

Work Plan

ITER Site Permit to Work Procedure

This procedure sets the ground rules and boundaries within which the all coordinating entities managing works on the ITER platform will be allowed to operate

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Change Log			
ITER Site Permit to Work Procedure (3E8289)			
Version	Latest Status	Issue Date	Description of Change
v1.0	Signed	24 Jul 2020	
v2.0	Signed	03 Aug 2020	This version includes all comments from the various stakeholders and include general parts that were contained in CMA daughter procedure and training manual. Track change version compared to version 1.0 is attached.
v2.1	Signed	11 Aug 2020	New version reflect more details about the management of the PTW specific risk assessment as well as reflects comments on management of work with very low co-activity outside of the platform.
v2.2	Signed	12 Aug 2020	2.1=> 2.2: Clarification about Excavation permit and PPSPS (Track change including V2.1 and V2.2 attached to) 2.0=> 2.1: New version reflect more details about the management of the PTW specific risk assessment as well as reflects comments on management of work with very low co-activity outside of the platform. 1.0=>2.0: Includes all comments from the various stakeholders and include general parts that were contained in CMA daughter procedure and training manual.
v2.3	Approved	12 Aug 2020	2.2=>2.3: Bertrand Portehault's comment addressed, definition of Full and Personnal Isolations added for clarity. Last sentence of section 4 was completed (a word was missing). (Track change against V2.0 including V2.1, V2.2 and V2.3 attached) 2.1=> 2.2: Clarification about Excavation permit and PPSPS 2.0=> 2.1: New version reflect more details about the management of the PTW specific risk assessment as well as reflects comments on management of work with very low co-activity outside of the platform. 1.0=>2.0: Includes all comments from the various stakeholders and include general parts that were contained in CMA daughter procedure and training manual.
v2.4	In Work	04 Dec 2020	Comments incorporated: Section 2 Change of wording to reflect Entity Co-ordinating and not Entity Performing Section 4.2 Rewording of Risk Assessment is in line..... to Ensuring Risk Assessment is attached or within the permit HSPC part of PVG Addition of Naked Flame and reference to HSPC the be part of PVG if work is associated with the Fire Detection System
v2.5	Approved	07 Dec 2021	Document updated mainly to address NCR (RT Permit issued without RPA involvement - https://user.iter.org/default.aspx?uid=5HMTUP) and some comments on the document (see enclosed track change).
v3.0	Signed	02 May 2022	Addition of a paragraph clarifying the controls required prior energizing equipment and management of equipment status in concerned areas after then.
v3.1	Approved	02 Aug 2022	Update of the 3.0 draft version to reflect reviewers comments. IO OHS and IO SIM comment implementation were reviewed separately and deemed acceptable. Track change version compared to draft version3.0 available in attachment.
v3.2	Revision Required	16 Aug 2023	Integration of all bespoke requirements from the Entity Daughter PTW Procedures into one ITER PTW Procedure

v4.0	Signed	21 Sep 2023	Revisions and additions as per the reviewers comments
v4.1	Signed	19 Oct 2023	Incorporation of reviewer comments
v4.2	Signed	25 Oct 2023	Addition of the Common Inspection document as part of the mandatory documentation supporting a permit Revision of text in section 9.16 and removal of the ICC workflow, as per reviewers request
v4.3	Signed	02 Nov 2023	Section 7.2 - Relocation of the requirement for a PRE to be attached to a permit from essential documents to if required Section 9.14 - Templates, revision of text when carrying out scopes of work under a Template
v4.4	Approved	10 Nov 2023	Removal of this text from Section 9.6 as this is managed by DR 8YZAHQ For EPD Electrical LOTO and Isolations, an NFC Form signed by both the Electrical Operations Supervisor or Designee and Task Supervisor replaces the requirement for an ICC to be created for the permit. This shall be attached to the permit before the permit is issued.
v5.0	Approved	29 Feb 2024	Dear all, please review and recommend the new version of PTW Procedure. Major Changes: <ol style="list-style-type: none"> 1. New structure of the document. 2. Cleaned duplication of the information. 3. General update to be fully aligned with eVision V9 version 4. Addressed comments provided for the previous revision. 5. Addressed comments from RCAs 6. Section 4. Cleaned all definitions and abbreviation to leave only relevant and applicable, also aligned with LOTO Procedure 7. Section 5. Cleaned to leave only relevant and applicable. 8. Section 7. Roles are cleaned and aligned with LOTO Procedure 9. Section 7.2. Permit Verification Group (PVG). Updated section for HSPC and SES required signatures. Added requirements for work under decree 92. 10. Section 8.1. Activities not requiring work permit. Added one more item related to work conducted by staff in charge of the dedicated area, executed by IO staff under approved procedures. 11. Section 8.2. New PTW workflow aligned with V9 process. 12. Section 8.4. Duration of a permit. New lifetime of all PTWs aligned with V9. 13. Section 8.5. Enhanced importance of the filed visit before creating PTW 14. Section 8.6.1. Risk Assessment. Section updated to reflect requirements for IO Staff and Contractors and options for Risk Assessment. 15. Section 8.7. Simops Management. New section to guide users about simops management. 16. Section 8.14 Suspension, overdue and re-acceptance. Updates to reflect new process for daily re-acceptance in accordance with V9 17. Section 11. Renewed to reflect all new types of PTWs added with implementation of V9. 18. Section 11.12. New PTW type which replace the concept of using PTW Template as permit to work. 19. Section 14. Added template checklists for Energization and HV insulation test.
v5.1	Revision Required	14 Jan 2025	Dear all, this is not a major change of the procedure. In general, we have improved the wording of some chapter and also provided some clarifications, where users were asking for. Here's the list of main updates: Sections 1 and 2. Re-structured Purpose, Scope and Objective to be more

			<p>clear</p> <p>Section 4. Definitions</p> <p>- PTW Coordinator - updated</p> <p>Acronyms - cleaned to make sure only relevant are included</p> <p>Section 5. Reference- updated to ensure all the documents that are referenced included, items 21-30.</p> <p>Some broken links -fixed</p> <p>Section 6.</p> <p>6.1. Permit Requestor - comment about admin added</p> <p>6.2. Safety Group required signatures in PTW - table updated</p> <p>6.4. Permit Authoriser - updated responsibilities</p> <p>Section 7.</p> <p>General Principles of PTW: Added comments about daily print out (IMPORTANT)</p> <p>7.1. Activities not requiring PTW':</p> <ul style="list-style-type: none"> • Clarification for Visual inspection • Routine operations by IO - clarifications on several items <p>7.1.1 Electrical Activities Without a PTW</p> <p>Fully revised section by SES and EPD</p> <p>7.5. Documents for PTW - formatted to table. Requirements are same as before</p> <p>7.6 PTW Request</p> <p>Equipment that is affected by the PTW - new comments</p> <p>7.6.1 Risk Assessment: HV Testing added to Level 2</p> <p>Removed old section 8.6.2 Pre-requisites - not used at ITER</p> <p>7.12 Start of work: Added clarification for daily signature of PTW (IMPORTANT)</p> <p>7.13 Time of PTW - update timing / added requirement for night shift and RT notification</p> <p>Section 9.</p> <p>On-call duty intervention outside of co-ordination hours - revision of section Optimized and cleaned. Reviewed with Safety and other stakeholders</p> <p>Section 10.</p> <p>Cold work PTW: updated the names of PTW types</p> <p>10.6. Pressure Test - full revision of the section to cover only tests above PS.</p> <p>10.7. Commissioning - cleaned wording</p> <p>10.9 - Work With Electrical Risk</p> <p>Full revision by SES and EPD</p> <p>Section 12 - fixed broken references</p>
v5.2	Approved	05 May 2025	<p>Answers to BFO's comments taken into account.</p> <p>Fast track to approve it.</p>
v5.3	Approved	20 Jun 2025	<p>PTW Process simplifications and clarifications.</p> <p>In particular:</p> <ul style="list-style-type: none"> - Section 6.2: clarification on maximum duration to realize a Verification - Section 7: simplification of the PTW printing requirements - Section 7.17: simplification of PTW process for specific case of enclosed working areas - Section 10.13.2: simplification of Radiographic Test permits workflow
v5.4	Approved	19 Feb 2026	<p>Update in Section 6.2 Permit Verification Group (PVG) --> Removal of mandatory HSPC signature for Low Risk / Long Term / Low co-activity Permit</p>

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1. Purpose

The purpose of this document is to:

- Define ITER Project Permit to Work system and its elements.
- Ensure management of the risks of the hazardous works and works that could interfere with other hazardous operations, so that they are reviewed, authorised, coordinated, controlled, and communicated.
- Provide details of the use of electronic PTW System (ePTW System) tool

2. Scope

This document applies to IO Staff, DA, Contractors.

The main objectives of the PTW system are to:

- Maintain safety of the work site and personnel during work on ITER
- Ensure that the work is approved after acceptance of the relevant documentation by the qualified/authorised persons.
- Verify that the stakeholders have properly assessed all the hazards linked with the activities that he/she will perform, including third parties.
- Control of the condition of the work site prior to beginning the permitted work
- Identify appropriate safeguards and safety precautions prior to and during work on the ITER site.
- Manage multiple concurrent activities and ensure no interference in a controlled environment.
- Ensure that the work will not be started until all parties are fully aware of the residual risks and accept the conditions of the PTW.
- Verify that the entities, that requested PTW, has undertaken all measures in order to control and mitigate the risks to reach an acceptable safety level for all parties.

This procedure establishes actions for the different role holders as follows:

- Use of the imperative terms ***shall*** or ***shall not*** indicate action that is required.
- Use of the indicative terms ***should*** or ***should not*** indicate action that is recommended.

