.

9.1.1.2 Road conditions.

9.1.1.3 Road obstacles, ie. Power lines, pipelines, highway and any other obstacles.

9.1.2 The Rig Liaisonman, Wellsites engineer, Rig Move supervisor, convoy leader and PDD representative shall check, verify and approve the Rig Move Route for safe passage (by driving the prescribed route).

9.1.3 Once the Rig Move has been surveyed and approved, Rig Liaisonman, Rig Move supervisor and, Convoy leader shall hold a Pre-Rig Move Meeting.

This meeting will include but not limited to:

- Sequence of loading as per the Load-out List. (Load-out List example attached)

- Additional equipment needed for the move (example. Lifting equipment and their corresponding lift plans).

- Lessons learned from the last Rig Move.

- Any special inspections (ie derrick) or repairs to be completed before moving.
• Any first time employees or limited experience people need to be identified and assigned tasks appropriate to their experience and ability.

9.1.4 No Moves are allowed in foggy, rainy and dusty weather where visibility is less than 100 m. It is the Rig Liaisonman’s responsibility to ensure that there is adequate visibility for the move.

9.1.5 Night time Moves shall be avoided as much as possible and limited to road legal loads only. Loading and moving oversize loads are not allowed at night time. The Rig Liaisonman has the authority and responsibility to shut down any night move when in his opinion conditions make it unsafe to continue.

9.1.6 Rig Liaisonman and Rig Move Supervisor ensure that all overhead cables are to be approached with caution. Rig move has to stop then proceed slowly under the cable to avoid any excessive movement of the rig suspension.

9.1.7 Affected facilities should be notified of the Rig Move. In congested areas (Qatif, Safaniyah, Jubail causeway etc) the Rig Liaisonman should inform them about the rig move.

9.1.8 The Rig Liaisonman responsibility during Rig move includes but not limited to:

9.1.8.1 Supervise moving derrick and sub-base off wellhead and clearing location.

9.1.8.2 Ensure Form Oversized Equipment Pre-Move checklists GI 2.702 is completed and supervise over size loads at critical crossing.

9.1.8.3 Monitor the Rig Move to ensure it is proceeding safely as planned.

9.1.9 During the Move, a meeting shall be held at the start of everyday between the Rig Liaisonman and Rig Move supervisor. The day’s agenda will be decided (what loads to move on to which trucks based on the specific Rig Move plan).
9.9.10 For crossing railways Rig Foreman shall make sure that one signal man with the proper communication device (walkie-talkie) position himself in such a way to alert the convoy if the train is coming before proceeding to cross the railroad.

9.9.11 It is the responsibility of the Rig Foreman to finally determine if the Rig can pass safely under overhead cables as outlined in the table:

<table>
<thead>
<tr>
<th>LINE VOLTAGE</th>
<th>ABSOLUTE LIMIT OF APPROACH</th>
</tr>
</thead>
<tbody>
<tr>
<td>2.4, 4.16, 13.8</td>
<td>1.22 meters (4 feet)</td>
</tr>
<tr>
<td>34.5</td>
<td>1.53 meters (5 feet)</td>
</tr>
<tr>
<td>69</td>
<td>1.7 meters (5 feet 7 inches)</td>
</tr>
<tr>
<td>115</td>
<td>1.95 meters (6 feet 5 inches)</td>
</tr>
<tr>
<td>230</td>
<td>2.7 meters (8 feet 8 inches)</td>
</tr>
<tr>
<td>380</td>
<td>3.65 meters (12 feet)</td>
</tr>
</tbody>
</table>

9.9.12 Moving any miscellaneous loads prior to Rig release shall be limited to road legal loads only with prior approval from Rig Liaisonman.

9.9.13 Supervise spotting, connecting, raising sub-base, rigging up mast and other critical loads.

9.9.14 Saudi Aramco Rig Liaisonman is to supply enough long range walkie talkie radios to help coordinate a safe and efficient Rig Move between the old and new location. These radios will remain under the custody of the Rig Liaisonman.

ATTACHMENTS

1. FLOW CHART FOR RIG MOVE APPROVAL PROCEDURE.

2. PDD DISPATCHERS’ CONTACT NUMBER

3. G.I. 2.702

4. G.I. 7.028

5. G.I. 7.029

6. Load-out List
PDD Dispatchers’ contact numbers are as follows:

<table>
<thead>
<tr>
<th>Area</th>
<th>Office Location</th>
<th>Telephone Numbers</th>
<th>Fax Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dhahran Central</td>
<td>OSPAS dispatch office</td>
<td>874-3030</td>
<td>875-0408</td>
</tr>
<tr>
<td>Dhahran Area</td>
<td>Dispatcher</td>
<td>875-5555</td>
<td>876-6535</td>
</tr>
<tr>
<td>RT area</td>
<td>Dispatch</td>
<td>673-7801</td>
<td>673-7365</td>
</tr>
<tr>
<td>Tanajib area</td>
<td>Dispatcher</td>
<td>378-3569</td>
<td>378-3620</td>
</tr>
<tr>
<td>Abqiq area</td>
<td>Dispatcher</td>
<td>572-8676</td>
<td>572-5710</td>
</tr>
<tr>
<td>Udhilyah area</td>
<td>Dispatcher</td>
<td>577-8139</td>
<td>577-8992</td>
</tr>
</tbody>
</table>
Attachment #2

Flow Chart, Rig Move Route Approval Procedure

1. APPROVED DRILLING SCHEDULE

2. WELLSITE INITIATE SURVEY RIG ROUTE
   - CLEARANCE UNDER POWER LINES IS SUFFICIENT
     - YES
     - NO
     - WELLSITE WILL CONSTRUCT DIVERSIONS OR EXCAVATE UNDER THE CABLE
     - POSSIBLE
     - NO
     - WELLSITE WILL NOTIFY PDD BY FAX
   - CROSSES OVER PIPELINES EXISTS?
     - NO
     - WELLSITE WILL COORDINATE WITH PROponent TO CONSTRUCT NEW CROSSING ACCORDING TO SPECIFICATION.
     - WELLSITE WILL RECTIFY ALL WORK REQUIRED.
     - WELLSITE WILL NOTIFY PDD BY FAX
     - ROAD CONDITIONS ARE SATISFACTORY
     - ALL INPUT ITEMS ARE COMPLETE

3. WELLSITE WILL SUBMIT A PRELIMINARY RIG MOVE ROUTE TO THE RIG LIAISONMAN
   - RIG LIAISONMAN WILL CO-ORDINATE A JOINT MEETING WITH WELLSITE, SATD AND PDD 7 DAYS PRIOR TO THE RIG MOVE
   - SATD WILL OBTAIN PERMISSION FROM GOVERNMENT AGENCY.
   - CROSSING HIGHWAY
   - WELLSITES REPRESENTATIVE WILL LEAD THE GROUP THROUGH THE PROPOSED RIG ROUTE
   - ACCEPTED
     - NO
     - RESPONSIBLE PARTY WILL RECTIFY THE RAISED
     - YES
     - ALL WILL SIGN THE PRE-RIG MOVE CHECK LIST FORM (G.I. 2.702) AND OBTAIN A COPY OF RIG ROUTE SURVEY SHEET AND MAP.