



Permit to Work System

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1 Scope

This Safe Work Procedure is valid for all activities carried out during construction, pre-/commissioning and start-Up phases as well as for repair work and small-scale modifications.

This Safe Work Procedure applies to all projects where COMPANY has an overall responsibility for construction and commissioning.

It applies also to all prefabrication and sub-construction areas (e.g. Package Units) in COMPANY's area of responsibility.

All requirements described in this procedure should be implemented if COMPANY's permit to work system is not used.

2 Purpose

This Safe Work Procedure defines responsibilities and workflow for the permit to work system during the execution of construction and commissioning activities on sites under COMPANY's responsibility.

The purpose of the work permit system is to set out clear workflow and requirements for the different types of work to be performed at the site in order to ensure that such works are carefully planned and safely executed to prevent any incident.

3 Definitions & Abbreviations

JSA	Job Safety Analysis
PPE	Personal Protective Equipment
PTW	Permit to Work (or 'permit' or 'work permit')
RF(P)C	Ready For (Pre)-Commissioning

Job Safety Analysis	Process of evaluating the risks arising from hazards specific to Work Systems with defined "Hazardous Work" while considering the adequacy of controls, deciding whether or not the level of risk is acceptable and determining, if necessary, further controls to achieve an acceptable level of risk.
Hazardous Work	Any work listed in the LS 940-03 "List of Hazardous Work"
Permit Coordinator	The single point of contact for all permits in order to have one person/department having the overview of all activities going on at site. The task of permit coordination is a support function in order to allow the responsible Permit Issuers to issue permits only based on a detailed investigation and review of all relevant safety aspects comprising the risks of the activities itself as well as the risk resulting from other parties' activities (e. g. the Site HSE Manager).
Permit Endorser	Person who according to his responsibility and training, has been authorised to endorse work permits. If defined accordingly, the endorsement is mandatory before a PTW can be issued. Permit Endorsers must be members of the Construction Site Management Team having responsibility for the job execution as a line function (e. g. COMPANY's Construction Manager or Construction Discipline Lead for construction activities in commissioning areas)
Permit Holder	Person, who according to his responsibility and training, has been authorised to receive work permits and is responsible for implementing the decided HSE requirements and for a close follow up of compliance with the HSE requirements set out in the work permit (e. g. CONTRACTOR's Supervisor).

Permit Issuer	Person who according to his responsibility and training, has been authorised to approve & issue work permits. Permit Issuers must be members of the Construction Site Management Team having responsibility for the job execution as a line function (e. g. COMPANY's Construction Manager or Construction Discipline Lead for construction activities in construction areas / Commissioning Manager for activities in commissioning areas).
Permit to Work System	Work system that aims to ensure that proper consideration is given to the risks of a particular job or simultaneous activities at site. Whether it is manually or electronically generated, the permit is a detailed document which authorises certain people to carry out specific work at a specific site at a certain time, and which sets out the main precautions needed to complete the job safely.
Risk Assessment	Process of evaluating the risk(s) arising from hazard(s) specific to Work Systems with routine or repetitive activities, considering the adequacy of controls, deciding whether or not the level of risk(s) is acceptable and determining, if necessary, further controls to achieve an acceptable level of risk.

In the following referenced document numbers with the originator code "&A?" in this project always refer to project documents with entity originator code "&AA".

4 General Principles

4.1 Activities requiring Permits & Exceptions

4.1.1 During Construction

CONTRACTOR must apply for a permit to work for all construction activities on the project site. Permits will only apply to a defined construction area.

4.1.2 During Commissioning

With start of pre-commissioning usually the responsibilities for the activities on site are split between construction and commissioning management.

In order to ensure that activities of both parties are coordinated properly all pre-/commissioning activities managed/led by COMPANY must be executed under a Permit To Work System.

if CLIENT'S permit to work system applies during commissioning similar requirements must be agreed with CLIENT.

Exceptionally pre-/commissioning activities do not require a permit when:

- Without work being executed by contractors or vendors AND
- With no more than 1 discipline (commissioning, electrical, instrumentation) involved AND
- With no hazardous work acc. to LS940-03 being executed (e.g. confined space entry, work under LOTO etc.)

