WORK MANAGEMENT SYSTEM (WMS)

Framework

ABU DHABI NATIONAL OIL COMPANY

ADNOC Classification: Internal

WMS STANDARDS

- ❑ WMS is the current replacement of various existing PTW standards across all Group Company
- ❑ Implementing a single system procedure which is common across all GC which will integrate **5 critical HSE process**

1) **PTW**
2) **JSA (including RA)**
3) **Energy Isolation (EI)**
4) **Temporary Defeat**
5) **SIMOPS**

WMS FRAMEWORK

Introduction

- ❑ Key Objectives
- ❑ Purpose
- ❑ Scope

Key Roles

- ❑ Roles and Responsibilities

Framework

- ❑ WMS Elements
- ❑ Continual Improvement

WMS FRAMEWORK

Key Objectives

- ❑ One Set of System
- ❑ Harmonized Terminologies
- ❑ Simplified & Effective Lessons Learned
- ❑ Familiarity of Contractors
- ❑ Agility for Movement

"A safety tool to ensure that the work is properly controlled, coordinated and communicated"

ADNOC Classification: Internal

WMS FRAMEWORK

Purpose

- ❑ Description of key aspects and requirements
- ✓ Facilitate harmonization and integration (5 HSE standards)
- ✓ Defines the structure of WMS (8 stage process)
- ✓ Provides requirements of WMS elements (4 elements)

WMS FRAMEWORK

Scope

- ❑ Applicability
- ❑ Shared Interface Areas b/w GC or External Authorities
- ❑ Contractor Responsibilities
- ❑ Non-ADNOC facilities / greenfield provisions

ADNOC Classification: Internal

WMS FRAMEWORK

Key Roles and Responsibilities

- ❑ ADNOC Group HSE, SVP (HQ) – Custodian
- ❑ Group Company CEO – Appoint Asset Owner (AO)
- ❑ Group Company VP-HSE – Tier 2 & 3 Audit
- ❑ Group Company Asset Owner (**AO**) – Compliance to WMS

Each Group Company shall maintain an up-to-date and approved list of the personnel authorized as signatories in the PTW System

WMS FRAMEWORK

- 4 WMS Elements

1) Custodianship - ADNOC Group HSE SVP (HQ)

2) Deviation Management (AO - RA to reduce risk to ALARP)

- ✓ Application of WMS Standards Deviations and Approvals (AO shall request (RA) to GC VP HSE for review, HSE SVP-HQ)
- ✓ Application of Stringent Requirements (Stricter Guidelines)
- ✓ Emergency work Deviations

3) Document Retention (Min 1 year) (For e-PTW wet-ink signature or doc not captured in e-PTW should be retained for 1 year)

ADNOC Classification: Internal

WMS FRAMEWORK

4) Training and Competency Assurance

Asset Owner responsible to authorize and appoint competent WMS Signatories once the personnel have successfully completed relevant training followed by a formal written and practical assessment.

WMS FRAMEWORK

Continual Improvement

Periodic review of WMS Standards – Annually – ADNOC Group HSE

- **WMS Audits** (Check Compliance and Improve Performance)
  - Tier 1 – **Daily Monitoring** (Self Audit) – Competent personnel who are authorized by Asset Owners
  - Tier 2 – **Annual** (Assessment by GC) – GC VP HSE
  - Tier 3 – **Every 3 Years** (Independent Assessment) – GC VP HSE

WMS FRAMEWORK

Additional Notes

- All contractors must follow WMS standard for all activities performed within ADNOC operating facilities in the course of carrying out their contractual requirements.
- If any documentation and all relevant attachments required as per WMS Standards form part of an **investigation for any reason**, the related documents shall remain in archive for the duration of the investigation.

THANK YOU

Questions and Answers

WORK MANAGEMENT SYSTEM WMS

Permit To Work (PTW)

ABU DHABI NATIONAL OIL COMPANY

AGENDA OF THE PACKAGE...

- ❑ Introduction
- ❑ Purpose
- ❑ Scope
- ❑ Key Roles
- ❑ Framework
- ❑ Process

PERMIT TO WORK

System containing documents for controlling and coordinating work to:

- ❑ Establish and maintain safe working conditions
- ❑ Ensure hazards & controls are defined and implemented
- ❑ Act as a written agreement between parties

PERMIT TO WORK

The Permit clearly documents:

- ❑ Specific work scope
- ❑ Known worksite conditions via supporting documents
- ❑ Preparations, worksite hazards, precautions and controls
- ❑ Equipment, systems, buildings and work areas associated
- ❑ Affected parties and required communications
- ❑ Requirements for personal protective equipment
- ❑ Verification of preparations and controls
- ❑ Revalidation

PERMIT TO WORK

Purpose

Ensure that a well-defined system is implemented across all ADNOC Group Companies ensuring that:

- ❑ Types of work are clearly defined
- ❑ Authorized at the appropriate level
- ❑ Categorized according to types of **Permits with Certificates**
- ❑ An appropriate level of planning
- ❑ Persons are trained and competent
- ❑ An appropriate **level of Job Safety Analysis**
- ❑ Appropriate control measures are identified & communicated

ADNOC Classification: Internal

PERMIT TO WORK

Purpose

Ensure that a well-defined system is implemented across all ADNOC Group Companies ensuring that:

- ❑ Work sites and equipment are adequately prepared
- ❑ The personnel executing the work fully understand scope
- ❑ Work activities are carried out safely aligned to conditions
- ❑ Worksite is returned to a safe condition
- ❑ A time validity is applied to each Permit
- ❑ A formal hand-back procedure is in place
- ❑ Monitoring is carried out
- ❑ **PTW exemptions are identified, assessed & approved** (AO)

PERMIT TO WORK

Scope

- ❑ Applicability
- ❑ Contractor Requirements and Responsibilities
- ❑ Non ADNOC Facilities and Greenfield Locations
- ❑ Alignment (Read in conjunction with other WMS Std)
- ❑ Principles (WMS Elements)

PERMIT TO WORK

For proper harmonization, a common terminology for naming of roles and understanding of their responsibilities and accountabilities.

Each GC shall maintain an up-to-date and approved list of the personnel authorized as signatories in the PTW System:

- ❑ Approved in **writing** by **Asset Owner**
- ❑ **Reviewed** and approved on an annual basis
- ❑ **Up to date**
- ❑ **Readily available**

PERMIT TO WORK

Roles and Responsibilities

- Asset Approval Authority (AAA) – Controls Approval (Critical & Hot Work)
- Area Authority (AA) – Authorization (Also responsible for approving GWP)
- Permit Issuer (PI) – Issue
- Performing Authority (PA) – Request & Return
- Job Performer (JP) – Accept & Execute
- Permit Endorser (PE) – Endorse (Affected Parties)

PERMIT TO WORK

WORK CONTROLLED UNDER PTW

- The safe and effective use of the PTW system is the responsibility of the respective Asset Owner
- Work Categorization Chart (WCC) advises the type of permit
- Exemptions from the PTW process shall meet **all** the below:
  1) Routine activities (including maintenance)
  2) Low risk in nature
  3) Single discipline / trade
  4) Completed in less than a shift (<12hrs)
  5) No impact on operations

JSA L2 required

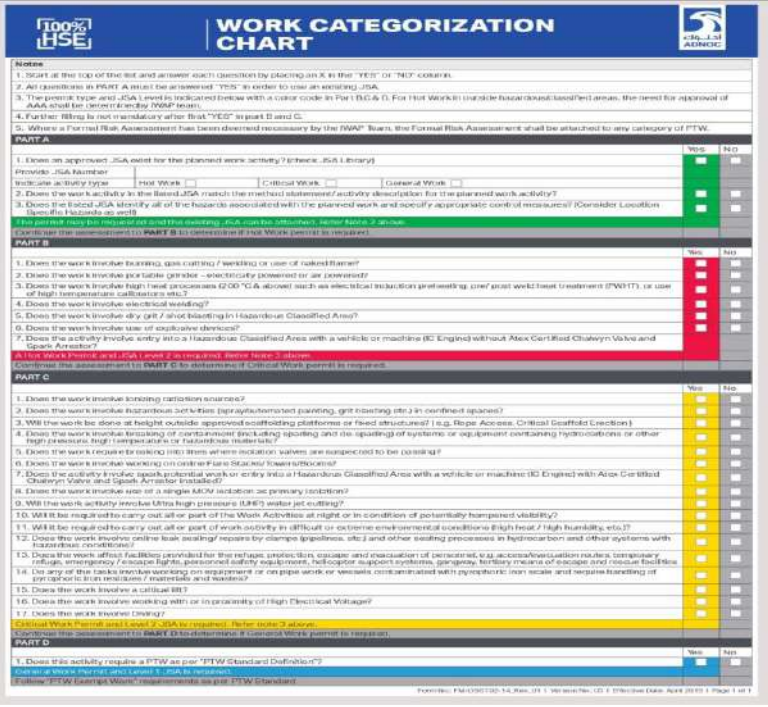
PERMIT TO WORK

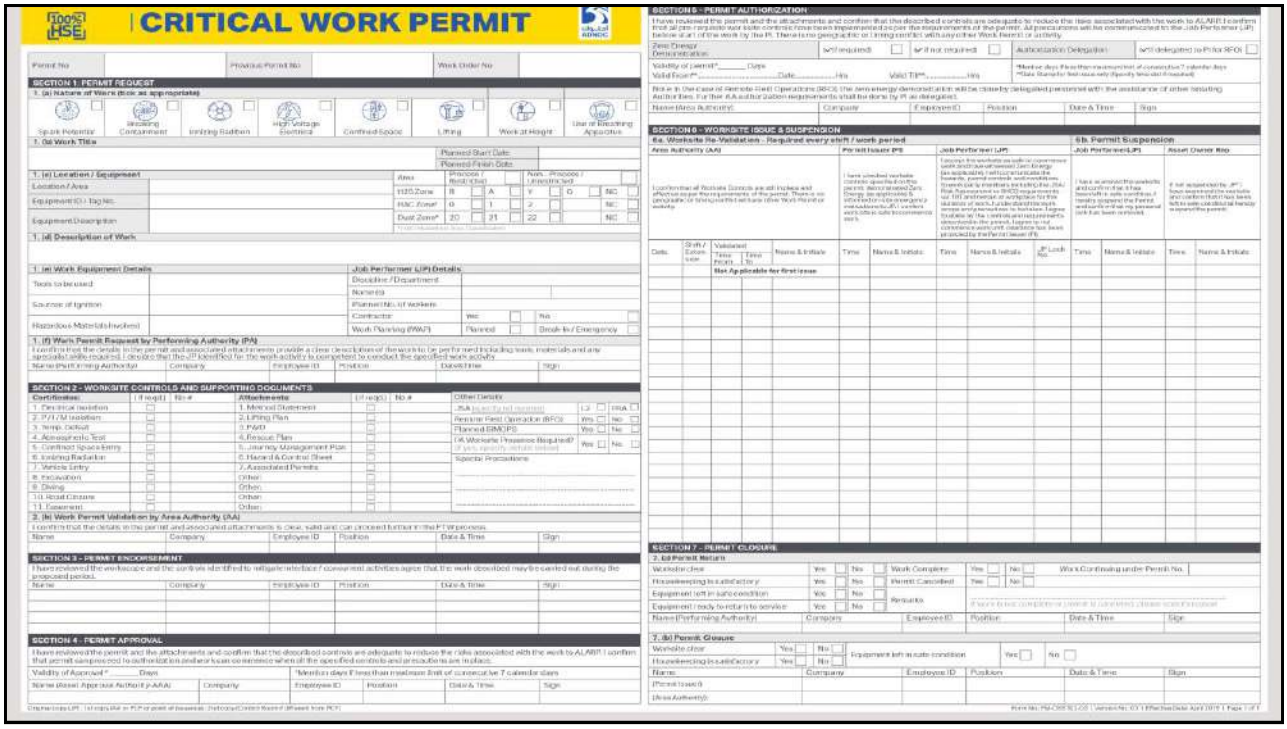
Critical Work Permit (17 activities mentioned in WCC)

- A permit used for critical work activities listed in 'Work Categorization Chart' or identified by the Group Company as Critical or High / High-Medium Risk (as per ADNOC RAM)
- Spark Potential nature of work in hazardous area will be covered under the Critical Permit

PERMIT TO WORK

- WCC has 4 parts
- Part A for JSA
- Part B for HWP
- Part C for CWP
- Part D for GWP