3. Review

This document shall be updated as necessary, at least once every 2 years. Triggers for full or partial update of this document may include:

- Emerging/growing safety concerns in specific areas;
- Concerns raised by the users;
- Changes in legislation and/or regulations;
- Changes in management and work organization process;
- Changes in activities and/or locations;
- Incident investigations which identify shortfalls in the work control system;
- New hazards or activities not previously considered.

4. Definitions and acronyms

4.1. Definitions

Term	Definition
Area Coordinator	A role assigned to the representative of the Coordinating Entity to manage interfaces between Task Supervisors, to coordinate all parties of works to be performed, their duration, the parts of the area affected, the risks affecting the activities (from one activity to another) and mitigation actions to be considered, the interfaces within the area to be considered, the number of workers involved in the area, etc. The role applied at several entities of ITER, in others it's fulfilled by other team members. Each entity manages their roster of Area Coordinators. The Area coordinators are listed in the [9] sheet <i>Roles Assignment by Entities</i>
Atmospheric Testing	The method and equipment used to verify and exclude that Hazardous Atmosphere is not present at the workstation.
Coordinating entity	This is a function used to distinguish between coordinating entities / Operating Authorities at ITER Site. In the procedure the word "entity" is used for Coordinating Entity. Latest list of entities can be found in [9] ePTW - Area authorization split and Notification configuration.
Electrical intervention	As per NF C18-510, simple LV or ELV short-term (< 1d) electrical operations carried out on electrical material or on a small part of an installation or on the annexes of energy transmission or distribution structures. These interventions concern circuits with the following characteristics: <ul style="list-style-type: none"> - Voltage $\leq 500V$ in AC and $\leq 750V$ in DC - Protected against short-circuits by a protective device with rated current of $\leq 63 A$ in AC and $\leq 32 A$ in DC Maximum cross section for live disconnection is 10mm ² Cu for control circuit and 6mm ² Cu for power circuit
Electrical Isolation Supervisor	Chargé de consignation in accordance with NF C18-510
Electrical Operation Supervisor	Chargé d'Exploitation électrique in accordance with NF C18-510. In some cases this person maybe called System Responsible Officer.
Energy Isolation (Lock- out/Tag-out (LOTO))	A process used to ensure that equipment and systems are at zero energy state. Processes that could involve positioning isolation valves, physical disconnection, blinding, securing electrical switches and other approved isolation System processes to an isolated state to remove or prevent hazardous energy sources and mitigate risk. Energy Isolations are performed in applying System isolation methods including Lock-Out/Tag-Out Processes. This process is closely related to the permit process, as equipment shall be properly isolated and secured prior to beginning work.
ePTW System	Electronic PTW data base used to manage PTWs, ICCs at ITER Site, approval process and PTW and ICC status.
Hazardous Atmosphere	An atmosphere that may expose workers to the risk of death, incapacitation, and impairment of ability to self-rescue (e.g., escape unaided), injury, or acute illness from one or more causes.

Isolation Control Certificate (ICC)	A certificate used in the PTW system aimed to control isolation and de-isolations. Can also be called LOTO Certificate.
ITER Site	Areas as defined in ITER Site Plan for Internal Regulations [24].
Leak testing	Introducing pressure or pulling vacuum to the system to confirm that integrity has been restored and there are no leaks.
Lifting Engineer	A person responsible for reviewing Lifting Plans for any lifting activities.
NFC Form	The form recommended by NF C18-510 [28] for electrical works or electrical work related authorization: “Autorisation de travail”, “Attestation de 1 ^{ère} étape de consignation”, ...
Permit Board	Physical Board in buildings/areas that is to be used when displaying live permits and associated paperwork.
Permit Holder “PH”	Field Task Supervisor responsible for the work execution. . This term can also be generally applied to several roles defined in NF C18-510 as Chargé de travail, Chargé de chantier, Chargé d’essais May be called also: Task Supervisor , Work supervisor
Permit to Work	A work control document required for the planning, communication, authorization of work.
PTW Coordinator	PTW Coordinator is responsible for the coordination of Permits to Work process within an assigned entity. For the sake of simplicity inside the procedure the term PTW Coordinator is used in general, however in different entities this role can be assigned to person with other roles, but they provide the same level of PTW Process coordination within their entity. The PTW Coordinators are listed in the [9] sheet <i>Roles Assignment by Entities</i>
Sanction To Test	The Sanction To Test mode is a controlled sequence that permits the testing of designated equipment under controlled conditions. An Authorised person gives the approval for the Sanction to Test to the person in charge of the test. This term is not applied to Electrical Isolations
Simultaneous operations	Simultaneous operations: works that take place at the same time and meet both of the following conditions: – Are in the same area. – Directly or indirectly could potentially affect the safe performance of any other activity.
System Responsible Officer (System RO)	Person in charge of the full life cycle of the system from Design to Operations is by default the Project Leader of the delivered system. [21]
Troubleshooting	Activity aimed to restore a network or system or equipment that has failed for various reasons to good working order (no breaking containment, no repairs)

4.2. Acronyms

Acronym	Description
CMA	The Construction Manager As-Agent (MOMENTUM)
ePTW	Electronic Permit To Work System used to manage all activities requiring permits to work.

EPDOM	The IO High and Medium Voltage Operation & Maintenance Contractor
EIS	Electrical Isolation Supervisor
EOS	Electrical Operations Supervisor or delegate
HSPC	Health and Safety Protection Coordinator
HYDOM	The IO Hydraulic networks Operation & Maintenance contractor
ICC	Isolation Control Certificate
PA	Permit Authoriser
PV	Permit Verifier
PAc	Permit Acceptor
PR	Permit Requestor
PI	Permit Issuer
PH	Permit Holder
PDP	Fr. (Plan de prevention, Prevention Plan, a document required for <i>Areas Under Operation</i> as defined in ITER Site Plan for Internal Regulations [24].
PGC (SPS)	Fr. Plan General de Coordination Sécurité et Protection de la Santé, Health and Safety General Coordination Plan
PPSPS	Fr. Plan Particulier de Sécurité et Protection de la santé, Individual Health Protection and Safety Plan, a document required for <i>Construction Site</i> as defined in ITER Site Plan for Internal Regulations [24].
PS	Maximum Permissible Pressure. PS as per Pressure Equipment Directive 2014/68/EU means the maximum pressure for which the equipment is designed, as specified by the manufacturer, and defined at a location specified by him, being either the connection of protective and/or limiting devices, or the top of equipment or, if not appropriate, any point specified.
PTW	Permit to Work
PVG	Permit Verification Group
RPA	Radio Protection Advisor (stands for French Conseiller en radioprotection). Formerly Radiation Protection Officer (RPO). The IO RPA is in charge of the global supervision of the radioprotection aspects of the Radiographic Testing. Each Contractor performing Radiographic test shall have a RPA.
SES	IO Security and Safety Section (IO/SQD/SES)
SIMOPS	Simultaneous Operations
SQEP	Suitably Qualified and Experienced Person

5. Reference Documents

Title	Reference	Version
[1] Health and Safety General Coordination Plan	2NUEYG	Latest
[2] ITER Lock-Out Tag-Out Instruction (LOTO)	34Q3GJ	Latest

[3] Organization of radiological tests on ITER Construction Site	T2GPED	Latest
[4] Confined spaces - Low points - Oxygen deficiency areas - Safety instruction	2CTMNC	Latest
[5] Working Instruction - Deviations to RT processes	26ACA6	Latest
[6] ePTW System (eVision V9) User Manual	8AM AHL	Latest
[7] PGC Vol 1	T6V4RP	Latest
[8] Lifting Instruction	YJ9MBD	Latest
[9] ePTW - Area authorization split and Notification configuration	YVAFBR	Latest
[10] Buildings Operator requirements on works requests on the ITER Site	2LMBAC	Latest
[11] ITER water supply and drainage networks - Requirements related to Connections, Modifications and use	2KNN2T	Latest
[12] Working Instruction - Use of XRF devices on ITER Site	8XEAPT	Latest
[13] Site Allocation Plan	37U6V3	Latest
[14] Worksite Coordination Organization Drawing - Network	7W6F8B	Latest
[15] AIPR - Article 24 - arrêté du 15 février 2012 modifié		Link
[16] EPDOM OPERATION REQUEST	2UYKWK	Latest
[17] Pre-job briefing	5EMK7J	Latest
[18] Instructions for Hot Work	64GPGM	Latest
[19] Articles L.4531-1 to L.4535-1 and R.4532-1 to R.4535-13 of the French Labour Code		Link
[20] Articles L.4511-1 and R.4511-1 to R.4515-11 of the French Labour Code		Link
[21] Deviation request to MQP documents describing responsibilities modified for the 2023 Re-organization	8Z7X9Q	Latest
[22] On-Call Responsible Entity Map (out of working hours)	8PZRW8	Latest
[23] Operational-Drawing – Common component – Global Layout	2UFTW7	Latest
[24] ITER Site Plan for Internal Regulations	3XWZL6	Latest
[25] PTW LOTO Certification Working Instruction	AXQJ95	Latest
[26] ITER_D_YDYGPU - PGC Annex 11 - Template for Delivery Organization Harmonized Document (DHOL) / Delivery Protocol (Decree 92)	YDYGPU	Latest
[27] Pressure Equipment Directive 2014/68/EU	RZ6PAK	Latest
[28] NF C18-510	C5CBCH	Latest
[29] Electrical safety procedure	3XULVS	Latest
[30] Live Electrical Work Authorization template	3XGT8M	Latest
[31] Electrical checklists (1st energization & HV Test)	CBZXTT	Latest

6. PTW process role holders and responsibilities

All personnel who can request, verify, authorise, issue, or accept a permit, are required to be a Suitably Qualified and Experienced Person and as per “PTW LOTO Certification Working Instruction” [25]. On completion of their appropriate training, the individuals will be formally assigned a role(s) in PTW process by PTW Trainers after the approval of System RO.

