



## INTER-DEPARTMENTAL PROCEDURE OPERATIONS – DUKHAN FIELDS

### EXCAVATION PROCEDURE - DUKHAN FIELDS IP-OPS-032

**Operations Manager,  
Dukhan Fields**

**Director Operations**

| Rev. | Date  | Reason         |
|------|-------|----------------|
| A4   | Mar13 | Issued for use |

OSD / QC: 4



**CONTENT LIST**

|                    |   |          |
|--------------------|---|----------|
| <b>1.0</b>         | <b>OBJECTIVE</b>  | <b>1</b> |
| <b>2.0</b>         | <b>SCOPE</b>  | <b>1</b> |
| <b>3.0</b>         | <b>POLICY / MANAGEMENT INTENT</b>                       | <b>1</b> |
| <b>4.0</b>         | <b>RELATED DOCUMENTS</b>                                | <b>1</b> |
| <b>5.0</b>         | <b>DEFINITIONS AND ABBREVIATIONS</b>                    | <b>1</b> |
| <b>6.0</b>         | <b>PROCESS</b>  | <b>2</b> |
| 6.1                | Planning  | 2        |
| 6.2                | Precautions   | 2        |
| 6.3                | Excavation Guidelines                                   | 3        |
| <b>7.0</b>         | <b>RESPONSIBILITIES</b>                                 | <b>5</b> |
| 7.1                | Permit Applicant  | 5        |
| 7.2                | Permit Authority  | 5        |
| 7.3                | Worksite Supervisor                                     | 5        |
| 7.4                | QP Job Officer  | 5        |
| <b>ATTACHMENTS</b> |   |          |
|                    | <b>ATTACHMENT A - EXAMPLE OF EXCAVATION CERTIFICATE</b> | <b>6</b> |

**1.0 OBJECTIVE**

The purpose of this procedure is to ensure that excavation work is properly controlled to minimize risk to personnel, property and the environment.

**2.0 SCOPE**

This procedure applies to all excavation work activities in Dukhan Fields operating areas.

**3.0 POLICY / MANAGEMENT INTENT**

Qatar Petroleum is committed to developing and managing safer working practices.

**4.0 RELATED DOCUMENTS**

- IP-OPS-015** - Permit to Work System - Dukhan Fields
- IP-OPS-031** - Confined Space Entry Procedure – Dukhan Fields

**5.0 DEFINITIONS AND ABBREVIATIONS**

- Civil Maintenance Authority** - A person who has responsibility for utility lines and has the authority to isolate such lines as required.
- Easement** - A right of way.
- Electrical Authority** - A person who has responsibility for electricity cables and has the authority to isolate such cables as required.
- Excavation** - Digging away or removing ground cover to expose, verify, remove, repair, modify or construct facilities.
- Hand Expose** - The use of hand shovels or other similar implements to expose buried cables or piping.
- Policy** - A rule or directive that guides or restricts action.
- Procedure** - A document that details the execution of an activity.
- Shall** - A mandatory action or requirement.
- Should** - A preferred course of action.
- Telecommunications Authority** - A person who has responsibility for telecommunications equipment and has the authority to isolate such equipment as required.

## **6.0 PROCESS**

### **6.1 Planning**

Prior to any excavation work commencing, the work shall be properly planned. The Permit Applicant shall ensure that all drawings and other relevant documents are available for review at the time of certificate application.

Note: It may be necessary for all parties concerned to pay a visit to the proposed excavation site to verify entry and access routes and to visually inspect other details, such as fences, power lines, pipeline warning signs, and soil conditions.

All QP Authorities (Instrument, Electrical, Telecommunications, Maintenance, and Civil) shall check the proposed workscope before signing their approval in Section 2.

The estimated location of utility installations (i.e. sewers, telephone lines, fuel lines, water lines, electric cables), that may be expected to be encountered during the excavation work, shall be determined by the respective QP Job Officer prior to the commencement of work.