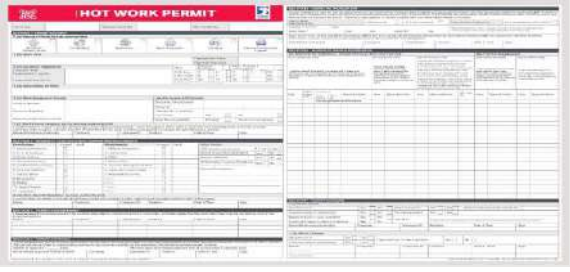


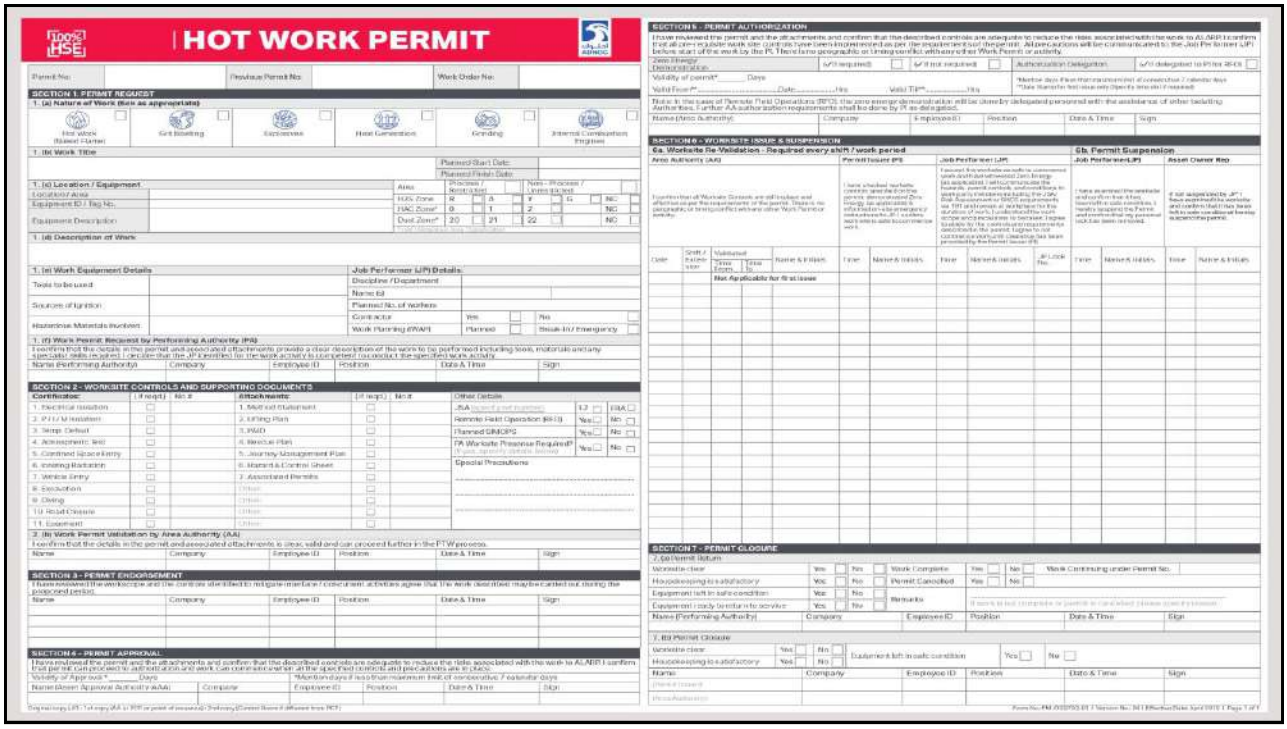


PERMIT TO WORK

Hot Work Permit (7 activities mentioned in WCC)

- A permit used for activities that contain a positive source of ignition as part of the nature of work activity. Examples include but not limited to hot surfaces, naked flames, hot gases, mechanically produced sparks, chemical reactions, etc.

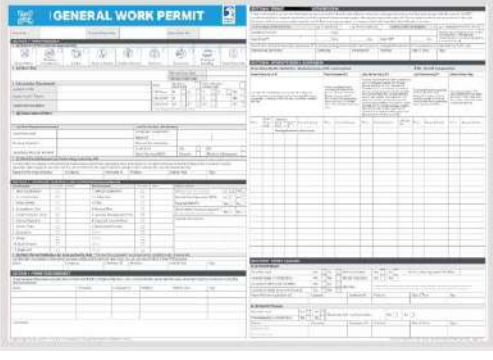


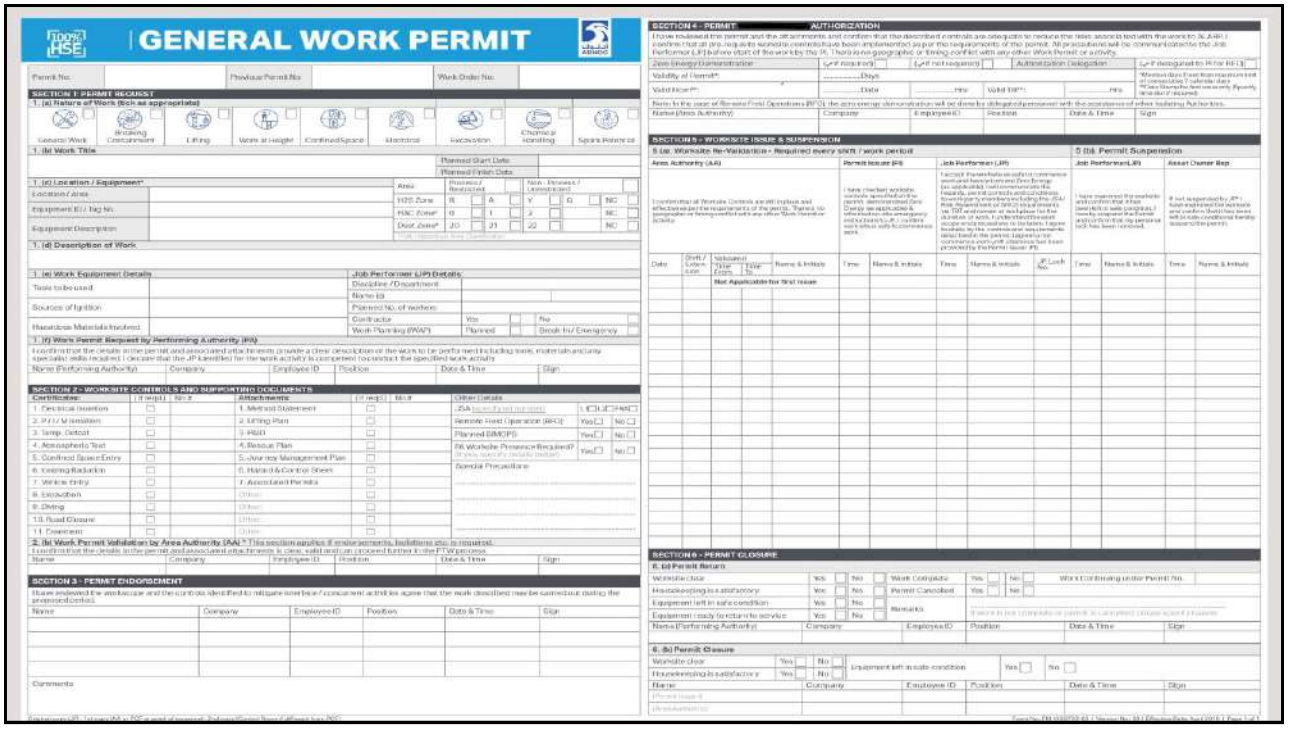


PERMIT TO WORK

General Work Permit

- A Permit used for activities that does not form part of the defined critical work, and does not contain any hot work.





GENERAL WORK PERMIT

ADNOC Classification: Internal

PERMIT TO WORK

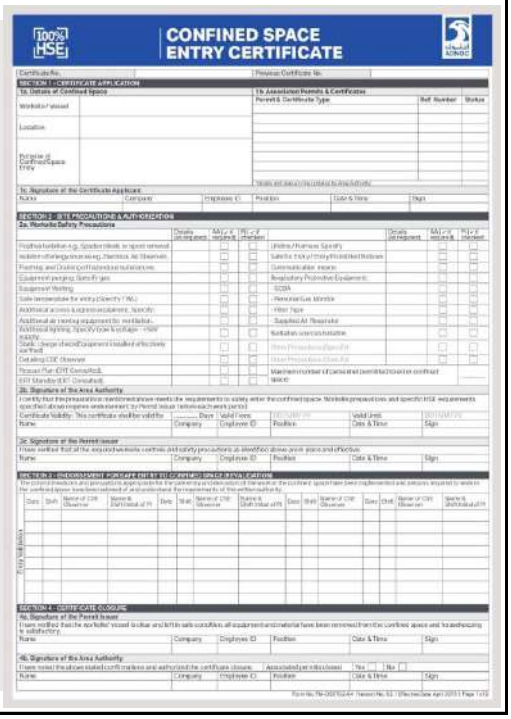
Certificates

- Set of **supporting documents** (Shall be attached to PTW)
- Complementary to PTWs (Do not in themselves, authorize work to be carried out)
- Standalone documents (Assist in identifying & certifying controls, prerequisite and conditions req prior to permit issue)
- Used for preparatory work (for the main permit)

PERMIT TO WORK

Confined Space Entry Certificate

- Any work that requires entry into a confined space or into an area that could become a confined space through a fall in oxygen levels through introduction of harmful airborne contaminants or presents difficulty in rescuing and treating an injured or unconscious person.

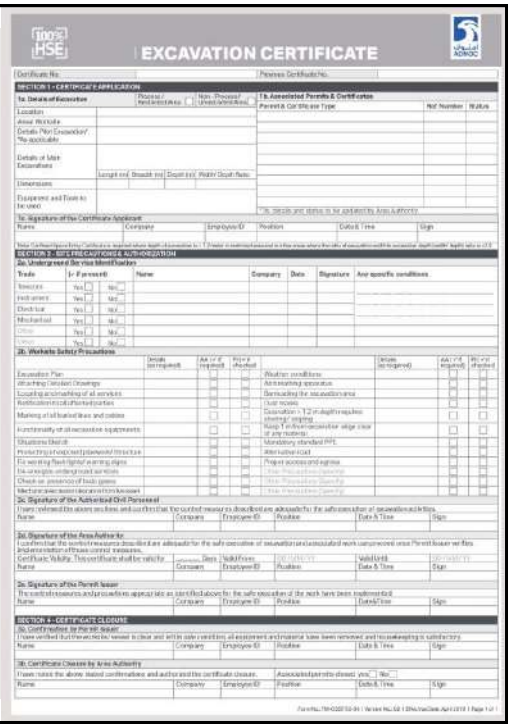


ADNOC Classification: Internal

PERMIT TO WORK

Excavation Certificate

- Required whenever breaking into ground (including drilling) and cutting into floors, walls, or ceilings to specify the precautions needed to protect personnel against collapse of the excavation or the hazards of penetrating/damaging underground cables, pipes or services during excavation work.
- If depth is more than **1.2m** and **W/D <2** is classified as Confined Space
- Note: Excavation Certificate is applicable in all areas (Restricted/Unrestricted)
- **Authorized Civil Personnel** Responsible for all excavations onsite and the authorizing signatory for Excavation Certificates



PERMIT TO WORK

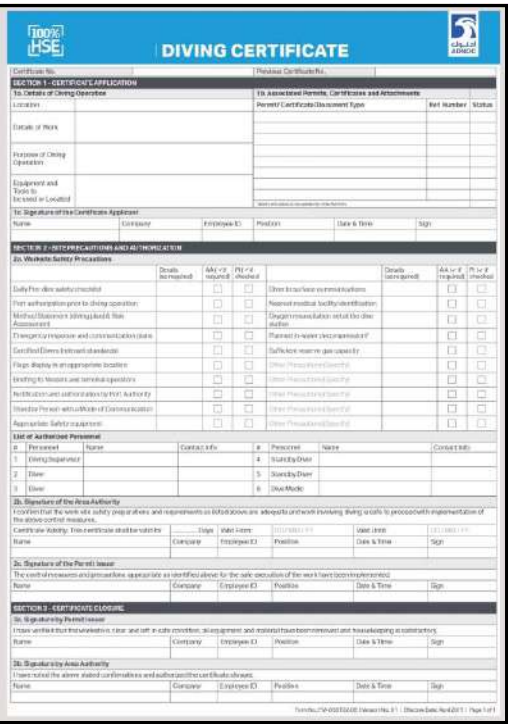
Vehicle & Machine Entry Certificate

- Required whenever operating equipment with combustion engines such as forklift trucks, generators, compressors, etc. are introduced into Zone Classified Hazardous areas.
- Vehicle and Machine Entry Certificate is valid for one vehicle. Any change in vehicle requires approval from Area Authority (AA)

PERMIT TO WORK

Diving Certificate

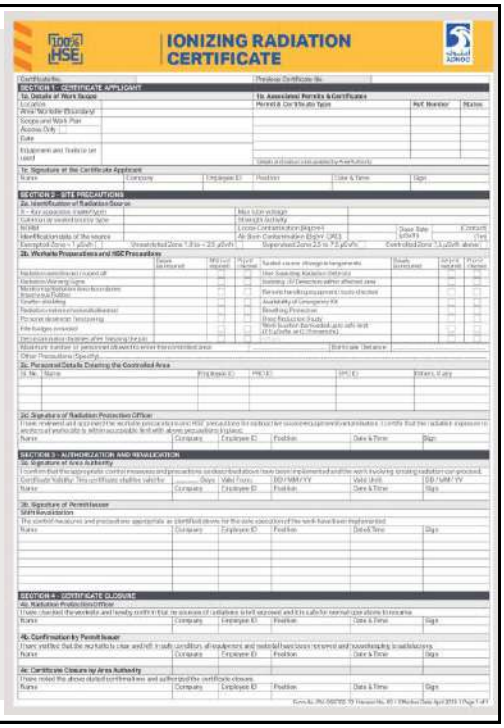
- A Diving Certificate is required to ensure that appropriate control measures are strictly applied to all activities involving a diving operation which reduce the risks to a diving team to ALARP.
- Note: Diving Certificate shall be issued to Diving Supervisors only



PERMIT TO WORK

Ionizing Radiation Certificate

- Ionizing Radiation Certificate is required for all activities that involve handling and/or use of radioactive sources such as Radiography and Radioactivity based process instruments and NORM contaminated waste from process lines/vessels/tanks.
- RPO in conjunction with AA need to identify site precautions



PERMIT TO WORK

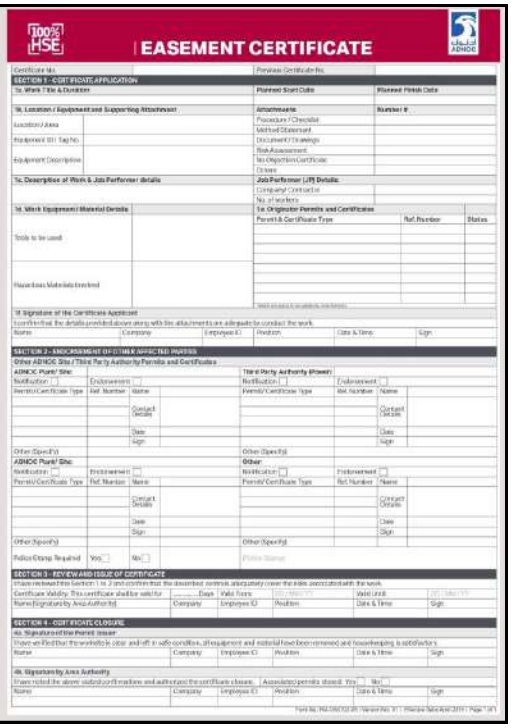
Atmospheric Test Record Form

- In order to determine the concentration of harmful vapors and/or the adequacy of the oxygen content, periodic or continuous atmospheric testing during the work would be required.
- AA determine the frequency of Gas Test
- Note: All Efforts shall be made to conduct Atmospheric test within 1 hour prior to the commencement of work