The following are the main roles within PTW Process:

- Permit Requester
- Permit Verification Group
- Permit Verifier
- Permit Authoriser
- Permit Issuer
- Permit Acceptor
- Permit Holder

Other supporting roles within the PTW process may be allocated by the entities as per their own internal processes and procedures.

Each entity shall identify personnel who will be assigned with the role(s) in PTW process. The table with the assigned PTW roles per the for the entities is available in [9] “ePTW - Area authorization split and Notification configuration”.

6.1. Permit Requestor (PR)

This is usually the person doing the work and the responsibilities for this role are the following:

- Request correct type of Permit.
- Complete all the necessary fields in the PTW form.
- Provide required documents as attachments to the PTW in accordance with section 7.5.
- Complete Risk Assessment section of PTW in accordance with section 7.6.1.

Note: Permit Requestor could be administrative personnel, who prepares the PTW on behalf of other individual, who did assessment of the work scope and preparation of risk assessment. In this case the name and contact details of this individual shall be reflected in the PTW.

6.2. Permit Verification Group (PVG)

Verifying groups inputs are not blocking point in PTW workflow and are not limited in number. This function allows PVG to acknowledge or comment on a permit.

On the ITER Site, as different entities are responsible for the work coordination and safety assurance depending on the work area, a document [9] “ePTW - Area authorization split and Notification configuration” was developed to map how the responsibilities are split. This is used to trigger automatic notifications. While Verification group members are normally all identified in the notification email, when an impact is identified, the Verifier in cooperation with Area Coordinator and/or PTW Coordinator may request other entities to review and sign PTW as a member of the PVG.

Permit Requestor also has a right to add additional PVG member to their permit to ensure notification and its confirmation is done before the work is executed.

PVG members shall:

- Review the PTW and supporting document(s) (defined in section 7.5) to ensure that it/they are approved, still valid and required.
- Acknowledge and validate the work covered by the PTW for the area of responsibility in the requested period.
- For works that impact or may potentially impact the systems under operation (electrical, fluids, drainage), the operating entity of the network, equipment or system shall review and sign the permit as part of the PVG to confirm acceptance of the activity, as per the ITER Site Operators instructions as per [10] [11] [16].

- Verify the PTW versus Health and Safety common inspection findings and add precautions when applicable.
- For the energized systems: System RO or EOS – identifies the necessary LOTO for safe work execution.
- Verification Group members shall sign related PTW within a 7 day period from the request date.
- SES/HSPC shall review and sign the following PTW as members of the PVG:

PTW Type	Decree 94		Decree 92
	Signature of SES*	Signature of HSPC	Signature of SES
Low Risk / Long term / Low co-activity Permit	X**		X
Excavation		X	X
Radiography (see section 10.13)		X	X
Confined Space Entry	X	X	X
Pressure Testing	X	X	X
Breaking Containment	X	X	X
Work on collective fall protection (Removal of grating/handrails / Removal of ladders of lifting hatches.) (Scaffolding work by specialized contractor is excluded)	X	X	X
Work at height without collective fall protection (Scaffolding work by specialized contractor is excluded)	X	X	X
Critical Lifting [8]	X	X	X
Live Electrical Work / Work with Notice of Requisition / HV Test	X	X	X
1st Energization	X	X	X
Commissioning	X	X	X
Hot Work			X

* - only for works performed by IO Staff (both signatures SES + HSPS)

** - if activity is long term or low co-activity, but includes high risk work it will require SES signature

Particular attention for all permits on or impacting Z4.1 due to the storage of radiographic sources.

6.3. Permit Verifier (PV)

A Permit Verifier is responsible for the following:

- Ensure that the “Area Authorization” [9] proposed is correct.
- Ensure that all required members of PVG have performed their review and signed the PTW.
- Ensure that all comments from PVG are addressed before the PTW is verified.
- Verify that provided list of documentation is in compliance with the requirements of this procedure as specified in section 7.5.
- Request update of hazards and controls section if necessary
- Ensure that the activity has been planned/discussed with the appropriate System ROs, building or Area Coordinator
- If LOTO is requested by PR or PVG – ensure it’s linked to the PTW inside ePTW Tool.

- Reschedule, if necessary, the works time and date execution with the PTW Requestor and the involved operators and update the PTW date in the system accordingly.
- Ensure dependent/linked permits are connected the correct way.

6.4. Permit Authoriser (PA)

The Permit Authoriser is responsible for the following:

- Ensure that all the checks to be carried out at verifying stage have been done.
- Ensure all comments from PVG and PV are addressed before the PTW is authorized.
- For areas with energized systems - in case of a full isolation, the required ICC/LOTO shall be in status “In place” and where necessary all the appropriate documentation is attached to the permit as per Section 7.5.
- Ensure system readiness for work execution.

6.5. Permit Issuer (PI)

The Permit Issuer is the last gate before granting authorization to start the work.

The Permit Issuer is responsible for the following:

- When issuing a new PTW verify if the permit cause any conflicting SIMOPS with other issued PTWs for the area
- Ensure that the work site is in acceptable and suitable conditions for the lifetime of the PTW from the coordination and SIMOPS perspective.
- Issue the permit on the requested date and at the agreed time.
- In case of the emergency/ site work condition change that can potentially prevent safe work execution immediately notify the Task Supervisor / Permit Holder and request Permit Acceptor to suspend relevant Live PTWs, visit the workstation(s) or assign a person to stop the ongoing activities and retrieve the PTWs and NFC forms (if issued).

6.6. Permit Acceptor (PAc)

A Permit Acceptor (usually the same person as a Permit Requestor) accepts PTW on their own behalf or on behalf of a person whose work he/she is supporting

The Permit Acceptor is responsible for the following:

- If required, discuss the activity with the Permit Issuer.
- Check that the controls needed for the work to begin have been identified, agreed, and can be put in place, as described in the Risk Assessment and Method Statement.
- Check the extent, duration, location, and method of the work that has been agreed and the relevant permit type is issued.
- Re-activate daily their PTW starting day two of the lifetime of the PTW via ePTW System.

Note: Permit Acceptor could be administrative personnel, who accepts the PTW on behalf of other individual, who will act as Task Supervisor. The name and contact details of the Task Supervisor shall be reflected in the PTW.

6.7. Task Supervisor / Permit Holder (PH)

The Task Supervisor / Permit Holder shall:

- Ensure that personnel in the work team are SQEP for assigned tasks.
- Be SQEP to perform/supervise work scope under PTW.
- Ensure that work group members fully understand the scope of the work, their individual tasks, hazards, and risks that have been identified, and the controls that must be in place

for the work described. This shall be done by holding a Start Work Meeting and ensuring that all members of the work group sign the Start Work Meeting Attendance sheet in the PTW.

- Ensure that only the work covered within the scope of the PTW takes place and that the work is executed as per the requirements of the PTW and any associated documents.
- Ensure that the workstation is kept in a clean and safe condition, both during and upon completion of the task.
- Performs required safeguards related to the work activity.
- Ensure that appropriate materials, tools, and equipment are in place, suitable, sufficient and in the proper condition and verified when applicable.
- Ensure that the workstation is maintained in a safe condition.
- Due to the ITER Project multi-national and multi-language environment some workers may not be able to understand the content of the PTW in English, in such cases it is the Task Supervisor responsibility to ensure translation of the PTW to the workers.
- If work is done with LOTO – implement necessary relevant step: Zero Energy verification and VAT.
- Notify the workers when the PTW is suspended that the workstation and affected areas if any are no longer safe.
- Ensure testing and monitoring of the workstation atmosphere by a SQEP person when required by PTW. The test result shall be recorded/handwritten in the hard copy of the PTW demonstrating that the workstation atmosphere is safe for the work to begin/progress.
- Attach/Pin the Live PTW to the area Permit Board, if there is no such Permit Board available, the permit shall be available at the workstation.

6.8. Work Group

As per the PGC, the work group shall consist of two or more persons including the Task Supervisor/Permit Holder. If the Permit Acceptor is not the same person as Task Supervisor/Permit Holder, then the name of the Task Supervisor/Permit Holder shall be added in the scope description section of the PTW by Permit Requestor.

The members of the Work Group shall:

- Actively participate in the Start Work Meeting to ensure they understand the hazards, risks and the control measures associated with the task(s).
- Actively participate in the identification of any additional hazards, risks and control measures required at the workstation.
- Actively monitor their workstation and the surroundings for any changes.
- Sign the Permit Start Work Meeting attendance sheet.
- Be SQEP for the the specific tasks to be performed.
- If the scope of the work, work method, or workstation condition change from the initial as per the PTW – STOP the work and inform Task Supervisor /Permit Holder.

7. General principles of PTW

The following rules are applied to all PTWs:

- All work permits have a unique number that can be used as a reference number on all associated documentation required for the work to be performed.