### **6.2 Precautions**

The following precautions apply for all excavation work in Dukhan Fields operational areas:

- An Excavation Certificate and primary work permit shall always be obtained for excavation work within 15 metres distance of the boundary to existing facilities. To avoid delay, a minimum of 24 hours notice should be given for this application.
- Mechanical / hydraulic rock breakers shall **NOT be used within 3 metres** of live pipelines.
- If jack hammers are to be used within 3 metres of any buried pipelines or between any pipelines running in the same easement, all-round pipe protection shall be provided before starting the work.
- Pilot holes to locate existing lines within 3 meters of live pipeline shall be dug by using hand tools only.
- Exposed pipe / bund areas shall be protected to ensure that no erosion of the soft sand fill takes place during trenching operations.
- When exposing live pipelines, substantial barriers shall be erected to prevent any damage to the pipelines. This is particularly important where there are heavy vehicles in the vicinity, and the possibility that removal of the bund for trenching operations opens up an illegal vehicle crossing.
- Excavations exceeding 1.25 metres require gas monitoring to be carried out.
- If there is concern or indication that an exposed pipeline is leaking, work **SHALL STOP** while the pipeline is depressurised.
- When working in the vicinity of overhead power lines, the ground around the base of the pylons / poles supporting the power lines **SHALL NOT** be disturbed.

### **6.3 Excavation Guidelines**

When excavation operations approach the estimated location of underground installations, the exact location of the installation shall be determined by safe and acceptable means (e.g. prodding, use of customary locating device). Where this determination is unclear, the Permit Authority shall be contacted for further guidance.

If any unidentified installations are encountered during the excavation work, the Permit Authority shall be contacted immediately and work shall be suspended until clearance is given to proceed.

Excavated earth shall be stored at a minimum distance of 1½ times the depth of the excavation away from the edge of the excavation.

No load, plant or equipment shall be located at or moved near to the edge of the excavation.

If the ground is extremely hard, the ground may only be softened using method statement approved by the Permit Authority.

Where earth being removed is contaminated, the Permit Authority shall be contacted to discuss the approved method of disposal.

When backfilling an exposed section of pipe, naturally occurring soft dune sand shall be used and the pipe shall be covered and re-bedded all round with 150mm minimum of sand. The remaining height of the bund will be made up of selected desert fill with particle size not exceeding 150mm, and free from organic materials. The QP Job Officer shall witness the backfill work, particularly the soft sand bedding operation.

When trenching between pipelines in the same easement, vehicle access between the pipelines shall be maintained.

The maximum length of exposed, unsupported pipeline **SHALL NOT** exceed 7 metres. When it exceeds 5 metres, a substantial central wooden support shall be installed, with a minimum 10mm thick rubber 'shoe' contacting the pipe.

When the bund has been removed from any existing line, its buried route shall be clearly indicated by pegs and warning signs.

If the excavation site is to be left unattended for any reason, it shall be fenced or barricaded off. Appropriate signs should be erected and lighting shall be provided during the hours of darkness or inclement weather.

Any damage caused by the Contractor to pipe external protective coating shall be repaired in strict accordance with QP requirements.

**a) Water Hazards**

Personnel shall not work in excavations in which there is accumulated water unless adequate precautions have been taken to protect them. These precautions will vary with each situation, but may include the following:

- special support systems to protect from cave-ins
- water removal to control the level of accumulating water
- use of safety harness and lifeline

Water should not be allowed to accumulate within an excavation and should be controlled or prevented from doing so by the use of suitable water removing equipment.

After a period of heavy rainfall, the excavation shall be inspected to ensure that existing safety measures are still adequate and have not been compromised.

**b) Access and Egress**

A means of access / egress (stairway, ladder, ramp) shall be provided from trench excavations of more than 1.2 metres but less than 6.1 metres in depth, such that no more than 7.6 metres travel is required to access the trench.

Means of access / egress from trench excavations greater than 6.1 metres in depth shall be equipped with ladder platforms at 6.1 metre intervals.

**c) Trench Safety**

Note: Under normal conditions, only trenches to a depth of more than 1.5 metres require shoring. However in hazardous soil conditions trenches under 1.5 metres may also need protection.