PERMIT TO WORK

Easement Certificate

- Required for any construction and/or repair activities performed in the common service / utility area with pipelines / communication / electrical power lines (**outside the fenced area** of an operating asset or pipeline berm (5m to 30m)
- Required in **Proximity areas**, **Shared Interference areas** & **Offsite areas**


EASEMENT CERTIFICATE

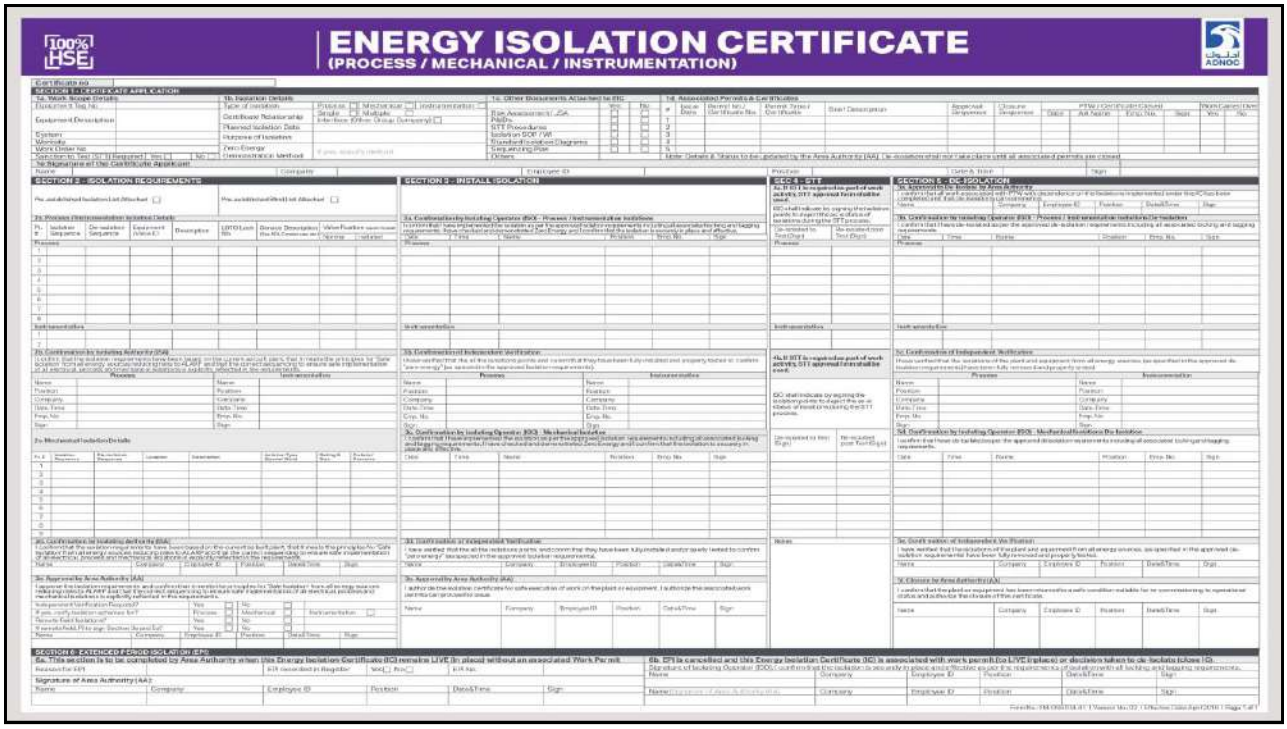
ADNOC Classification: Internal

PERMIT TO WORK

Energy Isolation Certificate – Process, Mechanical & Instrumentation

- Work that requires isolating the energy source/equipment to be able to conduct the work activity.

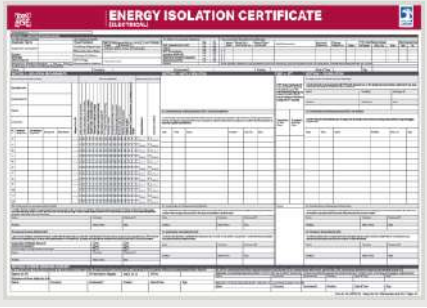

ENERGY ISOLATION CERTIFICATE

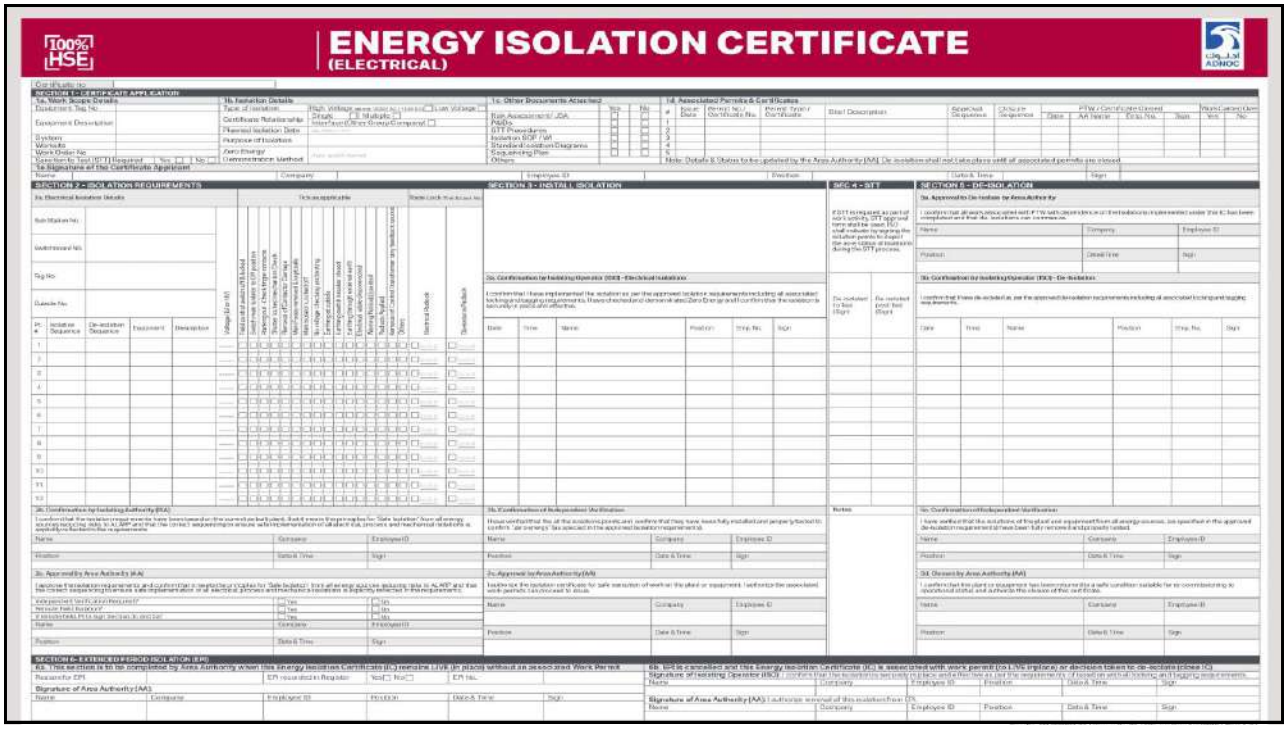


PERMIT TO WORK

Energy Isolation Certificate – Electrical

- Work that requires isolating the energy source/equipment to be able to conduct the work activity.

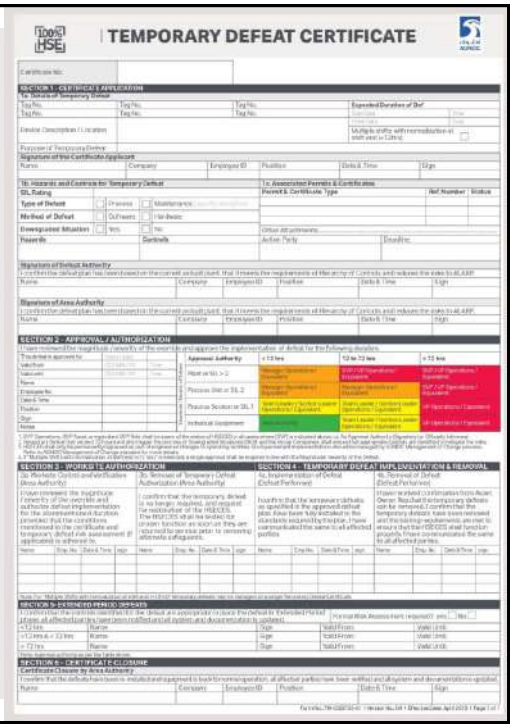




PERMIT TO WORK

Temporary Defeat Certificate (TDC)

- Any work activity that requires the temporary bypassing of a safety system including over-ride, defeat or inhibition of function on equipment identified as HSE Safety Critical Equipment and Systems (HSECES).



PERMIT TO WORK

Road Closure Certificate

- ❑ Required for work activities that require closure of roads.
- ❑ Max Validity of 28 Calendar Days
- ❑ Authorized Fire Personnel signature is required


ROAD CLOSURE CERTIFICATE

PERMIT TO WORK

Document Requirements

- ❑ Paper based PTW Systems
  - ❑ Original copy is displayed at **work site** by Job Performer
  - ❑ First (1st) copy retained by the Area Authority
  - ❑ Second (2nd) copy retained in the Control Room
- ❑ For electronic PTW systems
  - ❑ A printed hard copy shall be displayed at the **worksite** during execution (JP)

PERMIT TO WORK

To ensure that precautions required for tasks of a long duration are reviewed regularly, limits are set on the validity periods of Permits and associated Certificates.

- ❑ Type of permits and certificates
- ❑ Maximum validity of certificate
- ❑ Re-validation requirements of the permits and certificates

Critical Work Permit	**Max. 7 calendar days validity**	**Revalidated Every Shift**
Hot Work Permit	**Max. 7 calendar days validity**	**Revalidated Every Shift**
General Work Permit	**Max. 7 calendar days validity**	**Revalidated Every Shift**

ADNOC Classification: Internal

PERMIT TO WORK

Certificate Type	Validity	Re-Validation
Confined Space Entry (CSE)	Specified by Area Authority (AA)	**Every Shift**
Atmospheric Test Record Form	**Not Applicable**	Not Applicable
Vehicle and Machine Entry	Specified by Area Authority (AA)	Not Applicable
Diving	Specified by Area Authority (AA)	Not Applicable
Excavation	Specified by Area Authority (AA)	Not Applicable
Ionizing Radiation	Specified by Area Authority (AA)	**Every Shift**
Road Closure	Specified by Area Authority (AA)	Not Applicable
Easement	Specified by Area Authority (AA)	Not Applicable
Energy Isolation	**Not Applicable**	Not Applicable
Temporary Defeat	**Defeat Approval Authority (DAA)**	Not Applicable

- ❑ **Permit Issuer (PI) will re-validate the certificate**

PERMIT TO WORK

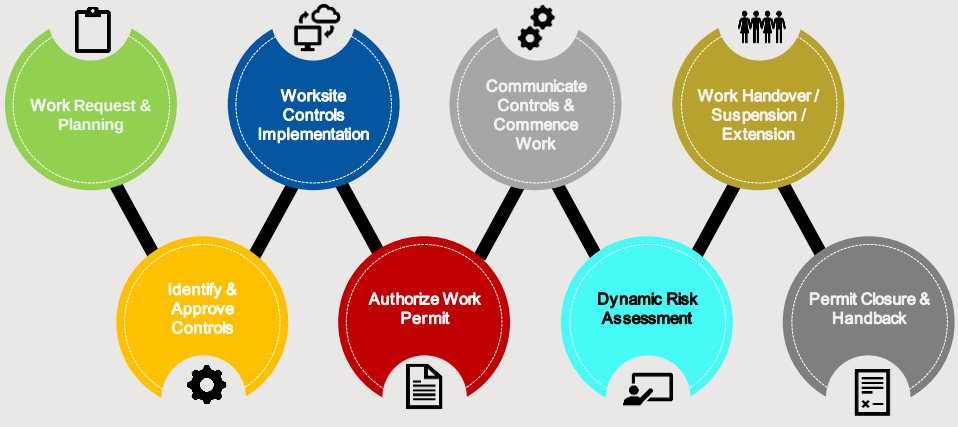
Signatory Limits

- There should be a sensible limit on the maximum number no of Permits to be administered by signatories approved by Asset Owner

Authority	No. of Permits	No. Critical Permits	No. of Hot Work Permits
Area Authority (AA)			
Permit Issuer (PI)			
Performing Authority (PA) - ADNOC			
Performing Authority (PA) - Contractor			

PERMIT TO WORK

The Permit to Work (PTW) is an 8-step process



PERMIT TO WORK

Work Request and planning - (IWAP) Process

The Integrated Work Activity Plan shall be developed in alignment with operational priorities while:

- ❑ Ensuring that Asset Owner's HSE objectives are achieved
- ❑ Balance between maintenance / operational plant req

IWAP Team composition:

- ❑ Asset Owner or Representative, PTW Coordinator, Planning Representative and Performing Discipline.

PERMIT TO WORK

Description of Work

- ❑ Performing Authority (PA) shall provide clear and adequate description about the following aspects:
  - ❑ A clear and concise title and description and location of work
  - ❑ Proposed / Planned start and finish date or duration
  - ❑ Job Performer (JP) details namely Discipline / Department
  - ❑ Expected number of people in the work party
  - ❑ Equipment, material and tools to be used
  - ❑ Providing documents supporting the work activity such as Method Statement, Procedures, Checklists, Drawings etc.

