PSSP Category 5

September 2024

Participant Guide

BC Hydro
Power smart

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Course introduction

Power System Safety Protection (PSSP) is defined as the required constraints applied to the power system to provide worker protection from power system hazards during prescribed work. All personnel required to access or work on the power system must be authorized.

There are 5 categories of PSSP authorization based on the hazards and complexity of the associated work as follows:

Category 2

- Authorization limited to access to the power system (e.g. entering stations, work sites etc.).

Category 3 (Prerequisite Category 2)

- Authorization limited to work on the power system that does not require a Safety Protection Guarantee except a Protection Extension on the power system under the direction of another crew member who has received a Safety Protection Guarantee, and for some types of work requiring an Assurance of No Reclose Permit.

Category 4 (Prerequisite Category 2 and 3)

- Authorization limited to receiving an Assurance of No Reclose Permit for tree trimming work by qualified trimmer/climbers.

Category 5 (Prerequisite Category 2 and 3)

- Authorization limited to switching Level I - IV equipment, receiving Safety Protection Guarantees, Live Line Permits and authorized to isolate level V equipment to take Self Protection.

Category 6 (Minimum prerequisite Category 2, 3, and 5)

- Authorization to receive operating authority, to perform PIC duties, and to issue Safety Protection Guarantees, Live Line Permits and Assurance of No Reclose Permits.

Category 5 Authorization Testing and Training Requirements

The training and testing requirements for Category 5 workers is the successful completion of Modules 2, 3 and 5 System Component training, Functional Component training and local information for all areas where the worker will be working.

Authorized workers must review the system component of the appropriate PSSP Categories every 2 years.

Only personnel on the PSSP Authorization list may access, switch level 5 or work on the power system without direct and continuous supervision. Authorization to switch level 1 – IV equipment can be granted to an authorized Cat 5 worker after additional training.

In addition to this training, you are also required to have:

- A personal copy of the SPR at all times
- Access to the PSSP
- Access to Operating and applicable Functional Component Operating Orders.

Course Objectives

Participants will receive PSSP Category 5 authorization after successful completion of this course and once sign-off from an authorizing Manager has been received. Participants will be able to:

- Receive Safety Protection Guarantees
- Receive Live Line Permits
- Issue Protection Extensions, and
- Isolate level V equipment for Self Protection.

References

Safety Practice Regulations (SPR) sections 400, 500 and 600

Power System Safety Protection (PSSP) System Operating Order 1T-12

WorkSafeBC Occupational Health and Safety Regulations, section 4.21, 10, 19.18-19.29.

Regulations

Safety Practice Regulations (SPR)

The Safety Practice Regulations (SPR), rule and govern all work done by or for BC Hydro, and all access to the Power System. Every worker shall observe all rules that apply to their particular job and worksite.

A thorough knowledge of applicable sections of the SPR is required prior to obtaining Category 5 Authorization. These sections will be identified throughout this course and presentation.

Power System Safety Protection (PSSP) System Operating Order 1T-12

Power System Safety Protection (PSSP) is a System Operating Order (S.O.O.O. 1T-12) and is defined as the constraints required to be applied to the power system to provide workers protection from power system hazards during prescribed work.

A thorough knowledge of applicable sections of the PSSP is required prior to obtaining Category 5 Authorization. These sections will be identified throughout this course and presentation.

Relationship between the SPR and PSSP

The SPR is a book of rules and instructions which govern work done on the power system. PSSP is the System Operating Order which defines how the SPRs are applied consistently throughout the power system.

The SPR and the PSSP govern all work done by, or for BC Hydro on its power system.

The SPR's are the foundational rules and the PSSP are the application of these rules.

Workers receiving Protection Extensions or working on the power system must be familiar with appropriate sections of the SPR and applicable S.O.O.s.

WorkSafeBC Occupational Health and Safety Regulations

A general knowledge of OHSR is required with emphasis on the following:

- Working Alone or in Isolation (4.21)
- De-energization and Lockout (10)
- Working on De-Energized High Voltage Power Systems (19.18 – 19.23)
- Working Close to Energized High Voltage Equipment and Conductors (19.24 – 19.29)

Reference

WorkSafeBC Occupational Health and Safety Regulations

Searchable OHS Regulation & related materials - WorkSafeBC

Operating Orders

All workers authorized to Category 5 must be familiar with all operating orders and emergency procedures for their area of operation.

Reference

Operating Orders can be accessed by going to the Site Information System (SIS).

http://w3ecm/sis/regions.html?GuidedSearchType=Customer%20Sites

Operating Authority and Responsibility

The BC Hydro Control Centre is accountable for the performance of all operational activities on the power system.

The power system is controlled through the delegation of Operating Authority and Responsibility in a hierarchical arrangement that includes:

- The Control Centre located in the:
  - Fraser Valley Office (FVO), and
  - Southern Interior Office (SIO)
- Certain manned generating stations, such as the Gordon M Shrum (GMS) generating station.

Important

The BC Hydro Control Centre has ultimate responsibility for monitoring, controlling and operating the power system, and may transfer Operating Authority to authorized on-site workers for specific portions of the power system.

There are six elements of the control hierarchy that directly relate to the work you do, your authorization and the safety procedures that ensure that you and your crew can work safely.

These are:

- Equipment Levels
- Equipment On and Off the Power System
- Operating Authority
- Operating Responsibility
- Switching Authorization
- Guarantee of Isolation.

Reference

SPR 500, rule 501

Equipment Levels

On the Power System, the BC Hydro Control Centre has a requirement to classify and operate the power system as five different equipment levels. This classification system helps us identify who has the right and the responsibility to operate different equipment on the power system. As a Category 5 worker, you need to remember:

- Level I-IV Equipment is operated and switched under the direction of the PIC, and
- Level V equipment can be switched by a Category 5 worker if system risk is low.

Reference

S.O.O. 1T-12I 4.0 Self Protection

You'll Learn more about the specifics of switching later in the lesson.

Differentiating Between Levels

Differentiating between Levels I – IV and Level V equipment is important because there are different switching rules for each.

Level I- IV

Level I – IV equipment is all power system equipment which is either shown or listed on station operating one line diagrams and transmission equipment which is under the direct operating responsibility of a central control facility.

The following equipment is defined as level I 0 IV:

- Stations/Transmission – cable pothead, circuit breakers, transformers, disconnects
- Distribution – cable pothead, risers, metal clad switch gear, disconnects

Important

Self Protection may not be taken on level I – IV equipment

See S.O.O. 1T-12E

Level V

The identification of level V equipment will be done through direct observation, or by reference to accurate drawings, or through consultation with a reliable source that has access to accurate information.