When considering shoring systems and materials, the Worksite Supervisor shall ensure that:

- materials and equipment used are free from damage or defects that might impair their proper function
- manufactured materials and equipment being used are maintained as per the recommendations of the manufacturer
- any damaged materials or equipment is immediately removed from use and tagged accordingly
- members of support systems are securely connected together to prevent sliding, falling, kickouts or other predictable failure
- support systems are installed and removed in a manner that protects personnel from cave-ins, structural collapse, or from being struck by support members
- individual members of support systems are not subjected to loads exceeding their design limits

- before the temporary removal of individual support members, additional precautions are taken to ensure the safety of personnel, such as installing other structures to carry the loads imposed on the support members being removed
- backfilling progresses together with the removal of support systems

**d) Hazardous Atmospheres**

In cases of excavations over 1.25 meters in depth and fall within the Confined Space Entry definitions then the Confined Entry Procedure shall be adhered to (see IP-OPS-031), to ensure acceptable atmospheric working conditions and to prevent exposure of personnel to harmful levels of contaminants. In cases of excavations is over 1.25 meters in depth and not fall within the Confined Space definitions then a gas test to be conducted before letting people enter inside.

**e) Temporary Crossings**

Temporary crossings over trenches shall be at least 610mm wide, of suitable strength, and with a fitted handrail on one side.

**7.0 RESPONSIBILITIES**

**7.1 Permit Applicant**

Shall ensure that all necessary documents are provided when applying for the Excavation Certificate and primary work permit.

Shall ensure that all personnel working under his jurisdiction are fully aware of the extent and limitations of the excavation work.

**7.2 Permit Authority**

Shall be satisfied that all relevant information is available to fully assess the application for the Excavation Certificate and primary work permit.

**7.3 Worksite Supervisor**

Shall ensure that all precautions are adhered to and that only permitted work is carried out. Shall remain on site at all times during the excavation work. If leaving the site unattended, shall ensure that barriers, signs, and lights (if required) are properly in place.

**7.4 QP Job Officer**

Prior to the commencement of work, shall determine the location of utility installations that may be encountered during the work.

Shall witness all backfilling work.



**ATTACHMENT A - EXAMPLE OF EXCAVATION CERTIFICATE**

CERTIFICATE No. \_\_\_\_\_

# QP - DUKHAN OPERATIONS EXCAVATION CLEARANCE CERTIFICATE

EXC

VALID FOR DURATION OF WORK PERMIT

|   |                              |
|---|------------------------------|
| <b>Worksite Location / Station:</b> _____   | <b>WORK PERMIT NO:</b> _____ |
| <b>Permit Applicant (Print Name):</b> _____ | <b>Ref. Indicator:</b> _____ |

**1. REASON FOR EXCAVATION: (By Permit Applicant)**

\_\_\_\_\_

Precise location: \_\_\_\_\_

| 2. METHOD                          | EXTENT OF EXCAVATION:  |
|------------------------------------|--|
| Mechanical Excavator               | Depth _____ Width _____ Length _____                               |
| Jack Hammer                        | Road Opening _____ <b>Required</b> _____ <b>Not Required</b> _____ |
| Manual Excavation (No sharp tools) | If required, Permit No. _____                                      |

**3. CERTIFICATE APPROVAL (By Affected Disciplines and Permit Applicant)**

Special Precautions: (Site drawing attached) \_\_\_\_\_

Certificate Approval (Operations Engineering Drawing Office). Drawing office to utilise and attach the latest available drawings for underground structures / cables.

Print Name: \_\_\_\_\_ Ref. Indicator: \_\_\_\_\_ Signature: \_\_\_\_\_ Date: \_\_\_\_\_

Instrumentation Authority:  
Print Name: \_\_\_\_\_ Ref. Indicator: \_\_\_\_\_ Signature: \_\_\_\_\_ Date: \_\_\_\_\_

Electrical Authority (Distribution):  
Print Name: \_\_\_\_\_ Ref. Indicator: \_\_\_\_\_ Signature: \_\_\_\_\_ Date: \_\_\_\_\_

Electrical Authority (Operations):  
Print Name: \_\_\_\_\_ Ref. Indicator: \_\_\_\_\_ Signature: \_\_\_\_\_ Date: \_\_\_\_\_

Telecommunications Authority:  
Print Name: \_\_\_\_\_ Ref. Indicator: \_\_\_\_\_ Signature: \_\_\_\_\_ Date: \_\_\_\_\_