- If the work scope or workstation conditions change during works execution or safety concerns are raised by the work party, the works shall be suspended and re-assessed.
- The permit is not valid if not completed correctly with the required endorsements, approvals, and signatures.
- Some of the activities can be done without PTW, see section 7.1. for further details.
- The paper copy of the PTW in the field is the controlled document with all and required signatures. Minor changes to the Permit Pack documents can be made “wet ink” in the field (for example: minor hazards identification and relevant mitigations).
 - The first day it necessary to print the full PTW. The other days – ~~print only 1st page to reflect the status of PTW and the date and staple it to the package from day 1~~ the permit needs to be LIVE into eVision but it’s not required to print again the PTW. The 1st printed permit needs to be available at the working area all along the PTW life duration. If the printed permit is lost or no more readable, the Permit Holder shall print it again.
 - If PTW is stopped for few days - print the pack again if the first set was archived.
 - For Long Term PTW – shall print PTW once and keep it on site. Do not need to print it daily, but Permit Acceptor shall make sure the PTW is in the correct state in ePTW tool, when work is ongoing

7.1. Activities not requiring work permit

Some activities can be carried out without a work permit, if they present low risk however **shall be fully coordinated with the entity in charge of the coordination of the area** (e.g. an email exchange to confirm possibility to intervene required)

Activities not requiring work permit are limited to the following:

- Visual inspection of equipment
 - Exception: when specific measures for work at height, exporting risks to others (using of mobile platform, cherry picker... rope works).
 - Visual inspections with access from scaffolds, platforms, stairs are not subject to PTW. Specific point of attention: the staff must be suitably qualified, especially if the access requires use of harness.
 - In Confined Space Areas, only Confined Space Entry PTW is required, no need to associate a PTW for the activity type.
- Non-hazardous waste collection
- Cleaning outside the buildings
- Implementation of labels or signage (if not at height, confined space, energized equipment)
- Check, replacement of extinguishers.
- Office /administrative work
- Deliveries [26]
- Operation duties:
 - Routine Patrols
 - Lining up systems or equipment for commissioning or start up.
 - Routine starting / stopping / changing over of duty equipment.
 - Visual inspection and monitoring of meters, pressure gauges etc for data logging, visual check for leakage, check for lube oil level (lube oil refilling requires a permit).
- Routine operations covered by an Operating Procedure: the operation scope covers both troubleshooting and operation performed by staff in charge of the dedicated system,

equipment and/or area, executed by IO or on behalf of IO as per approved Operating Procedures (which shall include specific risk assessment, and requirements for necessary coordination).

- **Troubleshooting** is an activity aimed to restore a network or system or equipment that has failed for various reasons to good working order (no breaking containment, no repairs)
- **Operations** is an activity of system line up, manoeuvring, switching of components
- **Risk Assessment** shall be similar to Risk Assessment Level 1 of ePTW system
- **Procedure Approval** shall be from System RO
- Emergency response actions and interventions by designated ERT, site medic, Security team
- Work outside of the ITER Platform such as:
 - Catering activities and its professional equipment maintenance
 - Waste collection in buildings and areas
 - Office/premises cleaning
 - Road sweeping (including snow removing and salt spreading)
 - Green areas maintenance
 - Servicing vending machines
 - Maintenance/repairing office equipment, photocopiers, computers etc.
- Services in the office environment (e.g., furniture moving, small fixtures fixing, handling works, minor drillings with compensatory measures of dust emission and removing fire detection impact)

7.1.1. Electrical Activities Without a PTW

Notwithstanding nor contradicting any electrical activities authorized by the above Section 7.1, the following conditions apply limitations specific to unplanned LV electrical activities related to troubleshooting and operations.

These electrical activities are allowed without a PTW, but only if:

- The activities consist of troubleshooting, or activities linked to troubleshooting such as measurement, access (visit or inspection), and operation; are limited to unplanned activities within a single shift; are confined to a limited area (e.g., a single electrical room); are aligned with NF C18-510 guidelines for intervention; and are limited to low voltage (LV) activities.
- A comprehensive Risk Assessment is completed in advance and thoroughly documented. Risk Assessment shall be similar to Risk Assessment Level 1 of ePTW system
- The individual performing these troubleshooting activities without a permit shall be delegated legal authority as Electrical Operation Supervisor (EOS) of the network on which the activity is being performed or shall be a member of their designated team.
- A designated team shall be clearly identified in advance by a list of team members, validated by the EOS, who are authorized to perform activity without a permit.
- Those performing the activity shall be direct contractors of IO, or IO Staff; they shall not be subcontractors.

7.2. Site visit before creating the permit.

Permit should be prepared based on the site visit and review of the actual site conditions, hazards and applicable mitigations and controls.

For the following activities the site visit is mandatory:

- 1st Energisation
- Confined Space Entry
- Pressure Test
- Excavation
- Critical Lifting

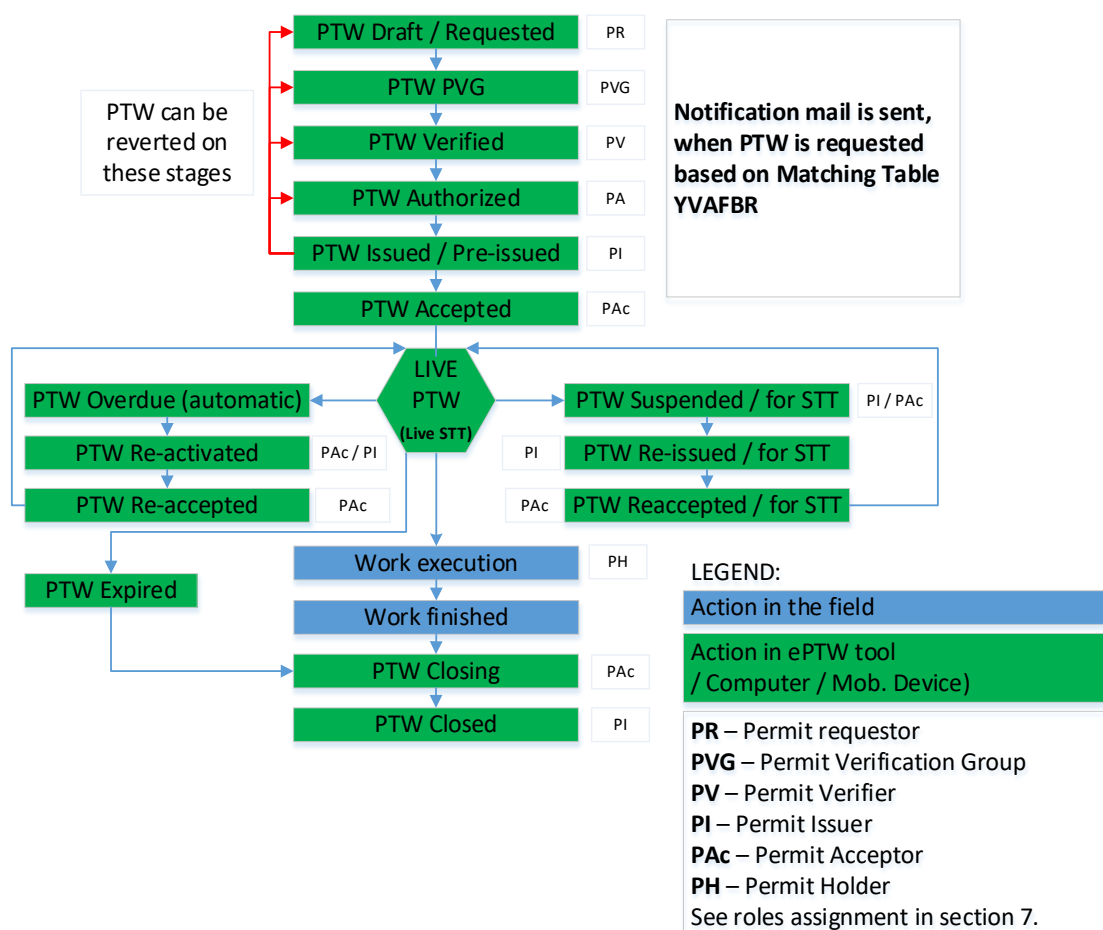
Mandatory attendees for these site visits are:

- Permit Requestor
- Area Coordinator / System RO or EOS if work will require isolation.

Depending on the type of activity/permit the additional attendees can also be:

- HSPC / IO SES
- CMA Lifting Engineers
- Responsible person for Pressure Testing
- PTW Team to be invited, especially for 1st Energization

7.3. PTW Workflow.



7.4. Duration of a permit

Lifetime for different permit types:

Permit type	Lifetime
Cold Work	28 days
Radiography	1 days

Permit type	Lifetime
Hot Work	28 days
Confined Space	14 days

Excavation	28 days
	28 days
Lifting	28 days
Breaking Containment	14 days
1 st Energization	14 days

Maintenance	28 days
Commissioning	28 days
Low Risk Long Term	60 days
Radiography Campaign	180 days
Pressure Test	14 days

7.5. Documents required to support permits.

Mandatory documents,

- Approved PPSPS/ PDP for all contractors
- IO Risk Assessment (as RA Level 1 or 2 inside the ePTW)

In addition, the following are essential documents that should be attached or linked to the permit:

Permit Type	Documents	
Cold Work	- Environmental Risk Plan, (PRE) or an Approved Deviation Request (if applicable, depending on the scope of work)	<u>If applicable:</u>
Hot Work		<ul style="list-style-type: none"> • MSDS with IDM link in attachments if applied¹.
Maintenance		<ul style="list-style-type: none"> • ICC (not for Low-Risk/ Long Term / Low Co-activity)
Commissioning		<ul style="list-style-type: none"> • Work specific documents: method statement, fluid request etc.
Low Risk / Long Term		<ul style="list-style-type: none"> • Latest controlled P&ID with isolation mark up • ICC or Personal Isolation Plan • MSDS with IDM link in attachments if applied¹
Breaking Containment		<ul style="list-style-type: none"> • NFC form in compliance with NF C18-510 [28], as applicable • ICC or Personal Isolation (if work with LOTO, network separation, and/or isolation) • Certificates for all work group members for high risk electrical works • HV Test Checklist [31] / Template (section 13.1)
Work with Electrical Risk		<ul style="list-style-type: none"> • Rescue Plan • Training certificates for all work group members • Create a dependency with a work PTW
Confined Space Entry		<ul style="list-style-type: none"> • Excavation drawing, based on the latest controlled Buried Network Drawings
Excavation		<ul style="list-style-type: none"> • Exclusion zone drawing • Test pack, • Method statement • Approved procedure
Pressure Test		<ul style="list-style-type: none"> • Approved Critical Lift Plan
Lifting		<ul style="list-style-type: none"> • Latest verified As Built/Red line drawings, • List of equipment concerned and Legal Inspection Report with no blocking observations, • Training certificates for all work group members, appropriate to the work scope • 1st Energization Checklist [31]
1st Energisation		<ul style="list-style-type: none"> • Exclusion Zone drawing
Radiography		
Radiography Campaign		

¹ Link shall direct to IDM page of the material with the list of approvals or directly to the approved MSDS.