Important

A reliable source is normally the PIC, the local BC Hydro manager or a PSSP authorized worker. Prior to operating level V equipment, the worker must also assess system risk.

Level V equipment is that which may be isolated using Self Protection and is considered to be all the rest of the equipment that is ON the power system but not listed or shown on the one-line diagram.

The following equipment is defined as level V

- Transmission – Power system equipment associated with any transmission lines or cables but not directly connected to the conductors, (E.G., cable pumping plants).
- Stations – Power system equipment not shown or listed on the station operating one-line diagrams, (e.g. dc supplies, VT secondaries).
- Distribution – Power system distribution equipment of any voltage outside stations, where looped or multiple feeds do not exist. A single isolation point must establish positive safety protection of a line or cable. An example is a distribution lateral.

Reference

PSSP page 13

Equipment On and Off the Power System

It is also important to identify whether equipment is ON or OFF the power system, as this determines what type of isolation protection you will use on the job.

Equipment ON the Power System

If the equipment is ON the Power System, such as all Level I – V equipment, Safety Protection Guarantees and their tags ensure that the lines are not energized while work is in progress.

Equipment ON the power system is defined by system and distribution operating orders, station and circuit one-line diagrams.

Reference

PSSP 1T-12B Power System Definition

Equipment OFF the Power System

Equipment that is OFF the Power System must be isolated using BC Hydro's OSH Standards 204 Personal Lockout procedures.

Reference

PSSP 1T-12B Power System Components

OSH Standard 204

Equipment OFF the power system includes:

- Transmission – Lighting and electrical appliances in a separate building such as an administration building at a site, and equipment belonging to bulk customers served at 60kV or more such as a pulp mill.
- Distribution – Bulk customer who receive supply below 60 kV such as a large office tower or Shopping Centre.

Operating Responsibility

Operating Responsibility: The responsibility for the operation and reliability of an assigned portion of the power system.

Who has Operating Responsibility?

The BC Hydro Control Centre Operator has the Operating Responsibility to monitor, control and direct the operation of the power system including integrated BC Hydro generation facilities.

The PIC has the Operating Responsibility, or the right, to operate all of the equipment on the portion of the power systems that has been assigned to them.

Operating Responsibility can also be delegated to one of the following:

- Project Controller
- Qualified onsite personnel
- GMS Operator
- Field Operations for Non-Integrated Area (NIA)

What does a person with Operating Responsibility do?

For example a person with Operating Responsibility would:

- Monitor, control and direct the operation of the power system
- Operate Transmission and Distribution equipment
- Adjust voltages on the system
- Start and stop generators

Operating Authority

In a lock-out system, worker safety is guaranteed by locking out sources of hazardous energy. In a tag-out system, we rely on the Control Centre to ensure that equipment is not energized. For the Control Centre to provide this assurance to workers, they must have absolute control over when equipment is isolated or energized (i.e., operated). No other worker can operate power system equipment unless being directed to do so.

We call this control over the power system, “operating authority”.

Operating authority is defined as the right to control an assigned portion of the power system to establish the conditions required for and to issue Safety Protection Guarantees, Live Line Permits and Assurance of No Reclose Permits (ANRP).

Operating authority will be assigned for all power system equipment. PICs will be responsible for switching and isolation procedures. PICs will maintain rigorous control over those portions of the power system for which they have operating authority.

Reference

S.O.O. 1T-12H Operating Authority

PIC (Person in Charge)

The PIC (Person in Charge) has the overall Operating Responsibility and Authority for the portion of the power system that is assigned to them. The PIC has the authority to issue clearances, Test & Work, Live Line Permits and ANRPs. The PIC also arranges Guarantees of Isolation with other PICs when work straddles the boundaries.

Important

The PIC is the only person who can issue SPGs, Live Line Permits, ANRPs and Guarantees of Isolation for their area.

The role of PIC can only be assigned to workers who have been authorized to Category6.

On a construction project, the PIC is referred to as the Project Controller (refer to SPR 503)

Switching

Correct switching procedures are fundamental to maintaining a safe operating environment for workers, customers and the power system.

Any switching error, even a small one, could have implications to worker safety, customer safety and system reliability.

Who Performs Switching?

The two largest groups of Category 5 workers who are Authorized to Switch are PLTs who switch in the field, and Electricians in stations,

Switching procedures are directed by the PIC, and are outlined in the SPR: Section 500 rules 508 and 509, Switching.

Reference

SPR Section 500, rules 508 and 509

O.O. IT-02F Switching Procedures, Designated Isolation Point and Equipment Not Ready for Service

Switching Authorization

Important

Only a manager can determine and assign Switching Authorization to a worker. This occurs when the manager is satisfied that the worker is qualified and has been granted authorization to a minimum of Category 5 from an authorized manager. Your Switching Authorization is recorded in the PSSP/WPP Manager database.

To be considered qualified by an Authorizing Manager, a worker must first demonstrate satisfactory performance in reference to:

- Training and Experience
- Education
- Personal competency
- Physical ability
- Familiarity with riles, procedures, equipment, and dangers involved in the work and/or operation

"Qualified through training and experience and authorized by your manager"

Important

If you have Authorization to Switch from your manager, you can request switching instructions from the PIC to isolate for Clearances and Test and Work Permits.

If you do not have authorization, you must make arrangements for the switching to be done for you when you request a Clearance or Test and Work Permit.

Level I – IV Equipment

The PIC has authorization to switch or direct switching of equipment levels I – IV under their care.

Important

Switching Level I – IV equipment is only permitted under the direction of the PIC since they are ultimately responsible, and have the detailed knowledge about the portion of the power systems assigned to them.

The only exception is in situation of "life and limb".

The PIC can direct an authorized worker to switch. The worker must be identified and recorded in the PSSP/WPP Manager database as being authorized to switch.

Important

A category 5 worker is not automatically authorized to switch Level I – IV equipment. They must qualify for switching authorization and receive authorization from an Authorizing Manager.

Level V Equipment

Authorization to PSSP category 5 is a prerequisite to switch level V equipment and is granted when a person is authorized to category 5. Switching on level V equipment should only be done after assessing system risk.

Important

Although all Category 5 workers are authorized to apply self protection on level V equipment, not all Category 5 workers have the extensive experience and training on the system. The PIC is a good resource to assess system risk.

Switching Procedures

Prior to Switching

The PIC will determine the switching assignment and identify the sequence of operations.

The field worker will verify the correct devices by checking the designation in the switching order against the field equipment.

