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Document Title	Electrical Safety & Energizing Isolation Procedure	Rev	0

COMMENTS:

By:

Signed

Date

Review Code:

- | | | |
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No. of Pages attached to this form :

ELECTRICAL SAFETY & ENERGIZING ISOLATION PROCEDURE

AGREEMENT NO. : 09-5578-E-4

PROJECT NAME : Ruwais Refinery Expansion Project
EPC-4: Tankage & Associated
Interconnecting Piping

COMPANY : Abu Dhabi Oil Refining Company (TAKREER)

PMC : Mott MacDonald Ltd.

CONTRACTOR : Daewoo Engineering & Construction Co., Ltd.



**RUWAIS REFINERY
EXPANSION PROJECT**

**EPC-4 TANKAGE AND ASSOCIATED
INTERCONNECTING PIPING**

DAEWOO E&C

AGREEMENT No. 09-5578-E-4

PROJECT No. 5578

Doc. No. 5578-E4-HSE-HU-00034

Rev. 0

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REV	DATE	REASON FOR ISSUE	PREP	CHKD	REVD	APP'D	COMPANY
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SIGNED (Initials)							


NOTES:

- (a) Revisions are denoted by a vertical line placed in the right-hand margin against the revised text.
- (b) PREP = Prepared by, CHKD = Checked by, REVD = Reviewed by, APP'D = Approved by.
- (c) In case of conflict between any requirements stipulated in this document with the contractual requirements, the contractual requirements shall prevail.

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<p align="center">PROJECT No. 5578</p>	<p align="center">Doc. No. 5578-E4-HSE-HU-00034</p>	<p align="center">Rev. 0</p>	<p align="center">Page 4 / 14</p>

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1. INTRODUCTION

1.1 Purpose

The purpose of this procedure is to ensure the safety of all personnel employed to carry out the energizing, testing and de-energizing of electrical circuits and equipment on the Ruwais Refinery Expansion Project, as well as general safety and awareness relating to electricity.

1.2 Scope

The procedure covers all electrical energizing, testing and de-energizing associated during construction on the Ruwais Refinery Expansion Project and is applicable to both permanent works and temporary electrical works. This procedure applies to all manpower on the RRE Project.

2. RESPONSIBILITIES

2.1 Project Manager


- Has the final responsibility to ensuring that the electrical works on the project is done as per mentioned herein this HSE management system document.
- Reviews and approves procurement requisitions: carries out checks and inspections to ensure that delivered goods are of good quality in respect of health and safety.
- Ensure that accidents related electrical concerns are reported, investigated and that corrective and preventive measures are taken.

2.2 HSE Manager

- Shall coordinate with the section managers to ensure that suitable arrangements, including subcontractors, are in place to conduct the work with electrical equipment safely.
- All necessary Lock out / Tag out will be carried out before working on electrical equipments.
- Shall assign HSE personnel for performing internal audits, advising employees on subjects concerning health and safety.

2.3 Section Manager

- Ensure that work on the project site is carried out without endangering health and safety in accordance with the HSE plan and procedure.
- Give his staff members job-related information and instructions on the subject of health and safety and repeats such information and instructions as needed.
- Conducts audits checks on plant and equipment prior to commencement of work.
- Ensures that all employees receive PPE and sees to it that they use it where necessary and maintain the PPE correctly.
- Makes inventory of potential hazards, takes corrective and preventive actions and ensures that the Site Safety Officer records these to the Project Manager.

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- Is authorized, if he is of the opinion that there is a threat of immediate and serious danger, to stop any activity under his authority from being carried out and/or stop the use of plant and equipment, etc. until effective measures have been taken
- Ensures that PTW (Permit to Work) and LOTO (Lockout and Tagout) is validated daily if applicable.

2.4 Supervisor

To ensure that all personnel are;

- Adequately trained for the relevant task
- That they are using the correct equipment and personal protective equipment
- That all relevant hazards have been identified
- That the respective permit to work formalities has been correctly addressed, where required.
- Must conduct a tool box talk meeting with his crews about the electrical work, related hazards and control measures to prevent any kind of injury and the instruction as per the Lock out /Tag out procedure before starting the job.
- Has responsibilities of providing the required PPE to his crew for the job as mentioned herein this procedure.
- Housekeeping is done at the end of the day and the waste to be disposed off as per the project waste disposal procedure and manufacturer instructions.
- Is responsible for ensuring all electrical works are performed in a safe and proper manner and that the equipment is left in a safe condition.

3. GENERAL GUIDELINES

There are six basic steps involved in all lock out / tag out (LO/TO) procedures. They are:


- (1) Identify all sources of hazardous electrical energy.