In case no permit to work is needed, COMPANY shall prepare a risk assessment and communicate to the Commissioning Manager and Site HSE Manager prior work start. (see 4.5)

4.1.3 During Simultaneous Activities

When activities are undertaken at the same time by Construction, Commissioning and/or Operations:

- All construction and pre-commissioning areas fall under the responsibility of the Construction Manager (or Delegate). These areas require a permit to work system to work (see 4.1.1).
- All commissioning areas fall under the responsibility of the Commissioning Manager or Lead E&I for non-process related commissioning (or Delegate). These areas require a Permit to work system (see 4.1.2).

When systems are handed over, HSE responsibilities are always coming along and therefore, the roles and responsibilities related to the permit to work are also transferred.

Status at which system handover including transfer of HSE responsibilities are taking place must be defined and documented before the project starts in the project specific Site HSE Management Agreement (&AX Q PR 2410.060.013). (e.g. RFPC (ready for Pre-Commissioning) or RFC (Ready for Commissioning) etc.)

4.1.4 Multiple Permit to Work systems

If multiple Permit to Work systems are in place on project site then COMPANY with CONTRACTOR must ensure a mechanism is in place to ensure there are no conflicts (e.g. SIMOPS, coordination plan, etc.) between these systems or work carried out. For each work activity, there must be one permit to work utilized by workers so that the permit requirements are clearly documented and understood.

4.2 Types of Permit to Work

For all different types of work COMPANY has specific work permit forms listed below.

Type of Permits	Doc. No.
General Work Permit (for all low or middle hazard activities)	&AZ W-SC 9601.001
Special Work Permits (for all high hazard activities)	
Hot Work Permit	&AZ W-SC 9601.002
Confined Space Entry Permit	&AZ W-SC 9601.003
Lifting Permit	&AZ W-SC 9601.004
Work at Height Permit	&AZ W-SC 9601.005
Energy Control Permit	&AZ W-SC 9601.006
Pressure Testing Permit	&AZ W-SC 9601.007
Hazardous Substances Permit	&AZ W-SC 9601.008
Excavation Permit	&AZ W-SC 9601.009
Radiography Permit	&AZ W-SC 9601.010
Specific Hazard Work Permit	&AZ W-SC 9601.011
Photography Permit	&AZ-W-SC 9601.012

4.2.1 General Work Permit

CONTRACTOR must apply for a General Work Permit for all activities not covered by Special Work Permits and the "List of High Hazard Activities" (LS 940-03).

A General Work Permit will only be issued by COMPANY if the tasks to be permitted have been risk assessed (see 4.5).

A copy of the relevant parts of the risk assessment and other relevant documents must be attached to the General Work Permit.

4.2.2 Special Work Permits

CONTRACTOR must apply for a Special Work Permits for all activities designated as "hazardous work" in the "List of High Hazard Activities" (LS 940-03).

Since

- the "Confined Space Entry Permit" and the "Work at Height Permit" only cover the risks and safety measures related to the work location and not to the activities to be carried out at these locations and
- the "Energy Control Permit" only covers the risks and safety measures related to (potentially) existing hazardous energies and not to the activities to be carried out

these permits should only be issued in conjunction with a General Work Permit.

This does not apply if no "real" activities will be carried out at these locations, (e.g. vessel inspections), in this case a confined space entry permit alone shall be issued.

For pressure testing permit used must indicate that pneumatic pressure test has been approved by COMPANY Site Manager and Project Manager.

For Excavation activities, a Special work permit is required, if the depth exceeds 20cm. The Special permit needs to be issued by the Civil Department when the depth exceeds 1.5m.

Other special work permits may be issued as a stand-alone permit (without the need for an additional general work permit) only if all applicable risks and necessary safety measures of all activities that a CONTRACTOR applies for can be covered in the relevant work permit.

Special Permits will only be issued by COMPANY if the tasks to be permitted have been evaluated in a Job Safety Analysis (JSA) and when applicable a lifting study. (see 4.5).

A copy of the JSA and other relevant documents must be attached to the Work Permit.

4.2.3 Photography Permit

The Photography Permit is a General Work Permit for a defined duration and for a specific area.

Note: *If the specific area for photography is an Ex-Area, a hot work permit is required in addition!*

4.3 Validity of Permit

General and Special Work Permits can be issued with a validity longer than one day.