7.6. PTW request.

A PTW request shall be submitted 7 calendar days prior to the work commencement date. For complicated/complex activities, such as major excavation works it is advised to raise the permit 14 days in advance to consider extended review time. On a case-by-case basis this duration could be reduced upon System RO request upon provided justification.

The Following information should be provided in electronic PTW:

- Type of the work to be performed (Maintenance, Hot Work and Access to Confined Space etc.)
- Work title - work short description statement
- Detailed description of the work including:
 - The details added to the permit shall be accurate to ensure that there is no ambiguity as to the content of the proposed work, equipment or location involved.
 - Any procedures or references used as part of the work. In the case of large or complicated procedures, specify the steps from the procedure that will be executed as part of the work.
 - Required working conditions (e.g., system drained, depressurized, de-energized, etc.).
 - Safe boundaries of the work
 - Documents as detailed in a table above.
- Area Authorization

As there are different entities coordinating PTWs across the ITER Site, the Permit Requestor shall specify which entity will be coordinating its permit. The Area Authorization field will allow to distinguish between coordinating entities and prevent one entity to verify permits coordinated by another entity. In case of doubt, entity PTW coordinator should be contacted.

 - Using the email notification workflow [9], set the Area Authorisation for the work location according to the Entities zone. If the permit requires the use of multiple work locations, then the primary work location should be selected and for other work locations associated with the work, use the Affected Location.
- Location: Exact location of the equipment/ system concerned by the work permit.
 - Permits zones can only be grouped when issuer is the same, details about issuers can be found [9] or if required liaise with PTW coordinator of the entity. For a permit on two zones with two separate issuers, two separate permits shall be created (for example B11 and B13 are not coordinated by the same team, accordingly two permits shall be created).
- Task Supervisor contact details.
 - Ensure that the Task Supervisor is SQEP to perform/supervise the work. Check that a certificate for the supervisor, relevant to the work exists.
 - If the work will last a significant amount of time or require the use of shifts, then list additional Task Supervisors in the Remarks section. The senior or primary Task Supervisor should be the first in the list.
- Tools companies are foreseen to be required.
- Equipment that is affected by the PTW
 - Requester shall select the equipment from the existing dropdown list the equipment. If equipment is not available, only in this case the Requester can add new equipment.

- Safety Measures: the Permit Requester shall consider the need for additional permits e.g., Confined Space Permit, etc.
- Planned Start Date and planned End Date.
- Planned working hours - if possible, provide the total number of hours required to complete the work.
- If known, request an isolation (also called LOTO). This can be done by liaising directly with the System RO / EOS or seek advice from entity Area or PTW Coordinator to determine the status of the equipment/system associated with the permit.
 - In general permits with the requirement for an isolation apply to work in one designated area/ building. However, at times, because of system configurations, any isolations may involve more than one area/building. In this case, the System RO / EOS of the system will prepare the isolation across all other affected locations.

7.6.1. Risk Assessment

Risk Assessment: Each permit shall have a task specific risk assessment. Within the ePTW System, there are two options available:

- **Risk Assessment Level 1:**
 - Mandatory for any Permit for Contractors, PPSPS or PDP attachment to PTW is mandatory.
 - Mandatory for all work activities performed by IO Staff that are not classified as hazardous.
- **Risk Assessment Level 2: (not required for Contractors)**

Mandatory for all hazardous classified work activities performed by IO. It is also necessary if IO representative s part of the group.

 - It shall be prepared and signed off by 2 people or more and is usually built up from a multi-disciplined team.
 - One of the Risk Assessment Level 2 approvers shall be IO SES.
 - The list of Hazardous classified work activities:
 - Excavation
 - Radiography
 - Confined Space Entry
 - Pressure Testing
 - Breaking Containment
 - Work on collective fall protection (e.g. Removal of grating/handrails / Removal of ladders of lifting hatches
 - Work at height without collective fall protection
 - Critical Lifting
 - Electrical Work on Live Parts, or in the vicinity of Bare Live Parts (LV or HV).
 - 1st Energisation
 - HV Testing (e.g. dielectric, voltage withstand, insulation resistance, or high current injection)
 - Commissioning

Risk Assessment shall be prepared based on the site visit and review of the actual site conditions, hazards and applicable mitigations and controls.

7.6.2. Notification to affected entities

When creating a permit, the area where the work takes place shall be selected. If a permit impacts areas coordinated by different entities, the permit requestor shall make sure to fully list all the impacted areas. It will be necessary to collect all these areas' coordinators' signatures as PVG before verifying the permit. In some cases, several dedicated PTWs might be required to ensure full control of each Coordinating Area.

The ITER Site graphic is split into many geographical subzones, each is linked to a list of emails, as per ePTW - Area authorization split and Notification configuration [9].

Notification to affected entities:

In case of any foreseen impact, potential impact, modification to a network or need for LOTO, the corresponding affected network shall be added to the list of affected areas in the permit. This will trigger an email to the corresponding network managing entity (as per ePTW - Area authorization split and Notification configuration [9]).

- **Work in the vicinity of HV network:** For work within 3m of non-buried electrical network up to 50kV, and 5m for higher voltage it is required to add the corresponding HV network (F4E or IO) to the affected locations. For buried network 1.5m disregarding the voltage.
- **Work in the vicinity of LV network:** For work within 1.5m of MV/LV network, it is required to add the corresponding MV/LV network (F4E or IO / Temporary or permanent) to the affected locations.
- **Work (Excavation work or heavy loads induced by works above the network) in the vicinity of a hydraulic network:** For work within 3m of a buried hydraulic network, it is required to add the corresponding entity in charge of this network.
- **Work in the vicinity of Site Boundary Fence:** For work within 10m, it is required to add the IO Security to the affected locations.
- **Hot Work Team:** In case of Hot work permit naked flame, the need for a fire alarm inhibit shall be duly checked with the Hot Work Team.

7.7. SIMOPS management

The number of operations that can be conducted simultaneously at the same location depends on various factors such as:

- Type the intended work
- Location of the proposed work in relation to other activities being performed.
- Duration of the work.
- Resources available
- Impact of the activities on the overall operations

These considerations shall be thoroughly discussed, and a decision made on the number of operations that can be performed simultaneously without jeopardizing safety to personnel, the environment, and the facility. Generally, such discussion happens during daily and weekly coordination meetings.

The following evaluation is mandatory when planning SIMOPS:

- Risk associated with each operation.
- Compliance with related ITER Site safety rules
- Compliance with regulatory requirements
- Any other safe work guidelines

- In some instances, these requirements may prevent certain operations from being performed simultaneously.

Adherence to the requirements set forth in the PTW System, as well as to other applicable ITER Site and regulatory requirements is intended to reduce the risks associated with the performance of simultaneous operations to an acceptable minimal level.

7.8. Editing a permit

A permit can be edited in ePTW at either the draft or awaiting verification stage by the appropriate person. If the permit requires a change “of any kind”, the permit shall be reverted to draft and the Permit Requestor advised as to the reason why via mail or with comment in ePTW. When the permit has been edited/revised, the permit will then go through the review and approval process, as per the established workflow.

7.9. Issue of a permit

If required and depending on the type of permit, before the issue of the permit, the Permit Issuer or their representative will check/visit the worksite to ensure that there is no restrictions or any preventative issue of the permit. Permit Holder may be requested to participate in the field visit.

NOTE: When Permit is issued the first day it’s issued not only for the first coming shift, but for the whole lifetime of the PTW, because the Permit Acceptor will be able to re-activate the permit themselves all the consecutive days if Permit is not Suspended. See section: 7.14. Suspension, overdue and re-acceptance for more details.

7.10. Adding measurements

Depending on the type of permit and if required several “Measurements” can be used to support any of the permit types. Measurements can be selected as being mandatory, and a pre-requisite to a permit being issued, for example:

- LEL, (Gas)
- Oxygen
- CO
- Nitrogen
- Helium

The results of all testing shall be recorded on the work permit. This is done either electronically or by hand on the atmospheric test record sheet.

There are different requirements for atmospheric testing as detailed in the following. Except for continuous monitoring all shall be performed by a person who is authorised.

- **Initial atmospheric test:** An initial test for shall be performed before certain work can commence, such as confined space entry or hot work.
- **Continuous monitoring:** The work site may be monitored continuously using a portable or personal detectors positioned adjacent to the work. This test may be in addition to the requirements for initial or repeat atmospheric tests.
- **Repeat atmospheric check:** Repeat gas tests should always be carried out at specified intervals, typically after meal breaks and any other substantial absences from the work site, Continuous monitoring is used primarily for jobs such as confined space entry, excavation work or hot work.

7.11. Acceptance of a permit

To ensure that the permit is Live before starting work, when issued, the Permit Acceptor shall log into the ePTW to accept the permit, and the permit now moves into the Live state.

7.12. Start of work

Each shift before the work starts, Task Supervisor shall go to the worksite and carry out a Start Work Meeting (or pre-job briefing) with the Work Group. At this meeting, the Task Supervisor shall discuss the scope of work, hazards, co-activity, and any other item that may impact the work. This discussion shall be formalised using a Start Work Meeting Checklist which can be separate file or part of PTW. It shall be **signed by all workers EVERY DAY** to confirm their understanding of the tasks and associated risks. Recommended to follow: Pre Job Briefing [17].