Logging Responsibility

- **Station switching** will be logged by the **field worker** at the station.
- **Field switching** will be logged by the **PIC** at the Control Centre.

Logging at Stations

The following details will be logged:

- Station identification
- Switching order number
- Purpose
- Date and time the order issued and completed

Important

Switching must be completed in exactly the same order as directed. Any changes must be confirmed by the PIC prior to switching.

For switching outside of stations the logging will be done at the Control Centre

Issuing Switching Orders

Verbal Orders

- Verbal switching orders may be issued for up to two devices.
- Repeat back procedures required.

Written Orders

- Written switching orders must be issued for three or more steps.
- Full repeat back required.

Faxed or Electronic Orders

- Faxed or electronic copies of switching orders are required to be positively identified by the PIC and the authorized field worker before issuing to ensure that each party is referring to the same version of the document.
- The field worker is required to verify that all text on the switching order is legible and reasonable before contacting the PIC to receive the switching order.
- Full repeat back of all the steps is not required, however, the authorized/qualified field worker must request clarification if some of the text is not legible or clear.

Full Repeat Back Procedures

Full repeat back (three part communication) will apply to the following components of the switching order issuance:

- The Switching Order number
- Receiving Location
- Name of the PIC issuing the switching order
- Name of authorized/qualified field worker receiving the switching order
- Date and Time of issue
- Purpose
- Number of steps
- Any amended switching steps

Reference

O.O. 1T-02F Switching Procedures, Designation Isolation Point and Equipment Not Ready for Service

S.O.O. 1T-12J Section 7.0 Switching Procedures.

System Risk

System risk is the potential impact on the power system created by the isolation of level V equipment. The ability to assess system risk comes from experience and may be listed in the operating orders.

The following are example of system risk and strategies for lowering risk:

- Stations/Transmission – Isolating the air on a 500kV circuit breaker that is in service is high risk. You can lower this risk by contacting the PIC and advising how long the air supply will be off, and requesting that they not operate the circuit breaker for routine switching.

- Distribution – Isolating a lateral that feeds a microwave control site is an example of Level V equipment with high system risk because it has the protection of all the lines on it. To reduce system risk, you can always arrange with the PIC to set up emergency power supply before the line is switched out.

Reference

If you are concerned about the system risk, or not sure if you are qualified to assess system risk, contact the PIC who will give direction and guidance.

Guarantee of Isolation

Guarantee of Isolation (GOI) is an assurance between different operating authorities in neighboring areas such as between two PICs, or between a PIC and a Customer. This assures that the boundary area is isolated and will remain isolated until the GOI is returned.

The GOI is reinforced by Guarantee of Isolation tags that are placed on both the PICS mimic display and on the equipment in the field.

Reminder

Guarantee of Isolation (GOI) is a means of affecting guaranteed isolation between different Operating Authorities.

The following are examples of GOI.

- Transmission – BC Hydro wants to do maintenance on a transmission line but the customer has an infeed to the BC Hydro line. Therefore, the PIC must arrange for the customer to lock open their disconnect switch. Once this has been done BC Hydro will tag GOI and apply system locks to that switch.
- Distribution – BC Hydro requiring isolation from the Independent Power Producer (IPP) for work on the electrical system would require a GOI.
- Stations – During construction work the onsite Project Controller may receive a GOI from the PIC in order to define the boundary between the construction zone and the rest of the power system.

Customer Boundaries

When switching involves isolating at a boundary line of a customer site that boundary line will be defined in a joint operating, the content and format of these joint operating orders are described is System Operating Order 1T-12H Appendix 1 in the PSSP handbook.

Reference

PSSP Handbook, SOO 1T-12H Appendix 1

SPR 501.2

Reminder

If your job requires customer isolation, you will be required to complete the Category 1A and 1B training.

Safety Protection Guarantees

Safety Protection Guarantees (SPG) Requirements for Category 5 Works

As a Category 5 worker, arranging for Safety Protection Guarantees (SPGs) and ensuring that you and your crew are working safely are your responsibility.

While there may be times that your crew compliment consists of workers trained to Category 5, it does not remove your responsibility to ensure and maintain a safe work environment.

Worker Protection Grounding and Blocking, logging and tagging go hand in hand with SPGs and helps you achieve this safe work goal.

Topics that will be covered include:

- Why are SPGs used?
- What are the 3 types of SPGs
- Selecting the right SPG for the job
- Requesting and Returning Clearances and Test and Work permits
- Issuing and Cancelling Protection Extension
- Taking and Cancelling Self-Protection

Why are SPGs used?

BC Hydro developed its own procedures for working ON the power system because the industry standard lockout procedures were not practical for work on the power system.

For example, isolation points that are geographically far apart.

Reference

SPR 600 Isolation and Tag Out

S.O.O. 1T-12 Power System Safety Protection

O.O. 1T-05 Safety Protection Issue Process

Important

S.O.O 1T-12 (PSSP Handbook) is classified by WorkSafeBC as a Supplementary instruction to the OHSR.

Types of Safety Protection Guarantees (SPGs)

There are three types of SPGs:

- Clearances (including Protection Extensions)

- Test and Work Permits

- Self-Protection

All these provide you and your crew with protection from power system electrical hazards as well as workplace, mechanical, and hydraulic hazards. It is your assurance that equipment will remain isolated until you return the Safety Protection Guarantee.

SPG Form

Safety Protection Record Form BC Hydro

■ Clearance ☐ Guarantee of isolation No.: LD2-980494
☐ Test and work ☐ Transfer of operating authority

Station or circuit: MR2 Issued to: David Lambe

For work on: MR2 T1, MR2 1D1, MR2 1D1CB2 MR2 1D1CB3, MR2 25CB11

Purpose: T1 INSP/DOBLE, DS PM, 25CB11 CA, 1D1CB2, 1D1CB3 INP

Isolation points:

① MR2 1D2CB2 ② MR2 1D2CB3 ③ MR2 25D1CB11/25GD1CB11

④ MR2 25D1CB11/25GD1CB11 DC SUPPLY ⑤ MR2 25D3CB11 ⑥ MR2 25D3CB11 DC SUPPLY

⑦ MR2 SS1 Secondaries ⑧ MR2 25VTT1 Secondaries

Gas state switch (open and tag caution): MR2 T1

Information from previous SPG (if applicable)

Previous SPG #:	Worker protection grounding/blocking comments:
Ready for service: ☐ Yes ☐ No	
Phasing required: ☐ Yes ☐ No	

Issued by: Person in charge	Date: May 23/24	Time: 13:21	Isolation points reviewed DZ (initials)

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	Protection extended to	Date	Time	Date returned	Time returned	Worker protection grounding / bonding and/or blocking clear?
1	Vaughn Langley	May 23/24	15:22	May 24/24	10:19	☑
2						☐
3						☐
4						☐
5						☐
6						☐
7						☐
8						☐

☑ All workers are clear of the conductors and equipment and have been warned to stay clear

Worker protection grounding/blocking clear?		Notes/location:
☑ Yes	☐ No	

Ready for service?		Notes:
☑ Yes	☐ No	

Phasing required?		Notes:
☐ Yes	☑ No	

Returned to: Person in charge	Date: May 24/24	Time: 14:14

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Clearances

Clearances are the most commonly used SPG, and are used:

- Where multiple SPGs are required for the same work zone;
- To issue Protection Extensions from; or,
- For situations when there is no requirement to conduct hazardous tests.