Depending on the type of activities, the maximum validity of a permit could be up to one week (6 working days of 12 hrs a day) although it will be necessary to daily revalidate the permit during this period.(see 5.5)

Permit Types	Maximum Validity	Issued by
General Work Permit (see 4.2)	Max 6 working days of 12 hrs a day	COMPANY
Special Work Permits (see 4.2)	Max 6 working days of 12 hrs a day	COMPANY
Photography Permit (see 4.2)	once per project	COMPANY

For work on non-working days and work during night shift, a separate permit must be obtained. (see 4.4)

COMPANY can cancel a work permit if terms and conditions necessitate. To cancel a work, permit the Permit Issuer must notify CONTRACTOR's Construction Manager. (see also 5.6)

If a critical job must be completed without delay, and the work is forecasted to extend beyond the permit's validity time, the Permit Issuer can approve an extension to the permit duration. This can be done either before work starting on site, or while work is being performed on site. Extensions are only given to the same crew covered under the permit. If a different crew must continue the task, a new permit must be issued.

4.4 Work Permit on non-working days and during night shifts

For work on non-working days (e.g. weekend, holidays) and work during night shifts, CONTRACTOR must specifically apply for a permit different from the permit issued for work completed during regular work schedule. The type of permit (general or special) required will depend on the activities to be performed (see 4.2).

On non-working days and work during night shifts, HSE conditions can be expected to be different or abnormal (e.g., with less supervision, reduced first aid, limited emergency services, etc.) therefore, additional, and specific control measures must be specified in the permit to work about (non-exhaustive):

- CONTRACTOR or COMPANY Supervision and HSE personnel
- CONTRACTOR or COMPANY first aiders
- Availability of emergency response services (internal or external)
- Availability of healthcare delivery (internal or external)
- List of CONTRACTOR who are present at site to the intention of the site security services. The list shall indicate workers' names, function (supervision, HSE, and role (first aiders, CPR, etc...))

4.5 Hazard Assessment

4.5.1 Risk Assessment

A Risk Assessment is completed during the work planning stages and is used to aid in the development the Job Safety Analysis.

CONTRACTOR must ensure that a general Risk Assessment or a Safe Work Method Statement has been completed for all activities or tasks that require a Work Permit.

The general risk assessment form can be according to CONTRACTOR's standard or using COMPANY's General Risk Assessment" template (&AZ-W-QR 9602).

A copy of the general risk assessment or Safe Work Method Statements must be attached to the General & Special Work Permit.

4.5.2 Job Safety Analysis

A JSA is completed during the permit application review and/or at the pre-job discussion of activities designated as "Hazardous Work" as per the "List of High Hazard Activities" (LS 940-03).

CONTRACTOR must develop, prior to issuance of a work permit, a task specific Job Safety Analysis (JSA).

The Job Safety Analysis (JSA) form can be according to the CONTRACTOR's standard or using the COMPANY's Jobs Safety Analysis template (&AZ-W-QR 9604).

A copy of the completed JSA must be attached to the Special Work Permit.

4.5.3 BeSafe Daily (or Pre-Start Risk Assessment)

The CONTRACTOR Supervisor is required to conduct a BeSafe Daily aka Pre-Start Risk Assessment with their crew to “double check” the understanding of hazards and the risks identified in the JSA.

CONTRACTOR must develop a BeSafe Daily (BSD) or Pre-Start Risk Assessment to the task hazards on a daily basis and prior to work start.

The BeSafe Daily form can be according to the CONTRACTOR's standard or using the COMPANY's BeSafe Daily template (&??-W-QR 9607).

A copy of the completed BeSafe Daily form must be attached to the Work Permit.

4.5.4 Lifting study

For a Lifting Permit (Special Permit to work for lifting operations), CONTRACTOR must prepare additionally a crane lifting study according to the "HSE Program Site" (&A? W-PQ 9601).

4.5.5 Gas Testing

When activities involve the likely presence of flammable or toxic gases, or oxygen deficiency/enrichment at the workplace, CONTRACTOR must undertake gas testing.