7.13. Extended time for live permit

If an activity is expected or confirmed as running across the shift change, it is possible to extend the permit validity for three extra hours. If the Permit Acceptor applies for an extension to the validity of the permit, the following steps should be followed:

- Request to be made within 3 hours of the end of the permit validity period, (i.e. system request made after 19:00 when permit valid till 22:00).
- Permit Requester request "Extended Time" in ePTW System.
- The Permit Acceptor shall advise the Permit Issuer of the request to extend the permit across the shift end time.
- The Permit Issuer shall acknowledge the request after confirming the absence of implications due to continuing the activity on the next shift, (Co-Activity etc).
- The Permit Issuer then approves the Extension.
- Permit Requester should "Accept" the extended time for the permit to be valid for 3 hours after the original validity time, (i.e. 24:00 instead of 22:00).
- The work shall be coordinated with night shift crew and RT Team in particular.

7.14. Suspension, overdue and re-acceptance

At the end of the shift the Task Supervisor / Permit Holder shall ensure that the work site is safe, clean and that personnel have stopped work.

The Task Supervisor/ Permit Holder can carry out one of the following:

- Do not execute any action in the end of the shift in ePTW System: each PTW will go "overdue" at the end of the shift. Within the lifetime of the PTW Permit Acceptor can reactivate their PTW from the overdue state to state "re-issued" and further re-accept their PTW from that state. This approach is recommended for daily re-activation and acceptance of the PTWs.
- Log into the ePTWS and suspend the permit. The permit is now available to be re-issued by Permit Issuer when it is next needed.
- Log into the ePTWS and close the permit. If NFC form was used – "end of work" section shall be signed by PH and document returned to EOS/EIS

7.15. Suspension due to changes

In the case of any critical and imminent danger, anybody can request the Task Supervisor to suspend the current activities and request additional assessment of the work activity/workstation conditions by OHS team of the entity. Support of HSPC or IO SES may be requested to determine requirements to make the site safe.

If decision is taken to suspend or close the permit, this decision shall be documented and immediately reported to the Task Supervisor and System RO. The reason for the suspension/closure shall be documented using a Comment section in the permit.

If the permit is to be re-issued and there is no requirement of any kind for revision, HSPC or IO SES (areas in the scope as above) shall re-sign the permit and a comment added to approve the restart of the work.

When the reason for the suspension has been clarified and the work can recommence, the following steps shall take place:

- A site visit is carried out to check for any change in work site conditions has occurred since the suspension.
- Confirmation that there are no changes/revisions required on the original supporting paperwork and there are no additional hazards identified or change of scope.
- Approval from the HSPC, (New signature on the permit)
- The suspended permit can now be re-issued.

Note: If there are changes to the scope of work or additional hazards have been identified, a new permit will be required.

For work that is associated with Electrical ICC, (includes Attestations), the following will apply when suspended due to a request or change of condition:

- The EOS directly or via PTW Coordinator shall request Task Supervisor suspend the work, bring site to safe condition, and return the PTW and NFC Form to the Permit Issuer.
 - The PTW will then be suspended in ePTW system and can be re-issued only after permission from EOS.
 - When conditions return to normal as confirmed by EOS, EOS shall countersign the PTW.
 - Permit Issuer may re-issue the PTW for PH.

7.16. Completion of work

On completion of the work, the Task Supervisor shall ensure that:

- All tools and materials have been cleared and the work area is in a safe and clean.
- Personnel have vacated the work area.
- The permit requirements have been cleared.
- Close the permit in the ePTW System.

Providing the permit is not associated with an ICC, the Permit Issuer will then close the permit and this now goes into the archive database, (available for reference, review or copying).

- If one of the conditions listed above is not completed or if the Permit Issuer decides for any reason the PTW cannot be closed, then the Permit Issuer will then have to discuss and agree with the Contract Task Supervisor requirements to enable closure of the PTW.

7.17. Renewal and copy of PTW.

The renewal/copy of a permit shall be initiated by the requestor at least 2 working days before the expiry date of the permit being renewed/copied.

Specific case of enclosed working areas:

If the PTW is located in an enclosed working area (as defined in [9]), the copied PTW will be managed through a dedicated fast track:

- PTW Verifier will be able to Verify/Authorize/Issue without any Verification group.
- A disclaimer must be written as a comment into PTW: *“This PTW is Verified based on the verification group signatures done on the 1st revision (ITER-XXXXXX). All original verification group are invited to alert PTW Verifier to discuss any potential changes”*.
- Maximum cumulative duration for those renewal is 1 year.

8. Work with Isolations

The management of all Isolations shall be done within the ePTW software (excepted for electrical intervention).

When requesting a permit that requires a full isolation (also called LOTO), the requestor shall select the affected entity in the permit field “affected area” by selecting the area effected networks in ePTW’s main graphic.

The System RO will review the isolation/de-isolation request and follow the ITER Lock-Out Tag-Out Instruction (LOTO) [2].

When the requirement for LOTO has been realized, the System RO shall ensure that the isolation, (ICC in ePTW) is attached to the permit. The System RO shall utilize the Verify Group Signature option to confirm that the ICC is applicable to the scope of work.

8.1. Electrical isolation specifics

Any work related to Activity with Electrical Risk shall contain an NFC Form, which shall be signed by EOS or EIS and Task Supervisor. The signed form shall be attached to the permit by the EOS or EIS before the permit can be Authorized.

Before work commences, the Task Supervisor as shall obtain two documents:

- Printed PTW in status LIVE
- The NFC Form signed by 2 people: Electrical Operation Supervisor or Electrical Isolation Supervisor and Task Supervisor

These two documents shall always be at the work site, when work is ongoing.

The NFC Form might be signed after LOTO is installed, before PTW is LIVE. In this case it’s not considered as full permission to commence the work.

If PTW is linked to several Electrical LOTO’s, this shall be documented on the permit and all the signed NFC Forms shall be attached before the permit is issued.

8.2. Sanction to test

In order that the Sanction To Test (STT) is well coordinated, the requestor of the test shall liaise with the System RO to ensure a full alignment with the requirements and timing of the test. The detailed description of Sanction to test is provided in ITER Lock-Out Tag-Out Instruction (LOTO) [2].

Currently, for Electrical tests, the functionality of the STT Mode in ePTW is not compliant with NF C18-510 [28] and as such the following sequence shall apply:

1. New permit created for test regime.
2. Ongoing activity permit set to close

3. LOTO to be removed by the System RO, (this will require co-ordination and should be aligned with the test permit with agreement between the test permit holder and the System RO).
4. Test permit issued.
5. On completion of the test, the test permit can be closed.
6. If required, a new permit is created to continue the activity with a new LOTO requested
7. New LOTO to be put in place

Note: If required, the above sequence of permits can be revised to utilize the e PTWS management of the Live/Not Live sequence. This will ensure a correct sequence for the 3 permits that are needed.

For any test permits, in addition to the mandatory documentation, (refer to section 8.3) the following documents are required:

- Approved risk assessment, (if not incorporated into the PPSPS/PDP or IO RA)
- Test procedure detailing the step-by-step activities to be performed.

9. On-call duty intervention outside of co-ordination hours

In terms of PTW, co-ordination hours are deemed to be those where the Entity PTW Coordinator is available to support site persons using the e PTWS.

For any planned (forecasted) work for the outside coordination hours a separate dedicated PTW shall be requested. It will also allow Radiography Team to identify night shift PTWs and ensure no coactivity occurs together with Radiography Works.

There are several areas on the ITER Site and on each of them the PTW coordinator could have specific working hours. Outside the associated coordination hours (in the absence of a PTW coordinator), the coordination is then organized directly by the IO on-call duty officer in charge of the area, with a phone contact available in document [22]

In case of an urgent and unforeseen activity:

- The IO on-call duty officer in charge of the intervention calls:
 - the IO on-call duty officer in charge of the area to inform them and request authorization to intervene.
 - The HSPC on-call to share the potential safety concerns.
 - The RPA to check whether the area is prohibited or not (due to RT tests).
- The IO on-call duty officer in charge of the intervention calls the IO Command post to inform them of:
 - The name and Company of the technician(s) that have to enter the site
 - The building where the intervention shall take place
 - HSPC on-call and RPA decision
- Command Post shall assess with the IO security on-call any site access issues.
- If intervention for electrical issues, then an appropriate Risk Assessment shall be in place. EPD team shall be informed.

10.Types of permits

There are 14 types of Permits and Templates:

- Cold Work
- Hot Work

- Confined Space Entry
- Breaking Containment
- Excavation
- Pressure Testing
- Commissioning
- Maintenance
- Work with Electrical Risk
- 1st Energisation
- Lifting
- Low Risk Long Term
- Radiography Campaign
- Radiography RT

10.1. Cold work

Examples of activities:

- Work on Electrical equipment which was never connected to the network
- General construction,
- Working with mineral fibre
- Surveys including exposure to higher risk (for example survey at height)
- Venting off / Bleeding down to atmosphere or open drains

Within the Cold work PTW the ePTW System allows to select the following types of works:

- Working with nitrogen gas
- High pressure grit blasting
- Use of lasers
- Use of air, electrical or hydraulically powered tools
- Handling or use of hazardous substances
- Work on lifts, which involve access into the lift shaft
- Demolition works
- Equipment start up
- Engine driven equipment operation
- Work at height /
- Rope access (abseiling)
- Work on collective protection
- Coating application (spray paint, fireproofing)
- Fluid request (request of provision of gas, water, etc from operating systems)

10.2. Hot work

Examples of activities:

- Stress relieving or use of high temperature
- Thermal calibrators, (above 200 Deg C) except in authorised workshops.
- Use of grinders.
- Use of heat shrink blowers.
- Work Involving naked flame, (Welding, flame cutting)
- Electrical Welding
- Electrical induction pre-heating

Reference [18] for more details regarding Hot Work requirements.

10.3. Confined space entry

Required for any confined space entry. This does not allow any specific work to take place within the confined space but will allow entry to perform work or inspection. Any work carried out in the confined space shall be covered under a separate permit in addition to the entry permit.