PERMIT TO WORK

Initial Job Analysis (IWAP Team)

Proposed work scope shall be classified according to the nature of work activity utilizing '**Work Categorization Chart**'. The Initial Job Analysis shall be used to determine:

- ❑ PTW with Type or PTW Exempted
- ❑ JSA (Level 1 or Level 2) or Formal Risk Assessment
- ❑ Permit type to be raised
- ❑ Nature of the work activity
- ❑ Supporting certificates / documents and signatories
- ❑ Identification for need of isolations & temporary defeats

➢ After IWAP meeting **PA Request for permit**

➢ Note: All permits must be requested by PA **at least 24hrs** before work start

PERMIT TO WORK

Identify Controls

Performing Authority (**PA**) shall identify the applicable hazard and controls (JSA) and **attach to the permit form** or **participate in Formal Risk Assessment**.

- ❑ General Work Permits require **JSA Level 1** (SHCF)
- ❑ Critical & Hot Work Permits require **JSA Level 2** (SHCF + HMF)
- ❑ Formal Risk Assessment (FRA) may replace JSA Level 2 (**If determined by IWAP team**)

As part of the controls identification process, the **AA shall review** and update the permit pack (**Permit Validation**)

AA can add **pre-requisite controls** during validation if applicable

PERMIT TO WORK

Approve Controls

- ❑ AAA checks & approves Hot Work & Critical Work Permits
- ❑ AA checks & approves General Work Permits

✓ **AAA** can provide maximum **time validity** period of **7 days**. If permit is not authorized (AA) within 7 days, **approval of AAA shall be required again**

✓ For General Permits, If the Permit is not issued (PI) on the planned start date, it shall be reverted back to the **Area Authority** for validation, approval and authorization.

PERMIT TO WORK

Worksite Controls Implementation Process

- ❑ All pre-requisite worksite controls shall be confirmed by Area Authority (AA) as "In place and effective" (before authorization)
- ❑ Verification of the effective implementation of controls shall be provided by Permit Issuer (PI) (after authorization by AA and before issue)
- ❑ The process for implementation of the controls as per the Permit requirements shall be overseen through the Daily PTW Coordination Meetings.

PERMIT TO WORK

Authorization Process by Area Authority (AA) ensuring

- ❑ Asset Approval Authority (AAA) approval time is still valid
- ❑ Pre-requisite controls are in place and proved effective
- ❑ Information is appropriate for the described scope of work
- ❑ Authorizations and other req documents are in place
- ❑ Authorization is within the PTW limits (Set by AO)
- ❑ No conflicts (SIMOPS) shall arise due to the work activity
- ❑ Adequate communication protocols are defined (SIMOPS)

PERMIT ISSUE

Communicate Controls and Commence Work

- ❑ Atmospheric tests, where required by the permit, shall be carried out as appropriate to cover all activities within the designated area.
- ❑ Only Authorized Gas Tester (AGT) with valid certificates shall conduct the tests.
- ❑ Job Performer (JP) & Permit Issuer (PI) **joint on-site walk**
- ❑ PI shall demonstrate zero energy to JP (If applicable)
- ❑ Permit Issuer inform the JP on the Emergency Response procedures and safe evacuation protocols.
- ❑ **PI will issue the permit** {after verify controls implementation}

PERMIT TO WORK

Communicate Controls and Commence Work

- ❑ The Job Performer (JP) shall:
  - ❑ Sign and accept the worksite
  - ❑ Adhere to all the worksite requirements
  - ❑ Communicate via a Tool Box Talk (TBT)

The work party shall be advised of and understand:

- ❑ The work content, environment and controls
- ❑ The potential hazards and controls required
- ❑ Any emergency actions
- ❑ Work party responsibilities.

PERMIT TO WORK

Supervision

Job Performer (JP) is in charge of the safe execution of the work and shall ensure:

- ❑ Work Team follow the HSE precautions
- ❑ Effectiveness of the controls is maintained
- ❑ SIMOPs protocols are followed

Stopping the Job

Every individual has an obligation to STOP THE JOB if deemed unsafe.

PERMIT TO WORK

Cancellation Rules

- In certain circumstances or emergencies it may be appropriate to cancel the permit
- A full re-assessment of work conducted in the affected area to ensure that conditions have not altered

In all cases when a permit is cancelled, re-commencing the work activity shall require a new permit with all the relevant approvals.

AA at his discretion shall be authorized to suspend/cancel the permit as deemed necessary

PERMIT TO WORK

Re-validation Rules

- Effective handover between incoming and outgoing personnel at shift handover or crew change is critical
- There shall be sufficient overlap to allow proper review and discussion of all permits on the facility
- At shift change, all incoming personnel shall become acquainted with the status of all ongoing and planned work.

The following shift roles shall be involved:

Area Authority (AA), Permit Issuer (PI) & Job Performer (JP)

PERMIT TO WORK

Suspension

A permit shall be automatically suspended when:

- ❑ An emergency alarm is activated at the worksite
- ❑ Rescue resources are no longer available
- ❑ Severe weather conditions occur
- ❑ Shift Ends, if the **time extension** is not approved by AA

At certain circumstances time extension is required. PTW shall be extended by AA for maximum **4 hours** **(Revalidation)**

PERMIT TO WORK

Remote Location Suspension Rules (RFO)

In RFO, PI can authorize the permit if delegated by AA

Job Performer shall suspend the PTW at the completion of work or end of work shift. Work shall require suspension under direction of the Area Authority (AA) / Permit Issuer (PI) when:

- ❑ A hazardous change in atmospheric conditions is identified
- ❑ The conditions of the Permit are not being followed
- ❑ The work scope changes or conflict with another PTW
- ❑ Sanction To Test (STT) is requested

PERMIT TO WORK

Request for Closure of Permit

PA shall return the **permit pack** to AA declaring:

- ❑ Housekeeping Status
- ❑ Equipment Status – Equipment is left in a safe condition
- ❑ Work Status (If work is not complete, need to provide reason)
- ❑ Work Permit Status

PERMIT TO WORK

Closure of Permit

AA shall ensure the following:

- ❑ Verify Permit Issuer signature on the permit (before closing)
- ❑ Updating of Isolation Certificates (If applicable)
- ❑ Updating of Temp. Defeat Certificates (If applicable)
- ❑ Informing other parties to the permits

PERMIT TO WORK

Additional Notes

- For complex and critical activities, a site visit by AA is recommended

Permissible Gas Values

- O2 {20.9%} {19.5% O2 Min……..23.5% O2 Max}
- LEL = <5% of LEL
- H2S = <5ppm
- CO = <25ppm
- SO2 = <2ppm
- NH3 = <25ppm

PERMIT TO WORK

Additional Notes

- Before revalidation, AA shall confirm that all Worksite Controls are still in place and effective as per the requirements of the permit
- PI shall authorize de-isolation if delegated by AA
- JSA L2/FRA shall be used for PTW Exempted Activities
- AA identify whether the isolations are to be installed in remote field.

THANK YOU

Questions and Answers

Introduction | Key Roles | Framework | Process | Support Tools

WORK MANAGEMENT SYSTEM WMS

Job Safety Analysis

ABU DHABI NATIONAL OIL COMPANY

1

JOB SAFETY ANALYSIS

- ❑ Purpose
- ❑ Scope
- ❑ Key Roles
- ❑ Framework
- ❑ Process

JOB SAFETY ANALYSIS

Purpose

- The purpose of the JSA Standard and process is to establish mandatory requirements for conducting Job Safety Analysis prior to commencement of work (using ADNOC PTW system) in areas under control of ADNOC and its group companies.
- JSA is carried out to ensure that content and location of a work scope are clearly defined, potential hazards of the work site & each of the tasks or activities to be performed are identified, the significance of hazards is adequately assessed & sufficient control measures are defined to reduce the risks to ALARP

ADNOC Classification: Internal

JOB SAFETY ANALYSIS

Scope

- Applicability
- Contractor Responsibilities
- Non-ADNOC Facilities / Greenfield Locations
- Alignment (Read in conjunction with other WMS Std)
- Principles (WMS Elements)

JOB SAFETY ANALYSIS

Key Roles and Responsibilities

- ❑ Asset Approval Authority (Approval of Work Pack)
- ❑ Performing Authority (Development of Job Safety Analysis)
- ❑ Formal Risk Assessment (FRA) Team Leader (Leading FRA)

ADNOC Classification: Internal

JOB SAFETY ANALYSIS

Framework

- ❑ Initial Job Analysis
- ❑ IWAP Process
- ❑ PTW Types & Applicable Levels of JSA

JSA Levels	Mandated for:
Level 1 - Standard Hazard Control Form (SHCF)	General Work Permit
Level 2 - SHCF + Hazard Management Form (HMF)	Critical or Hot Work Permit
Formal Risk Assessment	Where determined by IWAP Team

JOB SAFETY ANALYSIS

Document Library

All JSAs are subject to periodic **review** to ensure they are still applicable, **valid** and up-to date

Type	Validity/Review Frequency
Formal Risk Assessment 	Every 1 Year
Level 2: HMF 	Every 2 Years

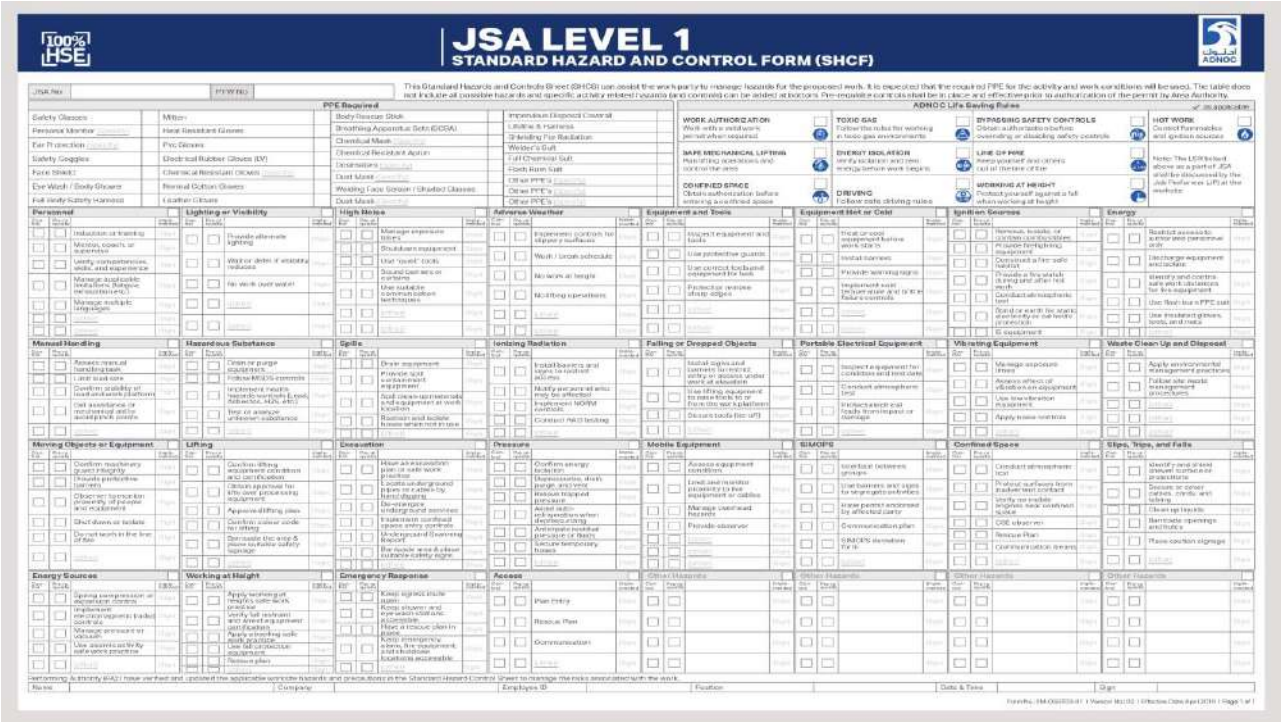
Note: JSA L1 Validity: Not Applicable

JOB SAFETY ANALYSIS

- ❑ **JSA Level 1:**
  Standard Hazard Control Form (SHCF)

- ❑ **Contents (JSA L1)**

1) PPE Requirements
2) Applicable LSR
3) Applicable hazards (aligned with work scope) and required controls



JOB SAFETY ANALYSIS

- ❑ JSA Level 2:
  Hazard Management Form (HMF)
- ❑ Contents of JSA L2

1) Major work steps
2) Applicable hazards (aligned with work scope) and its location
3) Required controls

ADNOC Classification: Internal

JOB SAFETY ANALYSIS

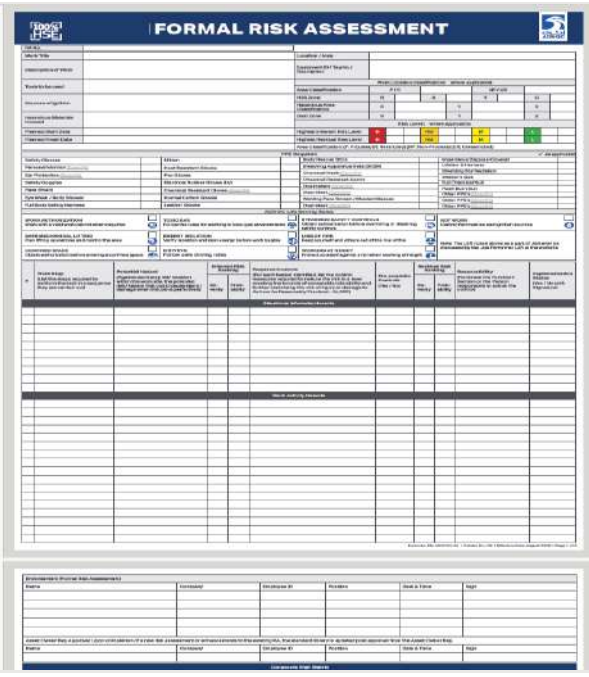
Formal Risk Assessment (FRA)

- ❑ Always consist of, at least, **two individuals**

Initial Risk Level	RA Team Composition
Low	❑ Performing Authority (PA) or PA Supervisor ❑ Asset Owner Rep. (Area Authority or his rep.)
Medium	❑ Performing Authority (PA) or PA Supervisor ❑ Asset Owner Rep. (Area Authority or his rep.)
High	❑ Performing Authority (PA) or PA Supervisor ❑ Asset Owner Rep. (Area Authority or above) ❑ HSE Representative ❑ Affected Parties (as applicable) ❑ Fire & Rescue Supervisor (as applicable) ❑ Other Specialists (as applicable)

- ❑ FRA (IWAP Team Decision)
- ❑ Contents of FRA

1) Major work steps
2) Potential Hazards
3) Inherent Risk Ranking
4) Required Controls
5) Residual Risk Ranking



JOB SAFETY ANALYSIS

Approval Of Controls

- ❑ General Work Permits (**JSA L1 Controls**)
  - ❑ **Area Authority (AA)**
- ❑ Critical & Hot Work Permits (**JSA L2 or FRA Controls**)
  - ❑ **Asset Approval Authority (AAA)**

ADDITIONAL NOTES

- WCC Tool will allow for deciding the JSA Level required for a specific task
- JSA L2 & FRA both allows for identification of responsible person to implement controls.
- FRA Team members will be decided based on risk level. All the persons conducting FRA need to endorse FRA
- The AO Representative has to approve any JSA before it can uploaded to the JSA Library for use as a template.