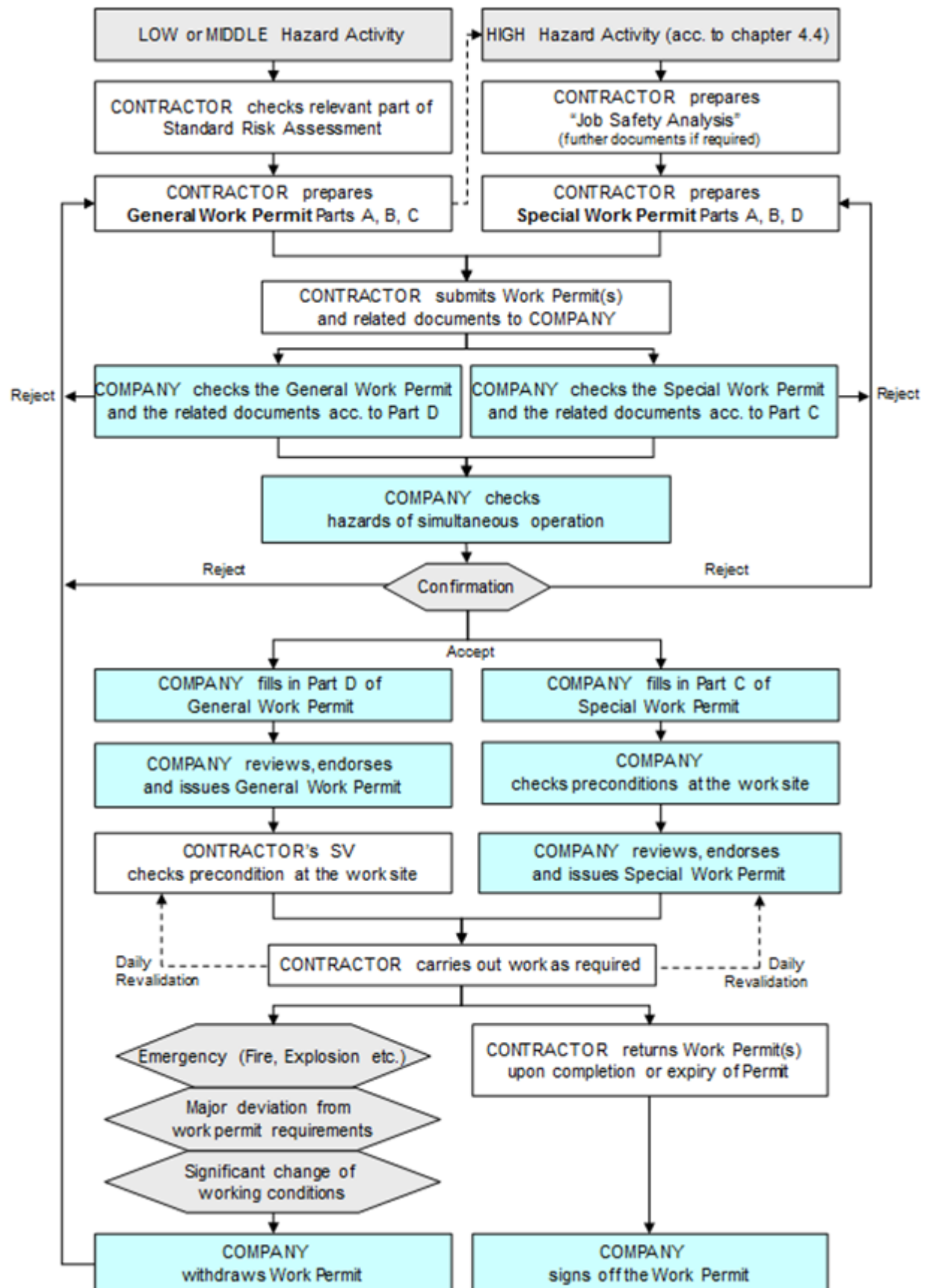
The results of any gas testing must be recorded in Atmospheric Testing Record (&AZ-W-SC 9601.014) and entered on the permit.

If levels change during the work, the permit must be suspended.

4.6 Training

All COMPANY, CONTRACTOR and VENDOR workers must be trained in the requirements of the Permit to Work System. Training must be based on their role.

5 Permit to Work System Workflow



5.1 Application

CONTRACTOR's supervisor who applies for a work permit for site activities must complete the parts "A" ('Time Schedule') and "B" ('Location and Activities') of the work permit form and submit it together with the additionally required documents (see 4.5) in good time before start of work to the COMPANY's Permit Coordinator.