Clearances are commonly used throughout Transmission and Distribution. Category 5 workers are required to be familiar with SPR rules 603 and 604

A Clearance is a stated assurance that one or both of the following is true:

- A specified conductor or electrical equipment is isolated, and it is safe to apply Worker Protection Grounding/Bonding.
- A Specified piece of mechanical equipment is isolated, and it is safe to apply blocking.

Important

A Clearance shall be issued only by the PIC of the affected line or equipment and only to a worker who is authorized to PSSP category 5 or 6.

A Clearance shall not be issued on a line or equipment on which a Test and Work Permit has been issued.

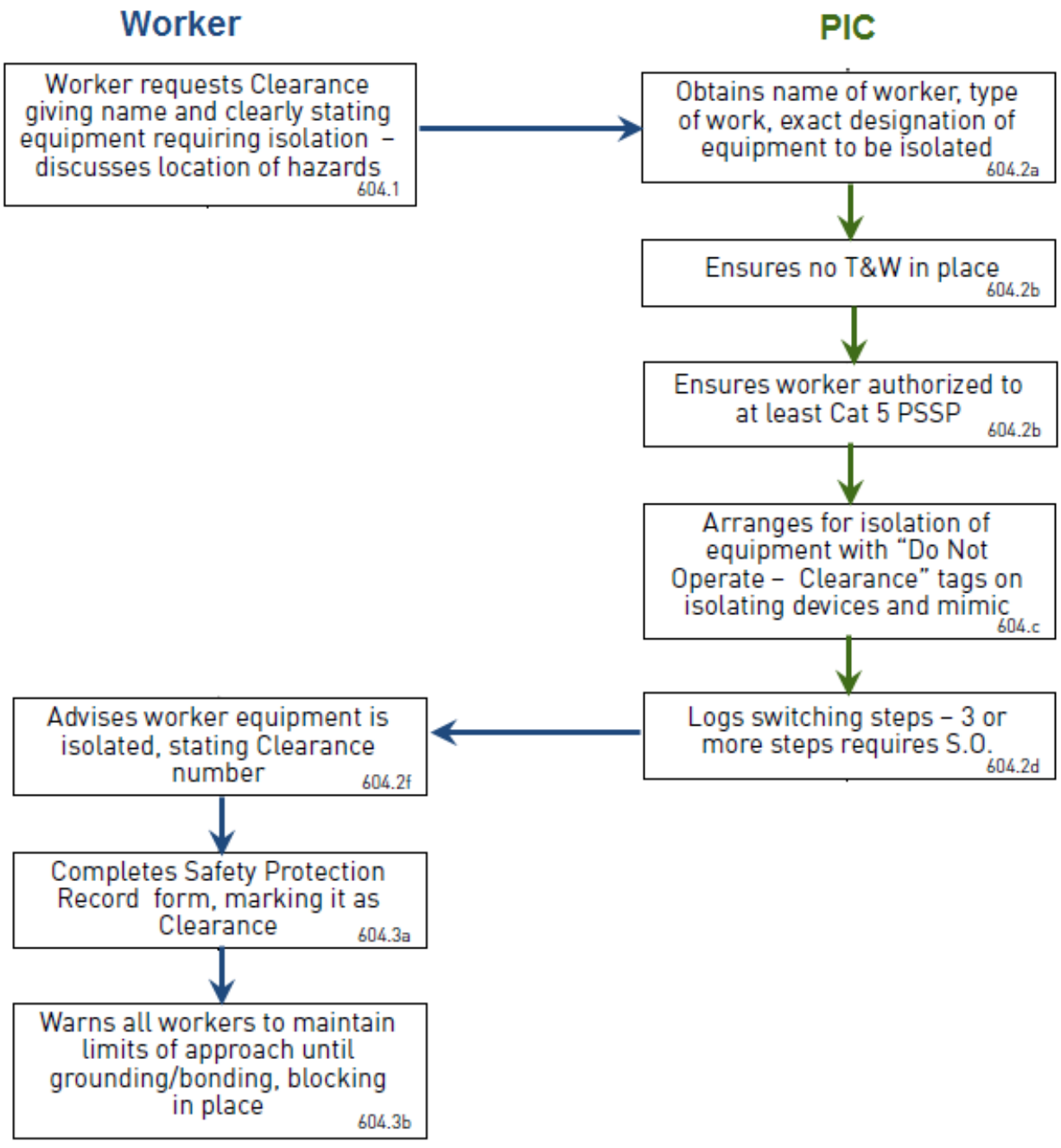
Where more than one crew is required to work on the same line or equipment, an authorized worker on each crew shall obtain a separate Clearance or work under the Protection Extension of an existing Clearance, Multiple Clearances on the same zone or equipment shall have the same isolation points.

A Clearance shall over all work to be done by the Clearance holder's crew. The Clearance holder shall be personally responsible for each worker on their crew. If the Clearance holder leaves the job, personal responsibility ceases, and the authorized worker left in charge shall take out a separate Clearance or work under a Protection Extension on the existing Clearance. In either case, the new Safety Protection Guarantee holder becomes personally responsible for anyone working under their Clearance or Protection Extension.