THANK YOU

Questions and Answers

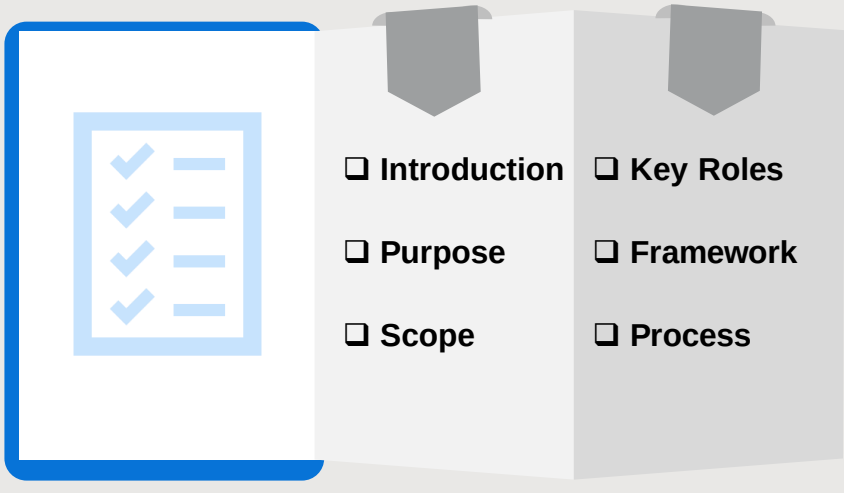
100% HSE

WORK MANAGEMENT SYSTEM WMS

Energy Isolation

ABU DHABI NATIONAL OIL COMPANY

AGENDA



- ❑ Introduction
- ❑ Purpose
- ❑ Scope
- ❑ Key Roles
- ❑ Framework
- ❑ Process

ENERGY ISOLATION

Introduction

Energy Isolation is the process of establishing a secure break in the energy supply to ensure that inadvertent reconnection is not possible.

Effective energy isolation ensures that equipment remains safely isolated for the duration of any work activity and prevents accidental re-pressuring or re-energizing of equipment before personnel have ceased work and equipment integrity has been restored.

ENERGY ISOLATION

Purpose

The Energy Isolation Standard and process provides a detailed description of the Safe Isolation / De-Isolation and guidelines on Lock Out - Tag Out Processes for use on all ADNOC Operational Facilities. The Standard sets out:

- ❑ Compliance with applicable Statutory / Legal requirements and Regulations, Codes of Practice and ADNOC Standards; and
- ❑ Ensuring risks associated with exposure to hazardous energy sources are as low as reasonably practicable (ALARP)

ENERGY ISOLATION

SCOPE

The requirements of the Energy Isolation Standard shall be applicable to:

- ❑ All ADNOC group companies
- ❑ Employees
- ❑ Contractors
- ❑ Facilities (including interface areas)
- ❑ Activities
- ❑ Services and products

Contractors shall be responsible for ensuring that all activities performed within ADNOC operating facilities.

ENERGY ISOLATION

This standard **does not** apply to:

- ❑ **Cord and plug-connected equipment** if the equipment can be completely isolated by unplugging and the person has exclusive control of the plug

- ❑ **Mobile plant and light vehicles**

ENERGY ISOLATION

Roles and Responsibilities

The ultimate success of isolation process depends on the competence and awareness of the people carrying out the activities. If they do not have a sound understanding of permit or isolation requirements and their own responsibilities, the system will have a limited effect on maintaining a safe operation and preventing accidents.

Please use and read this standard in conjunction with other WMS Standards.

ADNOC Classification: Internal

ENERGY ISOLATION

Roles and Responsibilities

- **Area Authority (AA)**

Approves all IC isolation points to be implemented regardless of discipline after being consulted by the relevant discipline **Isolation Authorities (ISA)**.

AA has **overall responsibility** for ensuring that all IC isolation points have been properly implemented, their integrity checked, "**zero energy**" tested and confirmed and that this is correctly certified (by Isolation Operators) in the IC documentation prior to commencement of **intrusive work**

ENERGY ISOLATION

Roles and Responsibilities

❑ Isolating Authority (ISA)

A person with overall responsibility for ensuring correct implementation of, and certification for, isolations being applied prior to intrusive work.

An Isolating Authority (ISA) is a competent person with detailed knowledge of facilities in an asset. This role develops the isolation requirement corresponding to their discipline.

ISA can act in the capacity of ISO to install isolations if required.

ENERGY ISOLATION

Roles and Responsibilities

❑ Isolating Operator (ISO)

The person responsible for the field operation of the asset or, in the case of electrical isolations, the field Electrical technician competent to work on electrical facilities with HV electrical isolations requiring additional HV certification.

The ISO cannot be the Job Performer (JP) for the main permit for which the equipment is being isolated.

ENERGY ISOLATION

Framework

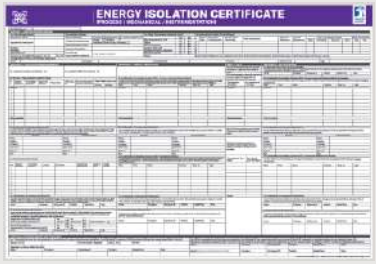
Isolation / de-isolation requirements will be documented in an Energy Isolation Certificates (**ICs**) with all necessary supporting documentation and information attached detailing:

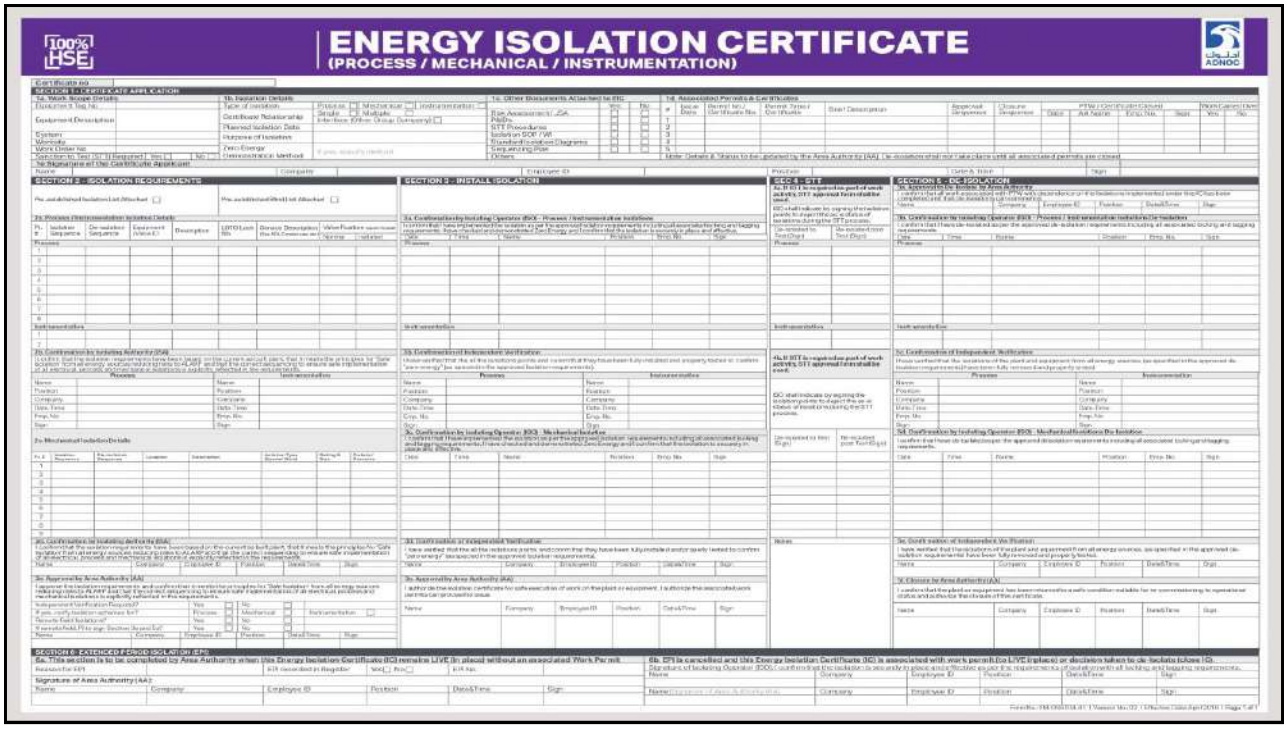
- ❑ Full description of the types of isolation required with markup
- ❑ Unique identification name / number
- ❑ Method & Sequence of isolation of a particular isolation point
- ❑ Zero Energy Verification requirements
- ❑ Provision of Independent Verification of Isolations.

ENERGY ISOLATION

Process, Mechanical & Instrumentation Energy Isolation Certificate

Process / Mechanical / Instrumentation isolations are combined on a single certificate for all details related to Separation of plant and equipment from every source of energy (**pressure, mechanical, instrument and control**) in such a way that the separation is secure.

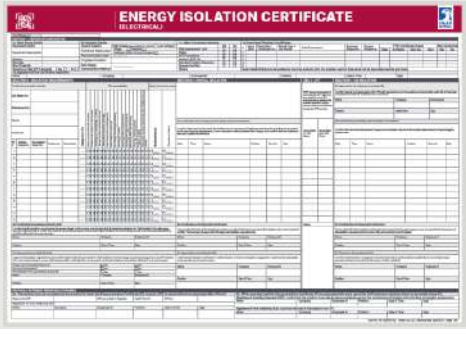


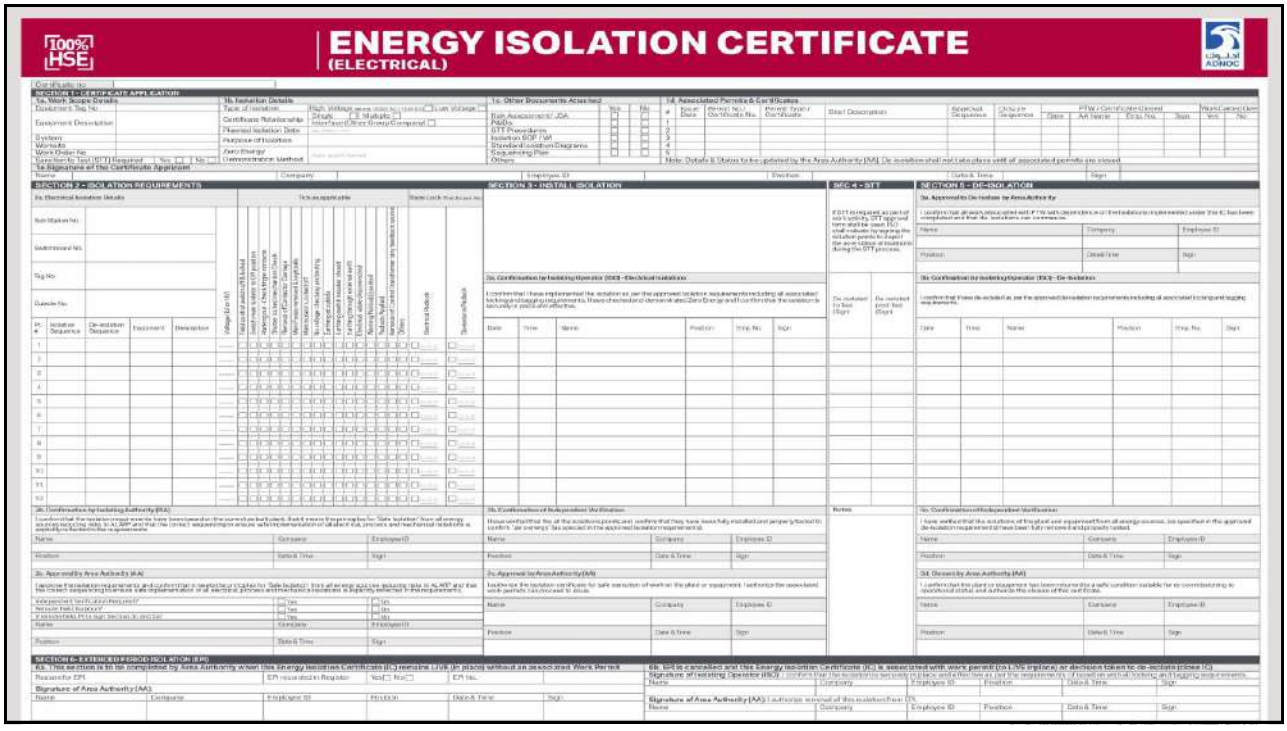


ENERGY ISOLATION

Electrical Energy Isolation Certificate

- Electrical Isolation is a separate Certificate for details related to Separation of plant and equipment from every source of **electrical energy** in such a way that the separation is secure.