Civil Maintenance Authority:  
Print Name: \_\_\_\_\_ Ref. Indicator: \_\_\_\_\_ Signature: \_\_\_\_\_ Date: \_\_\_\_\_

Mechanical Maintenance Authority:  
Print Name: \_\_\_\_\_ Ref. Indicator: \_\_\_\_\_ Signature: \_\_\_\_\_ Date: \_\_\_\_\_

Water Authority (Potable & Fire):  
Print Name: \_\_\_\_\_ Ref. Indicator: \_\_\_\_\_ Signature: \_\_\_\_\_ Date: \_\_\_\_\_

Sewage Authority (Raw & Treated Sewage Effluent):  
Print Name: \_\_\_\_\_ Ref. Indicator: \_\_\_\_\_ Signature: \_\_\_\_\_ Date: \_\_\_\_\_

**4. SCANNING**

| Location        | Cables |           | Cable Route Marked On |            | Scanned by   | QP Supervisor  |
|-----------------|--------|-----------|-----------------------|------------|--|--|
|                 | Found  | Not Found | The Drawing           | The Ground |  |  |
| Operation Areas |        |           |                       |            | Print Name: _____<br>Ref. Indicator: _____<br>Signature: _____ | Print Name: _____<br>Ref. Indicator: _____<br>Signature: _____ |
| Utilities Areas |        |           |                       |            | Print Name: _____<br>Ref. Indicator: _____<br>Signature: _____ | Print Name: _____<br>Ref. Indicator: _____<br>Signature: _____ |

Other comments: \_\_\_\_\_

Scanning has been witnessed and the above instructions are acknowledged. Permit Applicant (Print Name): \_\_\_\_\_ Signature: \_\_\_\_\_

**5. PRECAUTIONS / PREPARATIONS TO BE TAKEN BY WORKSITE SUPERVISOR: (By Permit Controller) Tick** YES  NO

Permission to move Heavy Plant equipment has been given by the Asset Holder, and a route plan to the excavation site has been provided to the Permit Authority. The

Safety Officer has been advised - signature to be appended. \_\_\_\_\_

Precautions are in place to prevent damage to underground / overground pipelines, roads, bridges and overhead lines. All excavation will be properly shored as required.

The area is barriered off and signs in English and Arabic are posted.

QP representative will remain onsite during the period of work.

Hazard warning lights will be used at night or during inclement weather conditions.

If the answer to any of the above statements is NO, give explanation: \_\_\_\_\_

**6. WORKSITE SUPERVISOR DECLARATION**

I fully understand all precautions and requirements listed above. I am fully aware of the location of all underground cables, pipelines and overhead lines within the designated excavation area, and will use only hand tools in close proximity to this equipment. No attempt will be made by me or persons under my control to carry out work other than that specified in Sections 1 and 2 of this Certificate.

Worksite Supervisor (Print Name): \_\_\_\_\_ Ref. Indicator: \_\_\_\_\_ Signature: \_\_\_\_\_ Date: \_\_\_\_\_

**7. CERTIFICATE VALIDATION (This certificate is valid only for the period of the Work Permit noted above)**

Based on the precautions and approvals in Sections 3 and 5, excavation is permitted as specified in Sections 1 and 2 of this Certificate. All underground cables, overhead lines and process pipework in the excavation area have been located and clearly marked by the respective Scanning Technician / Supervisor.

Permit Authority (Print Name): \_\_\_\_\_ Ref. Indicator: \_\_\_\_\_ Signature: \_\_\_\_\_ Date: \_\_\_\_\_

**8. CERTIFICATE CANCELLATION**

All activity specified under this Certificate has stopped. Personnel under my control are aware that no further work is permitted.

Worksite Supervisor (Print Name): \_\_\_\_\_ Ref. Indicator: \_\_\_\_\_ Signature: \_\_\_\_\_ Date: \_\_\_\_\_

I certify this Certificate is cancelled and all work activity has stopped.

Permit Authority (Print Name): \_\_\_\_\_ Ref. Indicator: \_\_\_\_\_ Signature: \_\_\_\_\_ Date: \_\_\_\_\_