If CONTRACTOR applies for a *general work permit*, it must also be checked (and filled in) whether any activities with high risks (see section 4.5) are included (part "C": 'High Hazard Activities'). If so, the respective special work permit(s) must also be applied.

If CONTRACTOR applies for a *special work permit* and the activities require a special competencies, qualification or training or any further personal prerequisites (e.g. medical fitness), CONTRACTOR must also fill in the names of personnel (part "D") that is expected to perform the tasks and that fulfil those requirements.

5.2 Review, Coordination and Endorsement

Permit Coordinator must review the work permit and the related documents.

If defined safety measures are incomplete or not satisfying, the permit must be rejected or additionally safety measures must be defined as necessary and filled in part "C" of the special work permit or part "D" of the general work permit.

If hazards resulting from simultaneous operations in the designated work areas exist, specific safety measures must be defined in part "D" of the general work permit. The required validity of the permit must be checked and modified as necessary.

The Permit Endorser must confirm that the required safety measures have been defined, the validity of the permit is appropriate, and endorse the permit by signing. If this is not the case, the permit cannot be endorsed and must be rejected and returned to the Permit Coordinator.

5.3 Approval (Issue)

The Permit Issuer must confirm that the required safety measures have been defined, the validity of the permit is appropriate to approve by signing the permit and release it for further actions. If this is not the case, the permit cannot be approved, must be rejected, and returned to the Permit Coordinator.

Work Permits must only be approved or issued once the pre-conditions for executing the work safely have been checked at the actual work site by the Permit Issuer or delegate.

The Permit Coordinator must ensure that the sheets of the permit form are numbered, a copy is filed, and the permit is recorded in the permit log book.

5.4 Acceptance

CONTRACTOR's supervisor accepts the approved work permit by signing off the document all safety measures for this work.

A copy of the permit must be clearly displayed in a recognized location near to the corresponding worksite while the permit should be kept with the Permit Issuer. (e.g., Display boards or Permit boxes are considered suitable for display of permits).

The respective work is only allowed to start following an inspection of the work site and signing the permit in part "F" ('Daily Confirmation').

5.5 Revalidation and Extension

Work Permits issued with a validity longer than one day must be revalidated on a daily basis in order that Permit Issuer can satisfy themselves that the conditions under which the permit was originally issued remain unchanged to allow work to continue or recommence.

Work permit must be revalidated daily before commencing of work:

- by CONTRACTOR's Supervisor or delegate for general work permit (part "F").
- by COMPANY's Permit Issuer or a delegate for special permit (part "F").

5.6 Suspension / Cancellation

Permits must be suspended or cancelled at least if one the following circumstances occur:

- in the event of an emergency
- If any uncontrolled risk for the workers is detected
- If any of the required documents associated to the PTW is not available
- In the case of unplanned interactions with other works
- while waiting for materials or services.
- Expiration of their validity date and time, with no revalidation being possible (i.e. more than five days since first authorization, no revalidation boxes available).
- Unforeseen modifications in the work conditions provided for in the original permit.
- Changes in the pre-established safety conditions.

To cancel a work permit the Permit Issuer must notify CONTRACTOR's Construction Manager.

Permit that has been suspended, must be revalidated (see 5.5) in order to continue with the work. Only Permit Issuer is allowed to issue the permit again after any suspension or cancelation.

5.7 Completion and Close-out

After completion of the work CONTRACTOR's supervisor signs the work permit and returns it to the Permit Coordinator who signs the permit in order to confirm the notification of work completion and permit closure. The permit closure must be recorded in the permit log.

5.8 Handover of Permit to Work Systems during Pre-/Commissioning

To issue the permit during pre-/commissioning, the following shall apply:

RESPONSIBILITIES	LINDE IS RESPONSIBLE FOR THE PRE-/COMMISSIONING OF THE PROCESS PLANT OR COMPONENTS				
	WORK PRIOR RFPC SYSTEM	WORK ON RFPC SYSTEMS	WORK ON RFC SYSTEMS		
	CONSTRUCTION	CONSTRUCTION AFTER HANDOVER OF 1ST SYSTEM	CONSTRUCTION	PRE-/COMMISSIONING	
PERMIT HOLDER	Contractor	Contractor	Contractor	Contractor/Vendor/ LE Commissioning	IF no contractor/ vendor, not more than 1 discipline, no haz. work involved: No need for PTW but Risk Assessment
PERMIT COORDINATOR	LE HSE	LE HSE	LE HSE	LE HSE	
PERMIT ENDORSER	-	LE Commissioning*	LE Construction	LE Construction*	
PERMIT ISSUER	LE Construction	LE Construction	LE Commissioning	LE Commissioning**	