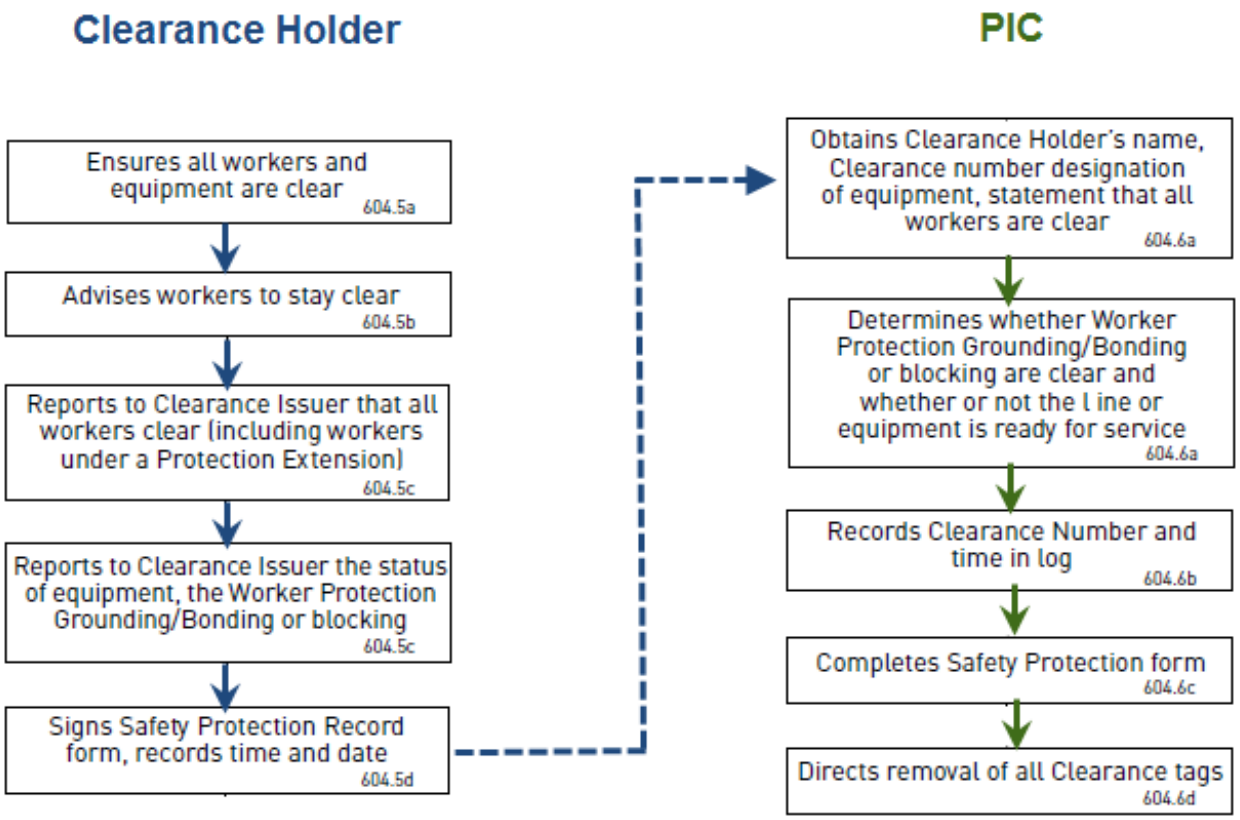
Important

A Clearance shall be returned before a Test and Work Permit is issued.

Clearances – Requesting, Issuing and Receiving



Clearances – Returning a Clearance



Protection Extensions

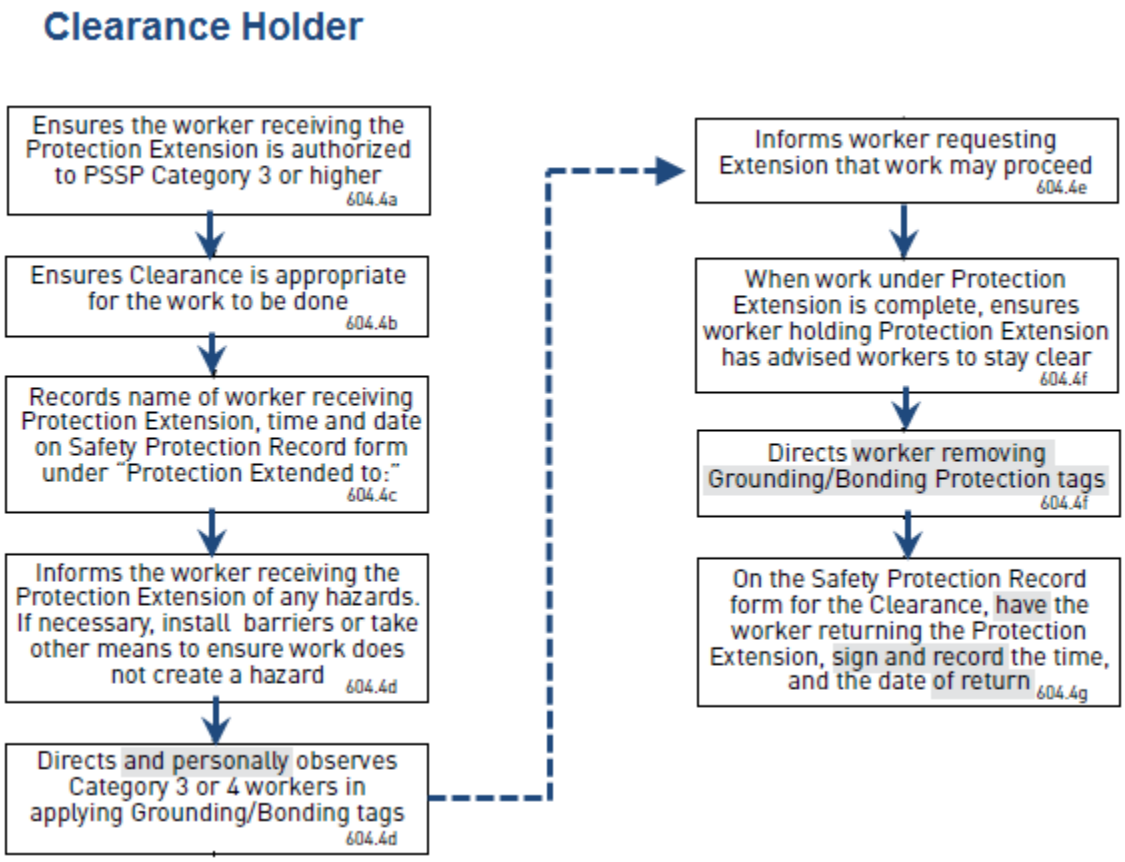
A Protection Extension is an extension of a Clearance from one qualified worker to another. An example would be, if you are leaving the site and want to extend protection to another qualified worker and their crew to allow the job to continue until finished.

The holder of the Protection Extension then becomes responsible for their crew.

Important

You can only issue Protection Extension to workers authorized to Category 3or higher. This ensures that they have the necessary training to continue to work safely.