Client Authorized Persons and CONTRACTOR Competent Person must identify all sources of hazards, locate all energizing points and disconnect which will de- activate the system.

- (2) De-energize, isolate, disconnect, or eliminate all hazards identified in Item (1) above.

Client Authorized Person, with CONTRACTOR Competent Person, isolates, disconnects, or eliminates the entire identified hazard. This is done by use of the circuit breakers; disconnect switches, removal of fuses. Fuses will be removed by the client Authorized Person, from all circuits that are disconnected and locked out prior to any person being permitted to work on any such circuit.

- (3) Immobilize and lock out all such isolation points and disconnects, then try to start the system to ensure total lockout, taking into account any systems that may have time delays built into software and hardware consists of the client Authorized Person immobilizing and locking out

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those means used to isolate all the sources of hazards. This means locking disconnect switches open. Then the system switches, buttons, release mechanisms are activated to ensure that they are totally immobilized

- (4) Tag all isolation points and identify persons performing such tasks.

Client Authorized Person shall fit DANGER TAGS to identify isolation points, which indicate that the system has been locked out for work to be carried out on the system, and identify the personnel engaged in the work. This also allows personnel to know whom to contact to re-activate the system in case of an emergency.

- (5) Energize the system in a manner which prevents injury or equipment damage.
- (6) Following the assurance that the equipment is in operating condition, the removal of all locks and tags shall be done.

4. **PROCEDURE FOR ENERGIZING / DE-ENERGIZING CIRCUITS (LOCK OUT/TAG OUT)**


At various times during the construction and commissioning period it will be necessary to energize circuits, e.g., temporary lighting and power supplies, for no-load running of motors, commissioning activities, etc.

The following procedure will be carried out prior to, during and after such energizing and de-energizing of circuits:

- Client Authorized Person, CONTRACTOR Competent Person, will identify the circuits to be energized
- Any such procedure will be written by Client Authorized Person and approved by Client Senior Authorized Person

Any switching procedure shall include, but not be limited to the following:

- Description of the work to be done supported by a sequence of events
- Circuit diagram, showing the limits of the circuits to be energized.
- Such a circuit diagram will highlight all isolation points, with a description of the means of isolation
- Period scheduled for energizing/de-energizing
- Switching sequence if applicable
- Description of any temporary power supplies, together with hook-up point
- Safety precautions to be taken, i.e. barriers required panel and building access limitations, etc
- Identify any manpower constraints, i.e., number of persons that can work safely, trade qualifications, experience, etc
- Any constraints imposed by the Government Authorities Permits and Inspections
- Ensure the procedure is attached to the PTW.

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Client Authorized Person will advise CONTRACTOR Competent Person of the scope of the circuits, switchboards, equipment, etc, that needs to be energized, together with details of any switching procedure.

CONTRACTOR Competent Person shall apply for PTW details 24hours prior to the work commencing and must indicate, at the time of application, details of the work and where it will be carried out.

All CONTRACTOR personnel who will be working on the energized circuit must sign on to the PTW prior to commencing work. Additionally besides their name, each person signed onto the PTW will write their trade, e.g. Electrician, Technician, Laborer, etc.

Client Electrical Permit Issuer will issue the PTW, together with all necessary locks, keys, tags, etc, to CONTRACTOR Authorized Person.

Following the issuance of a PTW, Client Authorized Person will energize the circuit fitting all necessary locks, tags, caution notices, etc, in the presence of the CONTRACTOR Competent Person and PTW Receiver.

5. PROCEDURE FOR TAGGING

The CONTRACTOR PTW Receiver signs the tag in ink. This includes name, badge number, and date, written clearly in full.

Attachment 4 shows the CONTRACTOR standard, plastic Danger LO/TO tags.

Always attach a signed tag to any lock applied and in a place as visible as possible.

6. ACCESS TO SUBSTATIONS


Whilst circuits are energized, access to substations will be restricted solely to two groups of people:

- Those persons who have been issued with a SUBSTATION ACCESS PASS
- Those persons named on a valid ELECTRICAL ACCESS/PERMIT TO WORK.

7. TEMPORARY LIGHTING


Contractors shall install temporary lighting when work site activities are scheduled to take place during darkness.

Brightness shall be sufficient to allow for safe working conditions at the work site and at access routes and passageways.