If the activity (e.g Visual Inspection) fall on List of Activities allowed without Permit to Work (7.1), no separate permit is required, the Confined Space Entry PTW stands alone.

Note: All persons entering the Confined Space shall be SQEP. Reference [4] for more details regarding Confined Space Entry requirements.

10.4. Breaking containment

Any non-routine activity where the work involves the breaking containment of system or equipment that normally contains pressure, high temperature or hazardous substances, or condition of the system cannot be confirmed as non-hazardous.

Examples of activities:

- Unbolting flanges and manways or removing screwed fittings on systems, such as, pipes, vessels, exchangers, valves, turbines, compressors, and pumps.
- Opening enclosures such as filter housings.
- Removing orifice plates.
- Spading and de-spading of such systems or equipment etc.

10.5. Excavation

Required when carrying out excavation on site. These permits will be supported by various documents to ensure no impact on any underground services, (electrical, water, drainage, etc). As a minimum, for all excavation permits, a drawing with the excavation footprint overlaid on the latest worksite buried network drawing shall be attached to the Permit.

Further to description provided in PGC (ref [7]) paragraph 3.8 (Earthworks), works in the close vicinity of networks shall comply with:

- The French standard NF S70-003-1 – Works operation nearby engineering networks – Part 1 prevention and consequences of injuries.
- The technical guide “Guide d’application de la réglementation relative aux travaux à proximité des réseaux” (Guide to the application of the regulations on work near networks).
- As required in French Legislation, anyone involved in the planning, execution, and supervision of works in the vicinity of networks shall have a dedicated authorisation to intervene in the vicinity of networks (AIPR - Authorisation d’Intervention à Proximité des Réseau) issued by their employer.
- Ensure that a detection of all buried networks on the whole excavated area closer than 1.5m of the existing networks has been carried out and provide the layout of the detected networks (native file), with AIPR-classification A.
- Provide an excavation drawing based on the last version of the Worksite Coordination Organization Drawing - Network [14], including cross-sections for every interface with all buried networks.

- When an excavation permit has been requested, a site visit to the work location shall take place.
 - Mandatory attendance at the proposed excavation location to discuss the requirements are the following: Permit Requestor, Area Coordinator.
 - Optional attendance will be drawn from members of the Verification Group that have identified potential LOTO requirements.

10.6. Pressure test

Pressure test PTW is used for Proof Pressure Test.

The **Proof pressure test** is one at pressure above PS. PS - the maximum pressure for which the equipment is designed, as specified by the manufacturer, and defined at a location specified by him, being either the connection of protective and/or limiting devices, or the top of equipment or, if not appropriate, any point specified [27].

In that case ***Pressure test PTW*** shall be accompanied with required documents:

- *Exclusion zone drawing*
- *Test pack*
- *Method statement*
- *Approved procedure*

When this Proof Pressure Test is successfully done and the safety devices re-installed, any further tests (which do not fall under the definition of proof pressure test, for example Leak Test) even with pressure, are out of scope of ***Pressure Test PTW***. Additionally, Pressure Test PTW can be used for Hydro cutting and hydro blasting (for example, tube cleaning), in this case the PTW package shall be equal to Cold Work PTW.

10.7. Commissioning

The main objective of commissioning PTW is to ensure that commissioning activities are carried out in a planned and effective way.

As there are networks and systems set across the ITER Site, it is important that when using this permit for commissioning activities, the affected System ROs are included in the communications during the review stage of a permit. Therefore, when creating the permit, the Permit Requestor shall consider the impact of the permit to ensure that the effect of the activity is known and more importantly addressed to ensure that the work is managed safely. This can be done by:

- Selecting one of the affected networks that are in the ePTW during PTW request.
- Communication at the Daily and Weekly co-ordination meetings.
- Via emails, (can be attached to the permit)

10.8. Maintenance

The Maintenance Permit is to be used for the removal, repair, or servicing of equipment for routine and non-routine activities.

This permit is to be used if the type or scope of work does not fall under Breaking Containment definition.

10.9. Work With Electrical Risk

The available PTW Activity Types are listed below, largely taken from NF C18-510, and the correct Activity Type should be chosen after analysing the work and risks along with the EOS of

the electrical network or installation posing the risk. In all cases, working without energy present shall be the preferred way to work. If energy must be left present, a justification should be provided explaining why dead work is not technically feasible.

- **Dead Work**

- This is work on or inspection of de-energized HV or LV electrical equipment, where removal of energy is necessary to work safely.
- Safety is maintained by assuring lack of energy by isolation, separation of network, or LOTO.

- **Live Work**

- This is not allowed at IO, as per Electrical safety procedure [29] with one exception for batteries, and it is subject to Live Electrical Work Authorization Template [30].
- For information, it is high-risk work on energized bare live parts and should always be avoided unless other options are not technically feasible.

- **Simple Vicinity**

- This involves proximity to bare live parts via access to or work within energized electrical areas like substations or power supply rooms, or via inspections of energized equipment like cubicles.
- Safety is maintained by keeping a certain distance from energized parts (distance will vary by voltage); Electrical Safety Procedure [29] section 9 provides guidance on these distances, and ultimately NF C18-510 is the authority.

- **Reinforced Vicinity Work**

- Similar to Simple Vicinity Work but performed closer to bare live parts.
- Safety is maintained with stricter distance requirements, dependent on voltage level; Electrical Safety Procedure [29] section 9 provides guidance on these distances, and ultimately NF C18-510 is the authority.

- **Specific Work**

- Covers all other work with electrical risk that meets this combination:
 - not falling under the previous categories,
 - where safety needs to be managed by a PTW to meet the Objectives of Sec 6 and the General Principles of Sec 8, and
 - where work without a PTW as per sec 7.1 cannot be performed.
- This could include but isn't limited to:
 - high current injection at LV along with general LV testing and measurement; some inspections.
 - any other activity if the EOS or Electrical Isolation Supervisor deems a PTW necessary to manage risk.
 - 1st Energization or Commissioning could be classified as specific work; however, these types of work have their own PTWs.

- **HV Testing**

- Includes but isn't limited to: dielectric, voltage withstand, or insulation resistance tests and measurements, at voltages above 1kVAC or 1.5kVDC.

This is separated for ease of PTW classification and risk management, even if it could be categorized under many other activity types depending on the test configuration.

In many of these examples, one or more NFC Forms may be required for the permit holder to manage the potential risks, provided by the EOS or Electrical Isolation Supervisor of the electrical network or installation posing the risk.

The types of NFC Forms that could be used are the following:

- First step LOTO Certificate (HV and/or LV)
- One step LOTO Certificate (HV and/or LV)
- Authorization of Live Working
- Authorization for Work / LV Intervention / Access
- Isolation Certificate for Intervention around Insulated Cables
- Notice of Requisition
- HV Separation Certificate
- Third Party Certificate

10.10. Lifting

The Lifting permit is to be used to ensure safe lifting operations on the ITER Site.

Lifting operations are categorised into 2 types:

- Routine Lifts: These are the lifts requiring no detailed engineering plan and which were subject to a generic assessment (e.g. PPSPS).
- Critical Lift: These are the lifts with specific criteria detailed in the Appendix A - Lifting Operation Categorisation

A permit shall be issued for each and any lifting operation.

- For Routine Lift, an Examination of suitability (Examen d'adequation), lifting study or equivalent shall be annexed to a generic permit. Lifting study can be attached in the field to the printed PTW, not mandatory for ePTW electronic attachment.
- For Critical Lift, a lift plan or equivalent shall be annexed to a specific permit.

The requirements for the use of these are noted in Lifting Instruction, [8]

10.11. 1st Energization

Energisation is the process of bringing an equipment to a “live” state; either by feeding it with electricity for an electrical equipment through the permanent power supply or filling/pressurizing a pipework with its operating inventory. First energisation concerns each equipment/group of equipment energised for the first time or following a modification on the configuration after a first energization. Below process shall then be followed. Once equipment starts to be energized in an area, work permit submission process needs to change from a mainly area-based coactivity check to area and system based check, for works on energized equipment. In order that the process of equipment installation and energisation can be carried out in a safe and controlled manner, the following steps are mandatory:

- Contractors requesting to energise equipment will be requested to provide up to date drawings with the permit request. This shall be done 7 days before the planned energisation to ensure latest information are available to the PTW Verifier. No permits will be delivered without this drawing.
- Contractor shall ensure that all equipment potentially subject to isolation can be physically isolated.
- For Electrical permits: Legal Inspection of connections and equipment to be energised, with a final report showing no blocking observations, or an explanatory note from or signed off on by the DG's delegate for electrical safety

- Contractor shall select the hazard “1st Energisation” in ePTW, this will trigger additional control requiring the contractor.
- The list of the equipment concerned shall be included in the PTW Work Description text and selected from the system’s equipment list.
- Contractor shall identify all boundaries downstream the concerned equipment and ensure all corresponding Isolations are in place.
- PTW Verifier to align with Area coordinator to ensure all Contractors are reminded of the new hazard in this area and ensure extra caution is taken, this shall be highlighted in all weekly/monthly coordination meetings records.

Any modification to configuration shall be subject to PTW and clearly reported to System RO (Modification on Equipment that had been energized) as this would require a new legal inspection. In fact, this shall be treated the same way as a first Energisation. Any damage to equipment shall be directly reported to System RO / EOS and required LOTO put in place to ensure safe work zone.

Modification for temporary configuration (power supply via temporary source / Blind flange installation-removal / Valve internal removal / Bypass installation...) shall be fully traced by the entity in charge of the concerned equipment operation, declared to System RO / EOS (via Sanction to Test) and a list of such modifications shall be made available upon request. The above requirements could be adapted / partially waived upon decision of the entity coordinating the concerned zone in case a Contractor works alone without any coactivity nor interface with others.