Protection Extensions – Issuing and Returning



Test and Work Permit

Test and Work (T&W) Permits are used in hazardous test situations and can only be used if:

- There is a requirement to test,
- There are no other SPGs in place, and
- You will not require Protection Extensions

A Test and Work Permit is required when hazardous electrical or mechanical tests (such as Doble testing) are to be conducted on a conductor or electrical or mechanical equipment. During such tests, the isolation points specified in the Test and Work Permit shall not be altered.

Important

Electrical testing from an external test source on low-voltage equipment does not require a Test and Work Permit, but the isolating device and equipment must be under the exclusive and immediate control o the worker at all times while testing the machine or equipment.

A Test and Work Permit is a stated assurance that one or both of the following is true:

- A specified conductor or electrical equipment is isolated, and it is safe to apply Worker Protection Grounding/Bonding and go to work.
- A specified piece of mechanical equipment is isolated, and it is safe to apply blocking and go to work.

Worker Protection Grounding/Bonding and blocking devices shall remain in place except during the tests.

Important

A Test and Work Permit Shall be issued only by the PIC of the affected line or equipment and only to a worker who is authorized to PSSP category 5 or 6.

Not more than one Test and Work Permit shall be issued or be in force on the same conductor or equipment at any one time.

While a Test and Work Permit is in place, a Clearance (including Protection Extensions) or Self Protection shall not be permitted on the same conductor or equipment.

A Test and Work Permit shall cover all work to be done by the Permit holder's crew. The Permit holder shall be personally responsible for each worker on their crew. If the Permit holder leaves the job, they must surrender the Permit, and their personal responsibility ceases. No work shall be done until the authorized worker left in charge receives a separate Test and Work Permit. The new Permit holder becomes personally responsible for anyone working under their Test and Work Permit.

Important

The Test and Work Permit holder is responsible to ensure that sources of energy do not create a hazard to others.

Column 2 LOA must be maintained when grounds have been removed for test purposes.

Before work is resumed on conductors or equipment on which tests have been conducted, the Test and Work Permit holder shall ensure that safe working conditions are established, including the re-establishment of Worker Protection Grounding/Bonding or blocking, and shall advise their crew of any changes in conditions from those that were in effect prior to the tests.

A Test and Work Permit shall be returned only by the worker to whom it was issued. If this is not possible, the matter shall be referred to the Senior Manager in charge of the work (or his or her designate or a higher authority), who shall be responsible for the return of the Test and Work Permit in a safe manner, as governed by circumstances.

Important

To perform overhauls and general maintenance, the correct procedure is to take a Clearance.

If testing is required before putting equipment back in service, the Clearance is returned and a Test and Work Permit is issued for the testing portion of the job.

At other times, only testing is required to complete the work so Test and Work permits can be taken out at the beginning of the job.

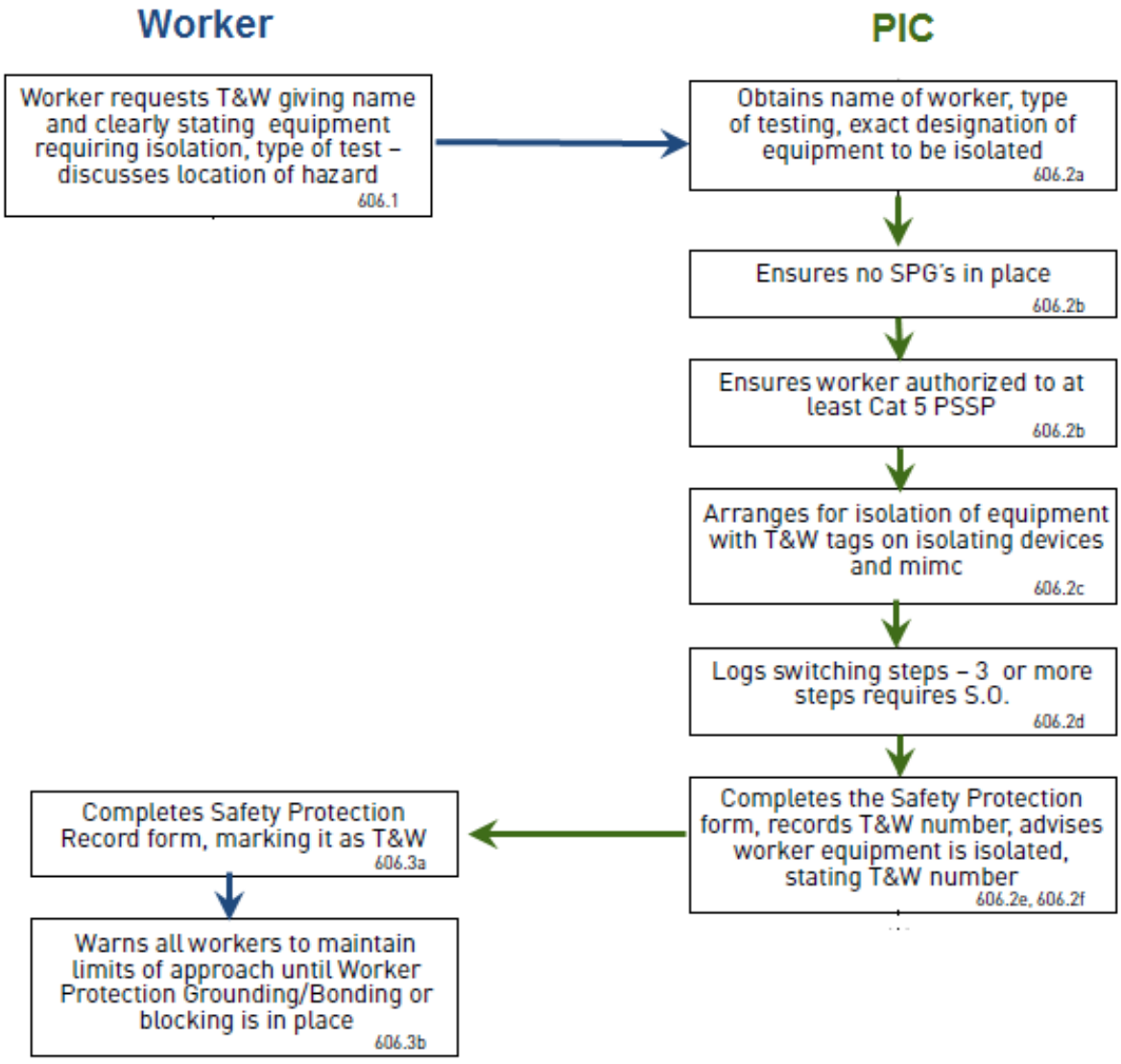
Important

Clearances and Test and Work permits can never be issued at the same time on the same piece of equipment.