ENERGY ISOLATION CERTIFICATE
(ELECTRICAL)

100% HSE

ADNOC

Cert #/Ref No:

SECTION 1 - CERTIFICATE APPLICATION

1a. Work Scope Details
Equipment / Tag No.
Equipment Description
Systems
Work Order No
Permit No. (if Required) Yes / No
1b. Signature of the Certificate Applicant
Name | Company | Position | Date & Time | Sign

1b. Isolation Details
Type of Isolation: High Voltage / Low Voltage
Certificate Relationship: Single / Multiple
Electrical Isolation Only / Mechanical Isolation Only / Combined
Planned Isolation Date
Purpose of Isolation
Zero Energy
Commencement Method

1c. Other Documents Attached

	Yes	No
Risk Assessment/ JSA		
P&IDs		
GTT Flowchart		
Isolation SOP / WI		
Standard Isolation Diagrams		
Sequencing Plan		
Others		

1d. Associated Permits & Certificates

#	Issue Date	Permit No./ Certificate No.	Permit Type/ Certificate	Brief Description	Area/Civil Requestor	Closure Requestor	PTW / Certificate Closed: Date	PTW / Certificate Closed: Am / Pm	PTW / Certificate Closed: Entry No.	Work Cancelled: Yes	Work Cancelled: No
1											
2											
3											
4											
5											

Note: Details 1b Status to be updated by the Area Authority (AA). De-isolation shall not take place until all associated permits are closed.

SECTION 2 - ISOLATION REQUIREMENTS

2a. Electrical Isolation Details

Pt. #	Isolation Sequence	De-isolation Sequence	Equipment	Description	Voltage (Line / kV)	Tests as applicable: Isolation Validated	Hand over tickets to VP points	Signpost / Check sign removal	Tester Check (Live / Dead)	Test Probes removed / Logbook	Earthing (through external earth)	Earthing (through internal earth)	Discharge capacitors/inductors	Isolation Padlock	Isolation Tagout	Permanent / Locked Transformer Key Isolation Issued	Other	Electrical Failsafe	Mechanical Failsafe	State Catch Pot Actual No.
1																				
2																				
3																				
4																				
5																				
6																				
7																				
8																				
9																				
10																				
11																				
12																				

2b. Confirmation by Isolating Authority (IA)
I confirm that the isolation requirements have been based on the current plant / field / area configuration for "Safe Isolation". Hand all energy sources requiring data to ALARP and that the correct sequencing to ensure safe implementation of all electrical process and mechanical isolations is digitally reflected in the requirements.
Name | Company | Employee ID
Position | Date & Time | Sign

2c. Approval by Area Authority (AA)
I approve the isolation requirements and confirm that it is safe to hand over to the Isolating Authority (IA) for Safe Isolation. Hand all energy sources requiring data to ALARP and that the correct sequencing to ensure safe implementation of all electrical process and mechanical isolations is digitally reflected in the requirements.
Independent Verification Required? Yes / No
Remote Field Isolation? Yes / No
If Isolation Field, Plant Operator Informed? Yes / No
Name | Company | Employee ID
Position | Date & Time | Sign

SECTION 3 - INSTALL ISOLATION

3a. Confirmation by Isolating Operator (IOC) - Electrical Isolations
I confirm that I have implemented the isolations as per the approved isolation requirements including all associated locking and tagging requirements. I have checked and demonstrated Zero Energy and I confirm that the isolation is satisfactory or partial when effective.

Date	Time	Name	Position	Emp. No.	Sign

3b. Confirmation of Independent Verification
I have verified that the all the isolations practical and confirm that they have been fully installed and properly tested to confirm "Zero Energy" has existed in the approved isolation requirements.
Name | Company | Employee ID
Position | Date & Time | Sign

3c. Approval by Area Authority (AA)
I confirm that the isolation certificate for safe execution of work on the plant or equipment. I will enforce the associated work permits / as discussed to abide.
Name | Company | Employee ID
Position | Date & Time | Sign

SEC 4 - STT

STT Flowchart as per GP 10-10, STT Sign-out form shall be used. IOC shall indicate by signing the isolation points to begin the de-isolation sequence during the STT process.

Do not start (Sign) | De-isolated post Test (Sign)

SECTION 5 - DE-ISOLATION

5a. Approval to De-isolate by Area Authority
I confirm that all work associated with PTW with completion of the isolation requirements under this EIC has been completed and that the isolations can commence.
Name | Company | Employee ID
Position | Date & Time | Sign

5b. Confirmation by Isolating Operator (IOC) - De-Isolation
I confirm that these de-isolated as per the approved de-isolation requirements including all associated locking and tagging requirements.

Date	Time	Name	Position	Emp. No.	Sign

5c. Confirmation of Independent Verification
I have verified that the isolations of the plant and equipment from all energy sources, as specified in the approved de-isolation requirement have been fully removed and properly tested.
Name | Company | Employee ID
Position | Date & Time | Sign

5d. Closure by Area Authority (AA)
I confirm that the plant or equipment has been returned to a safe condition suitable for re-commissioning to operational status and authorize the closure of this certificate.
Name | Company | Employee ID
Position | Date & Time | Sign

Notes

SECTION 6 - EXTENDED PERIOD ISOLATION (EPI)

6a. This section is to be completed by Area Authority when this Energy Isolation Certificate (EIC) remains LIVE (in place) without an associated Work Permit
Reason for EPI | EPI recorded in Register | Yes / No | EPI No.
Signature of Area Authority (AA):
Name | Company | Employee ID | Position | Date & Time | Sign

6b. If EIC is cancelled and the Energy Isolation Certificate (EIC) is associated with work permit (ex LIVE in place) or electrical isolation to be re-instated (close EIC)
Signature of Isolating Operator (IOC): I confirm that the isolation is securely in place and effective as per the requirements of this EIC and all associated locking and tagging requirements.
Name | Company | Employee ID | Position | Date & Time | Sign
Signature of Area Authority (AA): I authorize removal of this isolation from EPI
Name | Company | Employee ID | Position | Date & Time | Sign

ENERGY ISOLATION

ADNOC

Energy Isolation – 9 Step Process

1. Work Request & Planning
2. Identify & Approve Controls
3. Work Site Controls Implementation
4. Authorize PTW
5. Communicate Controls & Authorize Clearance to Commence Work
6. Dynamic Risk Assessment
7. Work Suspension / Extension / Handover
8. Closure & Hand back
9. Under Asset Owner Control

ENERGY ISOLATION

The **Integrated Work Activity Planning (IWAP)** process includes review of the scope of work requests received and identify whether isolations are required for safe execution of work. If the work activity requires isolations to be in place, the scope of isolations shall be defined which includes:

- ❑ System / Equipment to be isolated
- ❑ Location of isolation
- ❑ Reason for isolation
- ❑ Properties of hazardous materials involved

ENERGY ISOLATION

Identify & Approve Controls

The process entails identifying:

- ❑ Hazards and risks associated with isolation
- ❑ Baseline Isolations (Positive, Proved, Non-Proved)
- ❑ Required Minimum Isolation Standards (Valve Config)

It follows by formal approval (AA) on the Energy Isolation Certificate before ISO can install isolation

As part of PTW Process & **Permit Pack Validation, AA** shall ensure appropriate isolation certificates have been identified for the work scope & direct the isolation requirements to the concerned ISA.

ENERGY ISOLATION

Hazard Identification and JSA (For Isolation Requirement)

This step requires conducting a JSA to implement isolation requirements and a corresponding de-isolation requirements to return the equipment to the de-isolated state. The JSA should cover all stages of the isolation activity as follows:

- ❑ Preparatory work for the isolation
- ❑ Installation / removal and proving of the isolation
- ❑ The integrity of the isolation during intrusive work
- ❑ Requirements for testing and reinstatement of plant

ENERGY ISOLATION

In all cases, the highest reasonably-practicable standard of isolation shall be applied.

Mechanical isolation shall always be used for work scenarios:

- ❑ Confined space entry
- ❑ Naked flame / spark potential hot work on hazardous areas

ENERGY ISOLATION

All isolations shall meet the Baseline & Minimum Isolation Standards. Three (3) methods of Baseline Isolations

- ❑ Positive Isolation (Mechanical Isolation): removal of a spool and fitting of blinds, or fitting of a spade or spectacle blind
- ❑ Proved Isolation: Valve isolation where effectiveness of the isolation can be confirmed via vent / bleed points
- ❑ Non-Proved Isolation: Valve isolation. No provision to confirm effectiveness of valve

ENERGY ISOLATION

Hazard Factor Assessment Tool (HFA)

To determine Baseline Isolation Standards

a. Susbtance Category

Category	Description
1	• Very Toxic (T+) • Toxic (T) • Carcinogenic, mutagens, toxic for reproduction • Sensitising
2	• Extreme flammable (F+) • Highly flammable (F) • Flammable gases (R10) • Flammable liquids (R10) – unless included in Category 4 • Petroleum products* - unless included in category 4 but also consider whether category 1 is applicable • Oxidising (O) • Explosive (E) • Steam • Pressurised gases >250 bar (3625psi, 25000kpa) • Flashing Fluids • Asphyxiants
3	• Corrosive (C) • Harmful (Xn) • Irritant (Xi)
4	• Flammable liquids stored below flashpoint, and below flashpoint following release (R10)
5	• Non-classification and not stored in potentially harmful state

b. Release Factor

	Pressure		
Line Size	>50 barg (725psi, 5000kpa)	≤ 50 barg but >10 barg	< 10 Barg (145psi, 1000kpa)
≥ 20cm	H	H	M
5cm < line < 20cm	H	M	L
≤ 5cm	M	L	L

c. Location Factor

H	Any of: Numbers at risk >10; congested equipment; potential for escalation; large fires with potential for damage and multiple fatalities
M	Typically: 3-10 at risk; uncongested plant; storage area or small number of items in open area; minor fire
L	Characterised by: 1-2 at risk; remote single items; easily contained minor fires

d. Outcome Factor

		Release Factor		
		H	M	L
Location Factor	H	A	B	B
	M	B	B	C
	L	B	C	C

e. Determination of Baseline Isolation Standard

		Outcome Factor		
		A	B	C
Substance Category	1	R	I	I
	2	R	I	II
	3	I	II	II
	4	II	II	II
	5	II	III	III

Results

R	Consider whether the associated risk is acceptable or whether there is a need to further reduce risk (e.g. risk reduction measures), extending the isolation envelope, plant shutdown.
I	I: Mechanical isolation (e.g. line blind, removable spool, spectacle blind, spade)
II	Proved isolation (e.g. SB&B, DB&B)
III	Non -proved isolation (e.g. SB, DB)

ENERGY ISOLATION

Minimum Isolation Standards

Valve Configuration to achieve **Positive (Mechanical) & Proved Isolation** depending on the fluid **and** pressure ratings

Substance Category	Fluid	Design Pressure	Valve to Install Positive Isolation	Valve to Work without Positive Isolation
1	Toxic Fluids	Pressures up to ANSI Rating Class 150	Single block and bleed	Single block and bleed
		Pressures at ANSI Rating Classes 300 and 600	Single block and bleed	Double block and bleed
		Pressures at ANSI Rating Classes 900 and above	Double block and bleed	Double block and bleed
2	Fuel Gas Hydrocarbon Liquids Hydrocarbon Gas Nitrogen (Asphyxiants) Diesel	Pressures up to ANSI Rating Class 150	Single block and bleed	Single block and bleed
		Pressures at ANSI Rating Classes 300 and 600	Single block and bleed	Double block and bleed
		Pressures at ANSI Rating Classes 900 and above	Double block and bleed	Double block and bleed
3	Chemicals	Pressures up to ANSI Rating Class 150	Single block and bleed	Single block and bleed
		Pressures at ANSI Rating Classes 300 and 600	Single block and bleed	Double block and bleed
		Pressures at ANSI Rating Classes 900 and above	Double block and bleed	Double block and bleed
4	Flammable liquid and gas below flashpoint	Pressures up to ANSI Rating Class 150	Single block and bleed	Single block and bleed
		Pressures at ANSI Rating Classes 300 and 600	Single block and bleed	Double block and bleed
		Pressures at ANSI Rating Classes 900 and above	Double block and bleed	Double block and bleed
5	Service Water Potable Water Firewater Injection Water Instrument Air Plant Air	Pressures up to ANSI Rating Class 600	Single block and bleed	Single block and bleed
		Pressures at ANSI Rating Classes 600 and above	Double block and bleed	Double block and bleed

ADNOC Classification: Internal

ENERGY ISOLATION

If it is not possible to meet the requirements of Minimum Isolation Standard or the overall risk of the job increases by doing so, a **Formal Risk Assessment** shall be required meeting the following minimum requirements:

- ❑ Satisfaction from the assessment team that the selected isolation controls reduce the risks to ALARP
- ❑ Consideration of the overall risk exposure to personnel
- ❑ Consideration of alternatives (shutdown or deferral)
- ❑ Consideration of additional controls

ENERGY ISOLATION

Approve Controls

Once the Isolation requirements are confirmed by ISA, it shall be approved by Area Authority (AA).

Before approving he shall be responsible to:

- ❑ Consider all aspects of work planning, operations resourcing requirements and Simultaneous Operations (SIMOPS)
- ❑ Determine if Independent verification is required

Anyone competent in the WMS system can carry out Independent Verification as identified by the Area Authority.

ADNOC Classification: Internal

ENERGY ISOLATION

WORKSITE CONTROLS IMPLEMENTATION (ISO)

Process/Mechanical/Instrumentation Isolations

Installation of **mechanical isolations** could involve two stages:

- ❑ Valve isolation – process isolation which enables the insertion of a mechanical isolation downstream of the initial isolation
- ❑ Mechanical isolation – physical isolation requiring suitable personal protective equipment to mitigate against any undetected failure of the initial isolation

ENERGY ISOLATION

In certain situations, a separate Permit to Work (PTW) shall be required to apply the isolation.

The following conditions define the requirement of PTW for isolations:

- ❑ For applying mechanical isolation
- ❑ For all intrusive electrical work
- ❑ Any PTW requirement for an isolation activity as identified by IWAP

ENERGY ISOLATION

Electrical Isolations

All electrical isolation shall be installed by an authorized and competent Isolating Operator (ISO).

- ❑ Low Voltage (LV) isolation
  A competent, certified and authorized Isolating Operator (ISO) can apply Low Voltage electrical isolations.