To be attached to the permit, (Mandatory):

- Method Statement
- Approved Procedure
- Functional reference (IO Equipment tag number or Temporary tag if applicable).
- P&ID or Single line diagram reference
- Completed the 1st Energisation Template / Check List – Pre-requisites prior Energization [31].

Permit Detail

- Equipment type, (Switchgear /Cubicle /Switch /Circuit Breaker)
- Mother tag (if any)
- From (electrical equipment tag)
- To (electrical equipment tag)
- Input and Affected Outputs
- Agreed timing
- Energizing Category: Electrical or Process Pipework / Vessel

With regards to installation of electrical equipment, the permit sequence of installation and energisation should be as follows:

1. Equipment/cubicle installation (with no electrical connections of any kind)
2. Cable connection (upstream LOTO certificate attached) (For Electrical permits: Legal Inspection of connections and equipment to be energised)
3. Initial Energisation, the Legal Inspection Report and downstream LOTO certificates are pre-requisites (Upstream LOTO is removed). (Upon successful Energisation, the permit can be closed out however all the LOTO on downstream equipment shall remain in place

(If energisation not successful, Upstream LOTO to be put back in place as well).

10.12. Low risk / Long term / Low co-activity

Low risk / long term / low co-activity Permit can be selected in 3 main cases:

- Repeated activity of the same scope during long period.
- Activity with low risk which goes beyond the criteria for the activity that can be performed without PTW or need additional level of co-ordination.
- Activity by single contractor in the area without co-activity with other teams and contractors.

This Permit can be valid for 60 days without need for daily re-activation and re-issue. However, it can be suspended by Permit Issuer at any day. In this case notification to Permit Holder from Permit Issuer is mandatory.

Use of this type of PTW will be subject to the Entity PTW Verifiers approval, based on risk assessment. The Verifiers shall apply particularly scrutiny when processing this PTW. In addition, a weekly review of the risk shall be carried out to confirm validity by the Area Co-ordinator at the weekly meeting.

Low Risk Long Term permits are never used for activities such as:

- Confined Space Entry
- Work at height without guardrail or collective protection
- Breaking confinement
- Any works in zones with high coactivity and/or on a wide panel of type of works

10.13. Radiography

All RT Permit shall be raised with the Area authorization as CMA only, regardless of the zone, CMA RT team shall review them all and they shall always be Authorized by IO RPA, then issued by CMA (RT Team). To perform radiographic tests (in addition to all requirements of [3] to be fully met) two dedicated work permits are required as defined below:

10.13.1. Radiography campaign permit

A RT campaign permit shall be approved at least 1 month before the start of the campaign (However deviations could be approved following [5]), one permit per Contractor and per area (usually one building per area, per level per building in TKC, to be discussed with RT Coordinator and IO RPA). It should contain at least the following information (in case of conflict with T2GPED requirement [3], T2GPED prevails)

- PPSPS for both Contractor requesting RT and RT Company
- Description of used equipment (type of source, serial numbers, additional information);
- Description of the global RT Campaign characteristics, is systematically prepared for each different areas (e.g. building, Tokamak level...)
- RT Company procedure for the dose rate definition and limitation
- Generic planning on the RT tests that are expected
- Exclusion zone forecast
- Preliminary list of welds to be shot (This planning may in detail be subject to change in the execution) with ISO drawings mark-up if possible.

10.13.2. Radiography Permit (RT permit)

The RT Permit has to be formally associated to a RT Campaign Permit validated prior creation of any Radiography Permit (via cross referencing adding: “RP Campaign reference: XXX” at the very start of work description section). RT Permit is created minimum 7 days (or more) in advance (However deviations could be approved following [5]) and normally shall be systematically in the authorised state (waiting for authorisation) 1 day before the RT shift. All RT permits shall be issued with a clear reference (special care to be taken to avoid mismatch) to the RT Campaign permit for each planned shift (only one permit per shift). The maximum duration of RT permit is one day with specific opening hours 22h30 to 5h30 (for night shifts), requirements in [3] to be followed in addition to detailed coordination in case of daytime radiographic testing. RT Campaign permits shall always be fully aligned with planning sent to RT coordination team [3] refers (in particular regarding the forecasted RT schedule submission 4 weeks in advance).

Such specific permit shall include all the details of the intervention:

- RT Campaign Permit approved.
- Works description (e.g. provide details about the welds environment, particular means required, etc)
- Date
- Exact location
- List of welds (Comprising the list of potential welds to be shot / Number of welds actually shot can be reduced up to 48h before the shot [3] refers)
- ISO drawing mark-up if possible (or equivalent)
- Source and equipment used
- Detailed Exclusion zone

Note: If the process described above is respected and the RT intervention file is missing radiographic testing will not be authorised.

The potential hazards in performing radiography or in working around radioactivity are inadvertent exposure of personnel to radiation from:

- Sealed sources associated with well logging,
- Non destructive testing (NDT), or process instrumentation
- X-ray machines
- Loss of radiation source containment
- Loss of radiation source

Use of Low Dose X-ray devices

Any use of XRF device on ITER platform, [12] shall be managed using a Cold Work permit. In addition to the mandatory attachments for a permit, the following is required:

- Employer or delegate authorisation certificate (stating operator can use the XRF devices) to be attached to the permit
- Specific information that shall be noted on the permit shall be:
- The dates of the tests
- The approximate hours of the test
- The location of the tests
- A short description of the items to be analysed

Specific workflow for RT permit:

Template collecting RT planning and exclusion areas for the coming week is created by RT team and reviewed at the beginning of the week by Verification Group.

Verification Group loop is hence not mandatory in eVision for daily RT Permits.

If an unplanned RT is created during the week, then a Verification Group loop is necessary in eVision.

11. Specific conditions

11.1. Works or Activities under IO BFO as Area Authorization

Works impacting networks under the custody of BSM/BFO Project shall follow the following Working Instructions:

- Buildings Operator requirements on works requests on the ITER Site – 2LMBAC [10]
- ITER water supply and drainage networks - Requirements related to Connections, Modifications and use – 2KNN2T [11]

11.1.1. Depending on the type of works, additional permits or arrangements outside the PTW system may be required:

- Test Condition Arrangement, refer to the ITER Site Operators instruction [10], [11], [16].
- Operating Delegation Arrangement, refer to the ITER Site Operators instructions [10], [11], [16].

In case of excavation permit request, as the works will have an impact on the Operational-Drawing – Common component – Global Layout [14], the requester shall:

- Create a dedicated JIRA FMTS-ticket:
 - Methods request,
 - Activity L1 “Internal FMM request”,
 - Activity L2 “Methods request”,
 - Activity L3 “Works related documentation request”
- Before excavation:
 - Proceed with a detection of all buried networks on the whole excavated area closer than 1.5m of the existing networks and provide the layout of the detected networks (native file), with AIPR-classification A.
 - Provide excavation drawing:
 - Based on the last version of the Global ITER Site Synthesis Drawing [14]
 - Including cross-sections for every interface with all buried networks
 - Based on the above-mentioned detection layout;
- After excavation and through the ticket instruction, provide the as-built layout of the implemented and detected networks (native file), with AIPR-classification A (maximum location uncertainty being less than or equal to 40cm), as defined in the 2 above listed orders (15-Feb-2012) [15].

11.1.2. When the works have been completed (**and that a complete as-built has been transmitted in the case of construction works**), the PTW Requestor shall come back to the IO/BFO PTW Coordinator Building (B95) to sign manually the PTW in order to formally notify the closure of it. As for the PTW issuance, an appointment shall be scheduled with IO/BFO PTW Coordinator.

A PTW can be closed only if:

- All the required controls and inspections mentioned in the PTW request have been performed and transmitted to the PTW Coordinator.
- The complete as-built has been transmitted by the IO Technical Responsible Officer.
- The impacted ITER Site Operators have closed all required associated permits or arrangements detailed in 6.3.
- The PTW Coordinator will then close the PTW and archive the original documents

11.2. Works on parking lots in the vicinity of photovoltaic panels

11.2.1. Photovoltaic panels operated by PT5 (parking lot C2)

According to [ITER_D_5TEM9M - LGA-2021-C-71 Convention d'accès et d'intervention sur le site ITER -PT5](#), any work that may harm the integrity of the solar panels structures and their maintenance conditions located in parking area C2 is subject to a prior authorization from PT5.

The work authorization shall be sent at least 5 working days in advance to IO BFO PTW Officer, which will apply dedicated workflow for those areas.

Urgent and unforeseeable works may be carried out without the agreement of PT5, provided that the specific safety instructions applicable to such works are observed. In these cases, a request for work authorization is nevertheless sent to PT5 as soon as possible.

11.2.2. Photovoltaic panels operated by DAJA160 (other parking lots)

According to [ITER_D_87MZGZ - LGA-2022-A-116 AGREEMENT ON ACCESS AND INTERVENTION ON THE ITER SITE BETWEEN THE ITER ORGANIZATION AND DAJA 160](#), any work that may harm the integrity of the solar panels structures and their maintenance conditions located in parking areas A1, A2, A3, B1, B2, B4, B6, B8 and C0 is subject to a prior authorization from DAJA160 (including substations and electrical interconnexions).

The work authorization shall be sent at least 5 working days in advance to IO BFO PTW Officer, which will apply dedicated workflow for those areas.

Urgent and unforeseeable works may be carried out without the agreement of DAJA 160, provided that the specific safety instructions applicable to such works are observed. In these cases, a request for work authorization is nevertheless sent to DAJA 160 as soon as possible.

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11.2.3.

12. Backup system in case of ePTW failure

The normal procedure is that each working day the Permit Print outs are retained until the next live permit print out is available and in the event that the ePTW application is not available, the following will apply:

- Short Term – less than 1 day
 - Paper permit print out from the previous working day is “Wet Ink” signed by the Permit Issuer before work commences.
- Long Term – Greater than 1 day

The back-up paper-based system will be utilised.