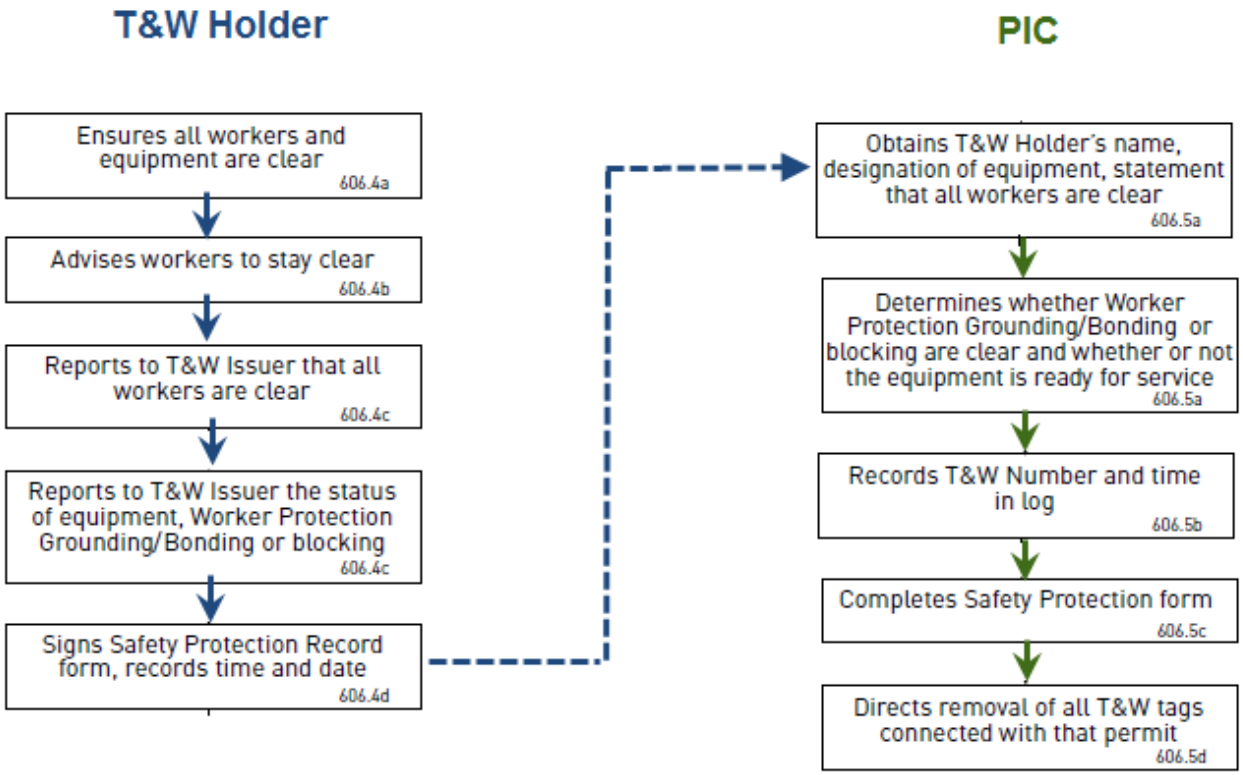
Test and Work permits are routinely used in Transmission and Distribution. The following are Transmission and Distribution examples:

- Transmission - Test and Work Permits are used for cable tests for high potential.
- Distribution - Testing underground feeder cable requires the use of a Test and Work Permit.
- Stations – Doble testing transformer bushings.

Test and Work Permit – Requesting, Issuing and Receiving



Test and Work Permit – Returning a Test & Work Permit



Self Protection

Self Protection is used:

- On Level V equipment
  - Auxiliary sources to equipment
  - Compressors or pumps and associated piping systems
  - Hight-voltage lateral distribution lines (below 60kV)
  - Low-voltage distribution line or equipment
  - Low-voltage station equipment not shown or listed on operating one-line diagrams
- When systems risk has been assessed, or

Self Protection may be applied on high-voltage distribution lines where looped or multiple feeds do not exist and where the isolation of a particular line section can be carried out from a single isolation point.

Important

If you are not comfortable assessing System Risk, contact the PIC who can give you direction and a Clearance or Test and Work Permit if required.

No more than one Self Protection shall be in place on a high-voltage distribution line isolation point.

Self Protection shall be applied by an authorized worker and shall cover the worker's crew. The worker applying the Self Protection shall be personally responsible for each worker allowed to work under the Self Protection. If this worker leaves the job, their personal responsibility ceases and the worker left in charge shall apply a separate Self Protection.

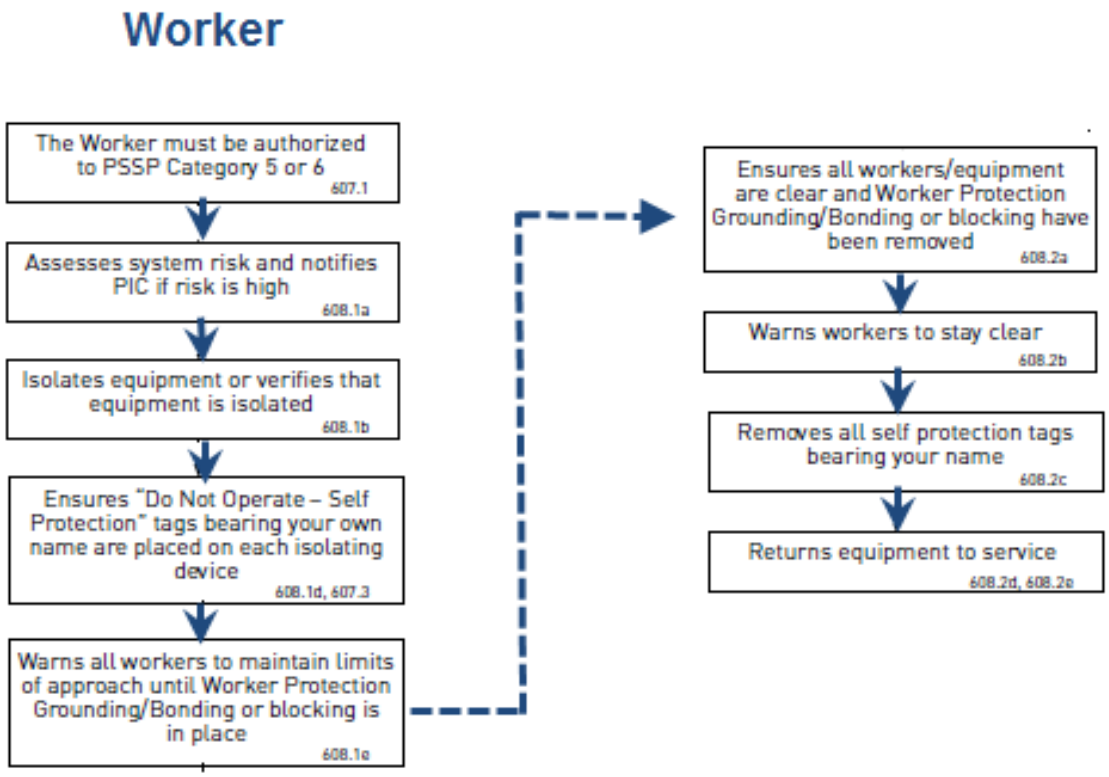
Important

Hazardous testing shall not be permitted under Self Protection

The following are Transmission and Distribution Examples of Self Protection.