- ❑ High Voltage (HV) isolation (1000V AC /1500V DC and above)
  A competent, certified and authorized Isolating Operator (ISO) can apply High Voltage electrical isolations.

ENERGY ISOLATION

Proving the effectiveness and integrity of Isolations (ISO)

The performance of isolations depends on:

- ❑ Integrity of isolation hardware
- ❑ Adequacy of the arrangements
- ❑ Proving and monitoring of the isolation such as:
  - ❑ Opening a bleed, vent or drain valve
  - ❑ Pressure build-up tests
  - ❑ Electrically test a circuit or attempting to operate equipment

ENERGY ISOLATION

Lock-out

- ❑ All isolations shall be secured with an approved padlock/locking device to ensure the isolation device is maintained in a safe position.

Tag-out

- ❑ An isolation tag shall be attached to each component of an isolation scheme to provide a visual indication that a device is in active use as a means of isolation and to facilitate checks that all necessary isolations are in place.

ENERGY ISOLATION

Confirmation of Isolations

- The Isolating Operator (ISO) performing the individual isolations shall sign all individual isolation points on the IC.

Independent verification

- May be required to ensure testing requirements and LOTO procedures have been met as planned and approved. Both the signatures shall be recorded on the certificate.

ENERGY ISOLATION

Final Authorization on Isolation Certificate

- Post signatures of ISO and independent verification (as applicable), Area Authority (AA) shall provide a final authorization on the IC.

AUTHORIZE PTW

- Prior to authorization of PTW, AA shall ensure that IC is attached to the work permit with appropriate authorizations and documentation

ENERGY ISOLATION

COMMMUNICATE CONTROLS & COMMENCE WORK

Demonstration of Zero Energy

- Prior to commencement of work and in accordance with PTW standard, the **Permit Issuer (PI) shall demonstrate the Zero Energy (as applicable) to Job Performer (JP).**

Acceptance

- Job Performer (JP) accepts that he has witnessed the demonstration of Zero Energy by Permit Issuer (PI). This is covered by the signature of JP on the permit.

ENERGY ISOLATION

Personal Locks

- Each Job Performer (JP) shall apply and provide the personal lock no. on the respective work permit prior to commencement of work.
- Personal lock-out shall be used in addition to the primary isolation and not as a substitute for a primary isolation.
- Each JP attaches his/her own lock to prevent exposure to energy source.

ENERGY ISOLATION

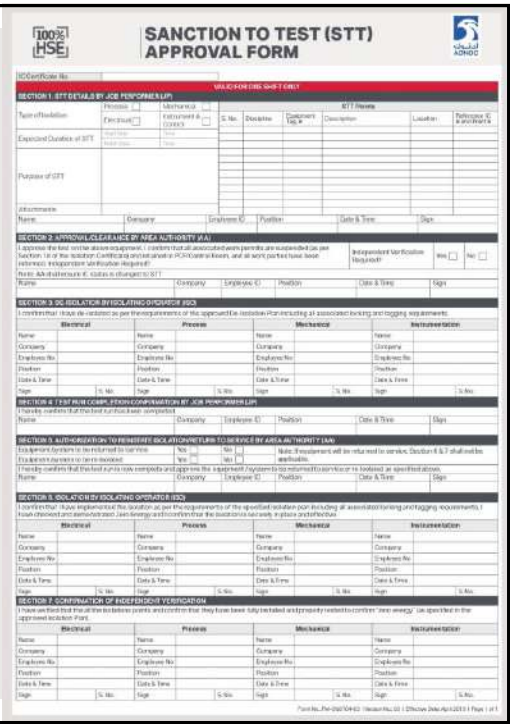
Dynamic Risk Assessment Process

- It is important to monitor the integrity of isolations on worksite for any changes that might prevent the job from being completed safely.
- Dynamic Risk Assessment is defined as the continuous process of identifying hazards and assessing risks arising due to changing circumstances of an operational environment followed by taking action to eliminate or reduce risk.

ENERGY ISOLATION

Sanction To Test (STT)

- Elements of an isolation scheme may need to be temporarily reversed to confirm that work stages have been correctly completed
- 'Sanction To Test' is required at the intermediate stage of a work activity involving function checks and / or pre-start tests
- JP need to suspend the permit before requesting for STT (Approval by AA)


SANCTION TO TEST (STT)
APPROVAL FORM

ENERGY ISOLATION

De-Isolation Process {after all associated permits are closed}

The approval to re-instate the isolation or de-isolation shall be provided by Area Authority (AA) on the IC.

- ❑ Once all preparations for re-instatement have been completed and readiness of the plant for recommissioning confirmed, the Isolating Operator (ISO) shall remove isolations according to the de-isolation sequencing (ISA) as specified in the Isolation Certificate.
- ❑ For certain de-isolations, a **separate PTW** may be required.
- ❑ AA will close IC

ENERGY ISOLATION

Extended Period Isolations (EPI) {AA fill EPI}

Isolations which are required to remain in place although no work is being carried out within the isolation boundary. May be required for following three main reasons:

1) The task has commenced but is suspended for a period exceeding the validity period of the Permit
2) An item of equipment that has been installed but is awaiting commissioning / start-up
3) An item of equipment becomes redundant and is to be isolated, pending an MOC to remove it

ENERGY ISOLATION

As per WMS Standard: Energy Isolation

- ❑ All isolations shall be recorded in the Isolation Register
- ❑ All GC shall utilize their Group Company specific LOTO standards during isolation
- ❑ All Extended Period Isolations shall require a periodic review and integrity check

While determining the isolation requirements for a particular isolation, the Isolating Authority (ISA) shall utilize Hazard Factor Assessment (HFA) tool to determine **Baseline Isolation Standards**. The ISA shall also ensure result of baseline isolation standard meets the Minimum Isolation Standards

ENERGY ISOLATION

- ❑ Requirement to conduct an independent verification of each isolation point is determined by AA
- ❑ Before, the Extended Period Isolation (EPI) is linked to a work permit; an integrity check of the isolation is always required
- ❑ STT is not mandatory. STT required or not will be mentioned on IC

THANK YOU

Questions and Answers

100% HSE

Introduction | Key Roles | Framework | Process | Support Tools

WORK MANAGEMENT SYSTEM WMS

Temporary Defeat of HSECES

ABU DHABI NATIONAL OIL COMPANY

AGENDA OF THE PACKAGE...

- ❑ Introduction
- ❑ Purpose
- ❑ Scope
- ❑ Key Roles
- ❑ Framework
- ❑ Process

TEMPORARY DEFEAT OF HSECES

Introduction

A Temporary Defeat or **bypass** occurs when a HSE Critical Equipment and System (HSECES) is **taken out of service** (isolated or shut down) while the equipment or facility being protected remains in service.

The use of the term Defeat should be taken to mean any of the following - to temporarily bypass, block out, isolate, override, inhibit, force, jumper, or disable a safety / protection device or an instrumented system or any parts thereof which would interrupt the normal design functionality of the equipment and system and its inherent ability to perform its protective or safety functions.

ADNOC Classification: Internal

TEMPORARY DEFEAT OF HSECES

Purpose

- To provide **instruction** on the evaluation and mitigation of risk for all occurrences where HSE Critical Equipment & Systems (HSECES) are temporarily defeated
- To ensure that any such bypasses of HSECES are **authorized**, **applied**, **monitored** and **removed** in a correct and controlled manner
- Safe, standardized and robust system for temporarily defeating the HSECES required to ensure **risks** associated with exposure to hazardous energy sources are **ALARP**

TEMPORARY DEFEAT OF HSECES

Scope

- ❑ Applicability
- ❑ Contractor Responsibilities
- ❑ Implementation (Adherence to all other WMS Standards)
- ❑ Principles (WMS Elements)

ADNOC Classification: Internal

TEMPORARY DEFEAT OF HSECES

Key Roles and Responsibilities

For proper harmonization of the Temporary Defeat process across ADNOC Group, all Businesses should adopt the common terminology for naming of roles and understanding of their responsibilities and accountabilities.

Success of Temporary Defeat process depends on the competence and awareness of the people carrying out the activities.

TEMPORARY DEFEAT OF HSECES

Key Roles and Responsibilities

- Defeat Approval Authority (Approval / Validity / Extension) [Selected from matrix based on **magnitude** of defeat]
- Defeat Authority (DA) – **Defeat Plan** (Risk Assessment)
- Defeat Performer (DP) – **Perform** (Implement / Restore)

TEMPORARY DEFEAT OF HSECES

HSECES shall only be defeated if it is necessary to prevent a greater risk or to perform an activity related to HSECES. Defeats of HSECES shall be allowed in the following situations and under strict control:

- For continued safe operations of plant and equipment
- For testing of the device
- For maintenance or repair of the device or connected equipment
- When its function may be adversely affected by certain work activities

TEMPORARY DEFEAT OF HSECES

- Only the minimum number of HSECES or systems that can be adequately monitored shall be taken out of service within the same zone and, as soon as the task is completed, the safety device or devices shall be placed back in service.
- Defeating the HSECES should be permitted for the shortest duration possible, are subject to risk assessment and only to be used when the facility is manned or remotely monitored.
- All other safeguarding instrumentation on equipment should be functional and high priority given to any repairs required to normalize a system.

TEMPORARY DEFEAT OF HSECES

Categorization Basis Type

Process Defeats

Any process-related bypass required / enacted by the DCS operator during start-up / shut down (unless specifically designed for start-up or shut-down) or controlled by OEM (Original Equipment Manufacturer) approved SOP, during process upset or in the course of handling emergency conditions.

Maintenance Defeats

Any bypass related to enabling the undertaking of corrective or preventive maintenance.

TEMPORARY DEFEAT OF HSECES

Categorization Basis Duration

1) Temporary Bypasses / Defeats

- ❑ Temporary Defeats or bypasses of HSECES are performed to allow certain work to proceed without causing unnecessary shutdown or interruption

2) Extended Period Defeats (EPD)

- ❑ Expected to remain in place **beyond the planned duration** of approval

3) Permanent Defeats

- ❑ As part of engineered changes to operating facilities (MOC)

TEMPORARY DEFEAT OF HSECES

HSECES **shall not be defeated** under below conditions:

- ❑ Risk is not reduced to ALARP level after consideration of implementing mitigation measures
- ❑ If suitable alternate protection cannot be provided
- ❑ If facility is in an upset condition (unstable condition or outside of defined normal operating windows such as when starting up, shutting down or running a controlled test)

TEMPORARY DEFEAT OF HSECES

DURATION OF DEFEATS

- All Temporary Defeat shall indicate the maximum time frame allowed for temporary equipment safeguard bypasses to be in place.
- Every effort should be made to limit temporary safety critical equipment and system bypasses to less than single shift
- If the duration required might be more than 72 hours, it will also trigger the process of Downgraded Situations (DGS) and the Group Companies shall ensure that appropriate controls are identified to mitigate the risks.

ADNOC Classification: Internal

TEMPORARY DEFEAT OF HSECES

Temp Defeat – 9 step Process

TEMPORARY DEFEAT OF HSECES

Integrated Work Activity Planning Process (IWAP)

- ❑ Identification of the safeguarding function
- ❑ Identifying any existing defeats in the same area / facility
- ❑ Identification of all equipment temporarily unprotected
- ❑ Method of defeat (Software / Hardware)
- ❑ Expected duration of defeats

After IWAP Team, PA request for TDC if required

ADNOC Classification: Internal

TEMPORARY DEFEAT OF HSECES

Process Defeats:

The DCS (Distributed Control System) Supervisor is the Certificate Applicant for process defeat. This role will initiate the Certificate for such a process defeat, e.g. start-up/shutdown requirements, process upset requirements.

The DCS Operator acting in capacity of Defeat Performer (DP) ensures that associated certificates and defeat registers are always maintained up-to-date and that the records are informative and detailed.

TEMPORARY DEFEAT OF HSECES

Maintenance Defeats:

In such case the Maintenance / Instrument / Automation Supervisors shall act as the Performing Authority (PA) and Certificate Applicant for a defeat request and initiate the certificate as Defeat Authority (DA). This shall apply to all maintenance activities such as Preventative Maintenance tasks and all jobs for which a system notification (work order) is generated.

The Technician (DP) shall be responsible to implement the defeat and shall liaise closely with the DCS operator. This role will sign off the Defeat Register

TEMPORARY DEFEAT OF HSECES

Hazard Identification and Mitigating Controls:

On the certificate, the Defeat Authority (DA) shall create Defeat Plan:

- ❑ Identify hazards, hazardous situations or specific events that may arise due to the defeated condition
- ❑ Evaluate the risk associated with these hazards; and
- ❑ Evaluate safeguards that reduce the risk to meet the conditions of ALARP

❑ **Defeat plan should be approved by AA**

TEMPORARY DEFEAT OF HSECES

The Defeat Approval Authority shall be selected from **matrix** according to the impact of the defeat has over the plant i.e. the magnitude of defeat.

- If "**Multiple shifts with normalization at shift end (< 12 hrs.)**" is selected, a single approval shall be required in line with the Magnitude / Severity of the Defeat. The table in the next slide depicts the approval levels for various scenarios of temporary defeat.

TEMPORARY DEFEAT OF HSECES

Magnitude / Severity of Defeats	Approval Authority	< 12 hrs	12 to 72 hrs	> 72 hrs
	Plant or SIL > 2	Manager Operations / Equivalent	SVP / VP Operations / Equivalent	SVP / VP Operations / Equivalent
	Process Unit or SIL 2	Manager Operations / Equivalent	Manager Operations / Equivalent	SVP / VP Operations / Equivalent
	Process Section or SIL 1	Team Leader / Section Leader Operations / Equivalent	Team Leader / Section Leader Operations / Equivalent	VP Operations / Equivalent
	Individual Equipment	Area Authority	Team Leader / Section Leader Operations / Equivalent	VP Operations / Equivalent

The AA shall authorize all Temporary Defeats before implementation of defeats.