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8. ATTACHMENT

- Attachment 1: Energizing Clearance Certificate
- Attachment 2: Electrical Isolation Clearance Certificate
- Attachment 3: Permit To Work on Electrical Equipment
- Attachment 4: Lock out / Tag out Tag

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ATTACHMENT 1: ELECTRICAL ENERGIZING CLEARANCE CERTIFICATE

Clearance Certificate No.: _____

Attached to CONTRACTOR Permit No.: _____

1. Location _____
2. Equipment Tag No.: _____
3. Reason for Energizing: _____
4. Switching Procedure attached (Yes/No) Doc. #: _____
5. Equipment Energized Requested by CONTRACTOR Competent Person

Date: _____ Time: _____

Name: _____ Signature _____


6. Issued by Client Authorized Person

Name: _____ Signature _____ Date: _____

7. Approved by Client Senior Authorized Person

Name: _____ Signature _____ Date: _____

DISTRIBUTION: ONE ORIGINAL COPY, ATTACHED TO WHITE COPY OF CONTRACTOR'S PERMIT UPON COMPLETION OF ENERGIZING, CLEARANCE WHITE COPY PERMIT TO BE RETURNED TO CONTRACTOR'S PERMIT COORDINATOR

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ATTACHMENT 2: ELECTRICAL ISOLATION CLEARANCE CERTIFICATE


Clearance Certificate No.: _____

Attached to CONTRACTOR Permit No.: _____

ELECTRICAL ISOLATION CLEARANCE CERIFICATE

1. Location: _____
2. Equipment Tag No.: _____
3. Reason for Energizing: _____
4. Isolation Procedure attached (Yes/No) Doc. #: _____
5. Equipment Isolated by means of:
 - Circuit breaker, Contractor, Isolator switch opened
 - Earthing switch closed:
 - Locked Out, Tagged Out
 - Fuses Removed
 - Danger/Caution Notices in place
 - Other specify
6. Equipment Isolation Requested by CONTRACTOR Competent Person
 Date: _____ Time: _____
 Name: _____ Signature _____
7. Issued by Client Authorized Person
 Name: _____ Signature _____ Date: _____
8. Approved by Client Senior Authorized Person
 Name: _____ Signature _____ Date: _____

DISTRIBUTION: ONE ORIGINAL COPY, ATTACHED TO WHITE COPY OF CONTRACTOR'S'S PERMIT UPON COMPLETION OF ENERGIZING, CLEARANCE + WHITE COPY PERMIT TO BE RETURNED TO CONTRACTOR'S PERMIT COORDINATOR.

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ATTACHMENT 3: PERMIT TO WORK ON ELECTRICAL EQUIPMENT

Clearance Certificate No.: _____

Attached to CONTRACTOR Permit No.: _____

A. Location

Exact Location and Equipment name/tag: _____

B. Issue

To: Client Authorized Person in charge of the work

Name: _____ Position _____

I declare that it is safe to work on the following electrical equipment, which has been made dead, isolated from all live conductors and earthed.

Refer as applicable to Electrical Isolation Clearance Certificate No: _____

1. Equipment _____
2. Supplied from: _____
3. Danger/Caution Notices have been posted at: _____
4. Additional Safety Measures taken: _____
5. Description of the work on the above equipment: _____

Date: _____ Time: _____


CONTRACTOR Competent Person: _____ Signature _____

C. Receipt

I declare that the work under this Permit has been explained to me and that I am responsible for taking the necessary precautions to avoid danger to myself and persons directly under my control.

Date: _____ Time: _____

Client Authorized Person: _____ Signature _____

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D. Completion of work and Clearance

I declare the work has been completed and all persons under my supervision have been withdrawn and that tools and test equipment are cleared away.

I declare that all earth connections have been removed, Caution Notices have been taken away, and the equipment has been tested and is ready for Energizing.

Date: _____ Time: _____

CONTRACTOR Competent Person: _____ Signature: _____

E. Closure of permit

I declare that all works that have requested were completely done and temporary equipment and connection have been removed. Housekeeping is done properly. Area is clear, Caution Notices have been taken away, and the equipment has been tested and ready for Energizing.


Date: _____ Time: _____

Client Authorized Person: _____ Signature: _____

**DISTRIBUTION: WHITE COPY AT JOBSITE WITH SUBCONTRACTOR'S PTW RECIPIENT
PINK COPY WITH SUBCONTRACTOR'S COMPETENT PERSON IN PTW FILE YELLOW
COPY TO BE RETAINED BY CONTRACTOR PERMIT COORDINATOR**

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ATTACHMENT 4: TAG OUT/LOCK OUT TAG



DANGER

MEN WORKING ON EQUIPMENT
DO NOT REMOVE THIS TAG

EQUIPMENT OUT OF SERVICE

FOR _____

BY ORDER OF _____

PLACED BY _____ TIME _____
DATE _____

ORDERED
REMOVED BY _____

REMOVED BY _____

SEE OTHER SIDE