- Transmission – Self Protection can be used to work on air supplies, emergency generators, and DC supplies.
- Distribution – Self Protection can be applied to repair Level V equipment such as radial lines requiring isolation from only one point.
- Stations – Self Protection can be used to work on battery banks and chargers.

Self Protection – Isolating, Tagging and Removal



Reference

SPR section 600, rule 608 Self Protection Requirements

Communication

The worker receiving a SPG, including cases in which it is sent electronically (by fax or email), shall verbally repeat back all components of the SPG word-for-word and receive acknowledgement (repeat-back procedure).

When direct communication is lost or is unreliable, it is permissible to relay the communication by phone or radio through a third qualified worker, using the repeat back procedure.

Important

Faxed copies of Safety Protection Guarantees may be utilized when agreed upon by the PIC and the authorized/qualified field worker receiving the SPG. In cases where a faxed SPG is issued, it is required to have full repeat back (i.e. three part communication) of all of the specifics of the issued Safety Protection Guarantee

During the return of the SPG the permit holder is responsible to notify the PIC of the status of the equipment that was worked on while holding the SPG and declare whether it is ready for service and if Worker Protection Grounding/Bonding is removed, as required by the Safety Practice Regulations.

- Not Ready for Service
  - Is defined as a condition which does not permit a device or piece of equipment to be energized, pressurized, or normally operated as designed.
  - The equipment serviceable status is independent of the status of the application of Worker Protection Grounds.
- Worker Protection Grounds Applied
  - Worker Protection Grounds have not been removed from the isolated zone and the zone cannot be energized.
  - A separate Safety Protection Guarantee will be required at a later time to remove the grounds before switching can proceed to energize the zone.
  - This is a more restrictive operational requirement and consequently recorded separately from Not Ready for Service.
- Risers Removed
  - Considered to be a ‘not ready for service’ condition
- Phasing Required
  - Considered to be a ‘not ready for service’ condition

Reference

SPR 600, rule 603, section 12

S.O.O. 1T-06 Section 2.6

Worker Protection Grounding and Blocking for SPGs

If you are working under a Safety Protection Guarantee (SPG), you will need to apply worker protection grounding and blocking to the site once the PIC has issued you an SPG.

Only at this time is it safe to apply worker protection grounding and blocking. Until this time, all lines and equipment must be treated as live.

Important

The specific types of grounding and blocking will vary based on the type of work you are doing, however, the general process for worker protective grounding and blocking is the same for all types of work.

It is very important that you familiarize yourself with these rules as they are key to performing safely.

Reference

SPR section 500 Rules, 512, 513, 514 and 518

Tagging Requirements

Once all Grounding and Blocking is complete review safety grounds and blocks with the crew and apply Grounding and Blocking tags as required.

Assurance of No Reclose Permits (ANRPs)

ANRPs are issued to qualified Category 3, 4 and 5 workers for work in proximity to a live line conductor or equipment. Work that may require an ANRP includes:

- rock scaling
- tree trimming

If your work required ANRPs, take a moment now to review SPR section 400 rule 424 Assurance of NOT Reclose and SPR Section 600 rule 614.

Reference

SPR section 400, rule 424 Assurance of No Reclose

SPR section 600, rule 614 Requirements for Tags

Requesting and Taking Permits

- The steps for requesting and taking an ANRP Permit are as follows:
- Request and receive the permit from the PIC using repeat back procedures
- On a Tailboard form record:
  - equipment,
  - location,
  - PICs name,
  - time permit was issued
- Maintain a means of direct communication with the PIC at all times
- Permits must be retained until the end of the job

Important

If a line trips, the PIC must be able to reach you immediately to investigate the problem before they can take any action.

The lead time for requesting a permit is identified in the Local Operating Orders and usually falls in the range of 1-2 days.

Reference

SPR section 400, rule 424 Live Line Permit

Returning Permits

When returning ANRPs ensure you:

- Return permit to the PIC at the requested time using the repeat back procedures
- Record the return time on the tailboard record.

Important

Permits can only be returned by the permit holder.

Live Line Permits (LLPs)

Live Line Permits are issued to qualified electrical workers, who are also Category 5 workers, for work on a live line.

All qualified electrical workers who work with live lines must be familiar with:

- SPR Section 400:
  - Rule 407 Tree Trimming and Clearing
  - Rile 415 Equipment for Work on Energized Conductors
  - Rule 416 Conditions for Work on Energized Conductors or Equipment
  - Rule 417 Work on Energized Conductors and Equipment – General
  - Rule 420 Barehand Work
- SPR Section 600
  - Rule 614 Requirements for Tags

If your job involves working under Live Line Permits, be sure to review these rules now.

Reference

SPR Section 400 Rule, 403, 407, 415, 416, 417, 420

SPR Section 600 Rule, 614

Requesting and Taking Permits

The steps for requesting and taking LLPs are as follows:

- Request and receive the permit from the PIC using repeat back procedures
- On the Tailboard form record:
  - Equipment,
  - Location,
  - PICS name,
  - Time permit was issued
- Maintain a means of direct communication with the PIC at all times
- Permits must be retained until the end of the job

Important

If a line trips, the PIC must be able to reach you immediately to investigate the problem before they can take any action.

The lead time for requesting a permit is identified in Operating Order 1T-22 Outage Scheduling and usually falls in the range of 1-2 days.

Reference

SPR section 400, rule 424

O.O. 1T-22 Outage Scheduling

Returning Permits

When returning LLPs ensure you:

- Return permit to PIC at the requested time using the repeat back procedures
- Record the return time on the tailboard record.

How to Submit a PSSP/WPP Authorizing Manager Request

- It is important you understand how to submit an authorizing manager request.
- Be sure to pay close attention to the steps and accompanying screenshots.