Individual Device:
Individual HSECES Component

Small Section:
Multiple components but not a complete critical system

Large Section:
A complete critical system comprising of multiple components

TEMPORARY DEFEAT OF HSECES

Applying Defeats

The **Defeat Performer (DP)** shall:

- ❑ Notify all relevant parties affected by the defeat when it is first executed
- ❑ Update Defeat Register and Shift Handover log

If the defeat is planned to be continued beyond shift change, the Defeat Performer (DP) shall inform the affected incoming parties and record the same in shift handover log

TEMPORARY DEFEAT OF HSECES

Sign-Off on Temporary Defeat Certificate

- ❑ The Defeat Performer (DP) defeating the HSECES shall confirm execution of the defeat by signing the Temporary Defeat Certificate. {**Note: TDC completed**}

AUTHORIZE PTW

- ❑ **AA** shall authorize PTW making sure that TDC is attached to the work permit with appropriate approvals and documentation

TEMPORARY DEFEAT OF HSECES

DYNAMIC RISK ASSESSMENT

- Dynamic Risk Assessment is defined as the continuous process of identifying hazards and assessing risks arising due changing circumstances of an operational environment followed by taking action to eliminate or reduce risk.
- The controls set in place of defeated HSECES and plant conditions shall be continually monitored for ensuring safe execution of work.
- Monitoring requirements shall be followed as per the requirements of the Defeat Risk Assessment and Temporary Defeat Certificate (TDC).

TEMPORARY DEFEAT OF HSECES

If planned to extend beyond shift change:

- The incoming shift personnel (AA, PI & JP) shall record the details in their respective shift handover logs and notify other affected personnel on the new shift.
- If planned to re-instate the defeats during night shifts, the records shall be recorded in the respective shift handover logs.
- The Area Authority (AA) shall ensure that the Temporary Defeat Certificate is valid in accordance with the requested timeframe (given by defeat approval authority) and not expired.

TEMPORARY DEFEAT OF HSECES

Temporary Defeat Certificate (TDC) is no longer required:

- ❑ The work is complete under the associated permits or permit validity has expired
- ❑ Area Authority (AA) has taken the decision to cancel the associated permit
- ❑ Validity of the requested duration of TDC is complete.

If any of the associated work permits is formally closed by the AA, the Temporary Defeat Certificate (TDC) shall be updated with the details of the closed permit.

TEMPORARY DEFEAT OF HSECES

Returning HSECES back to service

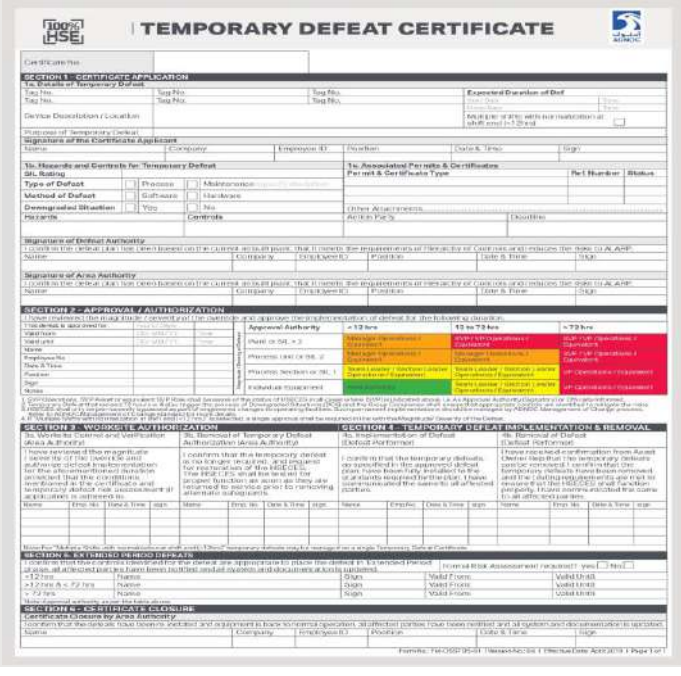
- ❑ The request for restoration raised by AA
- ❑ HSECES shall be returned back to service by DP
- ❑ HSECES shall be tested for function (**If applicable**)
- ❑ Testing requirements shall be based on the type of safeguard (mechanical, electrical, etc.) Testing results shall be documented in the Defeats Register.
- ❑ **AA will close TDC**

TEMPORARY DEFEAT OF HSECES

In cases where HSECES was defeated for working on other equipment, then testing might not be applicable for its re-instatement as the HSECES was healthy and working prior to defeating.

Extended Period Defeats (EPD)

In case the planned duration of approval of defeat is expired and HSECES not returned to service, it shall be considered as Extended Period Defeat. If extension is required, Defeat Approval Authority decides whether a separate Temporary Defeat Risk Assessment is required or not and provides a **separate validity and approval for the extension**.


TEMPORARY DEFEAT CERTIFICATE

THANK YOU

Questions and Answers

100% HSE

Introduction | Key Roles | Framework | Process | Support Tools

WORK MANAGEMENT SYSTEM WMS

Simultaneous Operations (SIMOPS)

ABU DHABI NATIONAL OIL COMPANY

ADNOC Classification: Internal

AGENDA OF THE PACKAGE...

- ❑ Introduction
- ❑ Purpose
- ❑ Scope
- ❑ Key Roles
- ❑ Framework
- ❑ Process

SIMOPS

Introduction

Simultaneous Operations (SIMOPS) are activities that take place at the **same time** and meet the following conditions:

- ❑ Activities that are located in the **same area**; and
- ❑ Activities that could **affect the safe performance of the another activity** (e.g. Breaking Containment and Hot Work)

Wherever possible, operations should be managed to **avoid situations** where simultaneous operations (SIMOPS) could arise, however at times, it may be necessary to perform operations simultaneously.

ADNOC Classification: Internal

SIMOPS

Purpose

To provide a **framework** to identify **potential hazards and threats** associated with **concurrent operations**. The application of SIMOPS is intended to provide:

- ❑ A basis for **safe performance** of simultaneous operations
- ❑ A common approach to **routine** SIMOPS
- ❑ A consistent approach to the planning and execution of **non-routine** SIMOPS
- ❑ Identification of combinations of work activities that **cannot be performed** at the same time

SIMOPS

Scope

- Applicability
- Contractor Responsibilities
- Application (Adherence with all other WMS Standards)
- Principles (WMS Elements)

SIMOPS

Key Roles and Responsibilities

- For proper harmonization of the SIMOPS process across ADNOC Group, all Businesses should adopt the common terminology for naming of roles and understanding of their responsibilities and accountabilities.
- Success of SIMOPS process depends on the **competence** and **awareness** of the people carrying out the activities.

SIMOPS

SIMOPS Coordinator (Single point coordination)

- The SC role is a **temporary role** where the person is appointed for the duration of the concurrent operations. SC shall be a competent person **appointed by the Asset Owner** in control of the worksite and should be at Supervisory or Management level in a facility with detailed knowledge of the asset and where two functions or business groups are involved.

ADNOC Classification: Internal

SIMOPS

Framework

Routine SIMOPS (Covered in SIMOP Matrix)

Routine Simultaneous operations occur where all the activities involved have been **previously identified** and the controls documented and their execution covered by existing, approved written instructions or **procedures** (or Procedure Checklists).

SIMOPS

Non-Routine SIMOPS (Not Covered in SIMOP Matrix)

Non-routine or 'occasional' SIMOPS can occur in the case of maintenance and/or modification works within the units of an existing facility such as a project. Following shall be required:

- ❑ Overview for performing the planned operation & purpose
- ❑ Identifying other activities planned during the same period
- ❑ Identifying other limitations or restrictions
- ❑ Identifying circumstances (for example, weather)
- ❑ Undertaking a **Formal Risk Assessment** with appropriate teams of operational, engineering and specialists (where required)

SIMOPS

Types of SIMOPS / MOPO Matrix

Separate matrices may be constructed for the below several categories of concurrent activities deemed as SIMOPS:

- ❑ Operations specific
- ❑ Adverse Weather & Environment specific
- ❑ HSECES Impairment specific
- ❑ Equipment Unavailability

It is at the **discretion of Group Company** to ascertain whether to use a single SIMOPS matrix which combines all the above matrices above or have set of individuals' matrices.

SIMOPS

SIMOPS Restrictions Tables

- List the activity restrictions for managing conflicts
- Act as a supplement to the matrix
- Reference and guidance related to that particular combination of activities to be conducted.
- Provides structured guidance

All "**Restricted**" SIMOPS activities should have an appropriate **JSA** conducted and attached to **Deviation Request Form** for approval. (**AO will give Approval**)

SIMOPS

SIMOPS Matrix Decision Tree

- **Provides several occasions in the PTW process to ascertain SIMOPS.**
- Facilitates the planning/ scheduling SIMOPs activities

Three basic categories are identified in a SIMOPS Matrix or MOPO:

- Allowed combinations of operations (**Green**)
- Restricted combinations with appropriate controls (**Yellow**)
- Prohibited combinations (**Red**)

SIMOPS

Process

- **Identification phase**: Identify SIMOPS and undertake Job Safety Analysis (JSA)
- **Preparation phase**: Identify & Approve Controls and form plan including resources for management of SIMOPS risks to ALARP
- **Execution phase**: Implement SIMOPS controls through integrated coordination of operations
- **Review phase**: After Action Review (AAR) of SIMOPS management and update of documentation including SIMOPS matrices

PROCESS

Identification Phase

The **Integrated Work Activity Planning** process:

- Involves identifying the hazards arising as a result of SIMOPS
- Evaluates the consequence of failures
- **Identifies**:
  - Whether proposed concurrent operations or activities fall under a classification of **Routine** or **Non-Routine**
  - Where a combination is **not permitted** or **restricted**

SIMOPS

Preparation Phase

SIMOPS Management Plan (SC)

Preparation of a SIMOPS Management Plan that shall include the following elements:

- ❑ Description of the operation (Requirements, Tools, etc.)
- ❑ Identification of additional supervision and support
- ❑ Allocation of responsibilities
- ❑ **Job Safety Analysis and MOPO and Restrictions Table**

SIMOPS

Preparation Phase

Site Coordination Roles, Organization and Communication

- ❑ Any activity, whether essential or not, should be stopped when the level of risk exceeds the maximum acceptable level or when the operations are disrupted
- ❑ An authorized and competent appointed SC should have the experience to make such judgement
- ❑ **During routine operations, the AA shall be the SC**

SIMOPS

Preparation Phase

Other Pre-Execution Preparation Activities

- A **site survey** prior to commencing SIMOPS by the appointed SC and involved parties
- Review of requirements for shutting down work in affected areas
- Revisions or modifications may be recommended to the SIMOPS management plan
- Applicable **Incident Management drills** should be conducted prior to commencing SIMOPS operations

SIMOPS

Execution Phase

On-site Pre-Start Checks

SIMOPS Coordinator (SC) shall have a SIMOPS document containing:

- The applicable Matrix of Permitted Operations (MOPO)
- Common Emergency Response Plan (ERP)
- Asset equipment or Activity spacing requirements
- Site layout diagram with Muster Points
- Details of SIMOPS Impact Contours
- Communication requirements

SIMOPS

Execution Phase

Prior to starting SIMOPS, the SC shall:

- ❑ **Confirm that all controls are effectively implemented**
- ❑ Ensure Dynamic Risk Assessment is followed
- ❑ Hold a **safety discussion** and briefing to communicate any safety and emergency response measures to the personnel involved in the operation

SIMOPS

Execution Phase

Site safety meetings for SIMOPS exercise shall be arranged in advance of the start-up of SIMOPS activities covering:

- ❑ Scope, purpose & objectives
- ❑ Review of operational details & Communication lines
- ❑ Procedures, instructions & responsibilities
- ❑ Emergency preparedness and contingency plans
- ❑ Utilization of safety equipment and protective clothing
- ❑ Management of the operations

SIMOPS

SIMOPS Coordinator shall:

- ❑ Review, approve and sign all paper or electronic permits (in SIMOPS instances only) as the **Permit Endorser (PE)** for **Non-Routine SIMOPS**
- ❑ Maintain rigorous oversight of all SIMOPS work activities
- ❑ Ensure that all workers have received information regarding the current SIMOPS activities
- ❑ Ensure Emergency Response Plans are in place and understood

SIMOPS

SIMOPS Coordinator shall:

Further requirement that should be **on-site** as required:

- ❑ Signage at the site entrance that includes the **name** of the SC, contact **phone number** and **location**
- ❑ A Permit Board or equivalent system
- ❑ Controlled access system for the site applicable for level of activity and risk

SIMOPS

During Execution

SIMOPS Coordinator (SC) shall:

- ❑ **Facilitate a daily SIMOPS Planning Meeting**
- ❑ Ensure conflicts due to scope, complexity and proximity have been adequately addressed before any work commences
- ❑ Ensure that all **hand over accountabilities** between SIMOPS parties are documented
- ❑ Ensure that all communication lines and means are, at all times, tested and effective

SIMOPS

During Execution

- ❑ **Proper communication** must be established among all personnel involved in SIMOPS involving such means as intercom or radios.

Further, SC shall ensure:

- ❑ Personnel manifest or roster is available and up-to date
- ❑ Communicate with responsible personnel
- ❑ Document and report on any safety incidents including near miss incidents related to a SIMOPS activity

SIMOPS

Post Completion Phase (Review Phase)

Upon completion of the operations involving SIMOPS, it is recommended to conduct an **After Action Review (AAR)** which shall be initiated by the **Asset Owner Rep** to:

- ❑ Review any incidents and near misses
- ❑ Identify lessons to be learnt for safer execution
- ❑ Identify improvements to the effectiveness of SIMOPS Process

ADDITIONAL NOTES

- ❑ SIMOPS/MOPO Matrix is **not a stand-alone document**. The use of Restriction Tables is to **put required controls** required in place
- ❑ Each GC shall identify the **Routine SIMOPS applicable** within their respective business and document the same via use of **SIMOPS matrix** or MOPO matrix and Restrictions Table.

The following requirements shall be applicable:

 The MOPO Matrix / Restriction Table shall be approved by Asset Owner;
 The MOPO Matrix / Restriction Table shall be reviewed and approved in case of any changes / modifications; and
 The approved MOPO Matrix / Restriction Table shall be readily available in the Permit Control Facility /Control Room or other designated area."

THANK YOU

Questions and Answers