RFPC: Ready for Pre-commissioning
RFC: Ready for commissioning
HSE: Site HSE Manager / Supervisor

*area/works that need endorsement to be agreed upon between construction and commissioning
** If LE Commissioning team member is permit holder, permit issuer should be its superior (if possible)

RFC certificate
Handover of system's ownership
& HSE responsibilities

RESPONSIBILITIES	CLIENT IS RESPONSIBLE FOR THE PRE-/COMMISSIONING OF THE PROCESS PLANT OR COMPONENTS
PERMIT SYSTEM	CLIENT's permit system to be applied.

- For work on systems **prior Ready for Pre-Commissioning Status**, the responsibility for the Work Permit System falls under LE Construction:
 - Contractor requires the permits
 - LE HSE coordinates the permit preparation, and
 - Permits are issued by LE Construction Manager, there is no additional endorser.
- With start of work on systems **with Ready for Pre-Commissioning Status**, the responsibilities for the Work Permit System are split between LE Construction and LE Commissioning:
 - Contractor requires the permits
 - LE HSE coordinates the permit preparation,
 - LE Commissioning Manager or Discipline Lead E&I endorses the permit, and
 - Permits are issued by LE Construction Manager
 - for systems prior Ready For Pre-Commissioning status, and also
 - for systems on Ready For Pre-Commissioning status
- For work on systems **with Ready for Commissioning Status**, the responsibility for the Work Permit System falls under LE Commissioning:
 - Contractor or vendor or LE commissioning require the permits,
 - LE HSE coordinates the permit preparation,
 - LE Construction Manager endorses the permit, and
 - Permits are issued by LE Commissioning Manager or Discipline Lead E&I
- Exceptionally, no work permit is required when Contractor or vendor met ALL following conditions:
 - Do not execute work themselves, AND
 - no more than 1 discipline (commissioning, electrical, instrumentation) is involved, AND
 - no hazardous work are being executed (e.g., confined space entry, work under LOTO etc.)

- a risk assessment has been established and communicated to the Commissioning Manager and Site HSE Manager prior work start.
- if CLIENT'S permit to work system applies during commissioning, the responsibilities for the Work Permit System must be agreed with CLIENT.

6 Referenced Documents

Document	Title
&AZ-W-QR 9604	Job Safety Analysis
&AZ-W-SC 9601.001	General Work Permit
&AZ W-SC 9601.002	Hot Work Permit
&AZ W-SC 9601.003	Confined Space Entry Permit
&AZ W-SC 9601.004	Lifting Permit
&AZ W-SC 9601.005	Work At Height Permit
&AZ W-SC 9601.006	Energy Control Permit
&AZ W-SC 9601.007	Pressure Testing Permit
&AZ W-SC 9601.008	Hazardous Substances Permit
&AZ W-SC 9601.009	Excavation Permit
&AZ W-SC 9601.010	Radiography Permit
&AZ W-SC 9601.011	Specific Hazard Work Permit
&AZ-W-SC 9601.012	Photography Permit
&AZ-W-SC 9601.013	Entry Logbook
&AZ-W-SC 9601.014	Atmospheric Testing Record
&AZ-W-SC 9601.014	Permit Logbook
LS 940-03	List of hazardous work
&AX Q PR 2410.060.013	Site HSE Management Agreement

7 Documentation and Records

This document and relevant records shall be controlled as defined in "Preparation of Internal Documents" (&AZ-Q-PP 1050.060.010 (EN)), "Distribution of Documents" (&AZ-Q-PP 1050.063.010 (EN)) and "Archiving of Documents" (&AZ-Q-PP 1050.066.010 (EN)).

8 Revisions

Proposals for revisions of this Safe Work Procedure should be forwarded in writing to the Global Construction department 'Construction and Commissioning HSE'.

9 Distribution

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