

Lock Out Tag Out Procedure

Purpose

This procedure is designed to facilitate effective identification and isolation of damaging energy sources prior to work on equipment. The procedure also provides a process to protect equipment and other people due to equipment being used or operated when defective and or unserviceable.

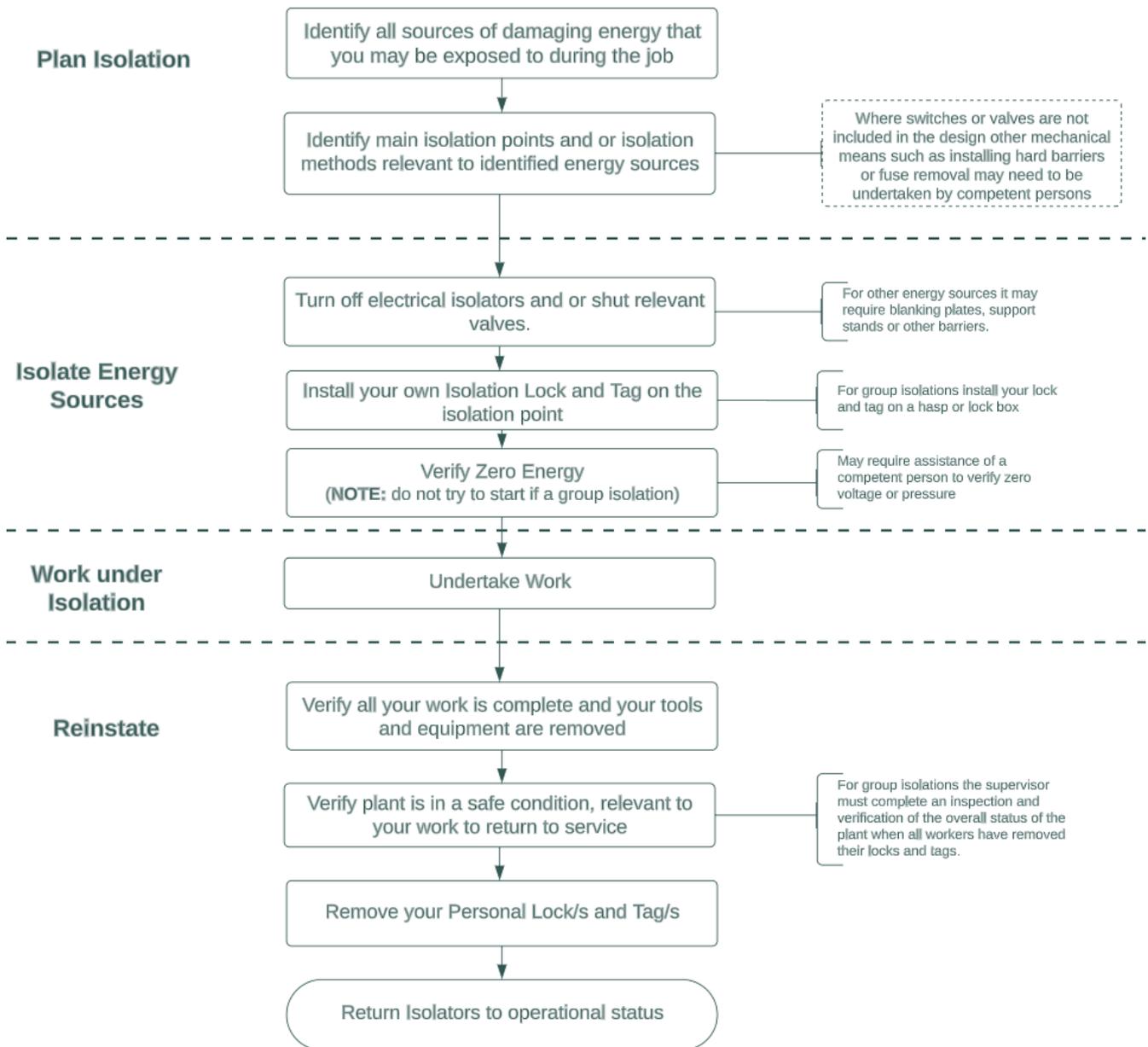
Scope

This Procedure applies to Queensland Hydro for all office and field-based activities. This Procedure also applies to Contractors when working under the Queensland Hydro HS Management System (HSMS) or when directed under Contract.

NOTE: This procedure does not cover high voltage electrical work.

Document ID: HS-PRO-0035		Title: Lock Out Tag Out Procedure		
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Approver:	Greg Tonks	EGM, Corporate	Revision ID:	B

Process Map



Isolation, Lock Out and Tag Out Procedure

Procedure

1 Plan the Isolation

Personnel shall identify the equipment to be worked on and identify the correct isolation point or points for that equipment. Equipment may have multiple sources of energy. If in doubt, refer to the relevant operating manual supplied by the manufacturer or the SWMS and/or speak with the Supervisor. If still in doubt do not proceed with the task or job.

The planning process for isolation shall include:

- Clearly define the scope of work and the equipment that will be included within the work area;
- Systematically identify all potential energy sources;
- Identify an appropriate method of isolation and de-energisation;
- Consider the risks associated with the actual task of performing the isolation when determining the isolation method; and
- Consider residual energy and de-energisation techniques when developing the isolation method.

1.1 Live Work

In some circumstances, it is necessary to work on plant when the sources of energy to it have not been isolated. Work such as adjustment, monitoring, fault tracing, some kinds of maintenance, replacement of components, etc. may require the plant to be energised or operated. Any such work on live plant is not to commence without a Risk Assessment and properly authorised Permit to Work.

1.2 Guard Removal

During routine operations, persons will normally be protected from contact with significant sources of energy associated with plant by the usual hazard controls (separation, guarding, other engineering controls and administrative controls), or because the source of energy is contained within the plant.

When work has to be carried out on plant or equipment (during installation, servicing, maintenance, repair, cleaning, dismantling, etc.), the usual hazard controls may not always be used. In particular, guards, interlocks and other safety devices may have to be removed or by-passed, and workers may have to enter or place parts of their bodies in potentially hazardous areas of the plant. In these cases the equipment shall be isolated.

2 Isolate

Before isolating any equipment, ensure that the isolation will not cause harm to people or damage to any item of plant or equipment.

A competent person shall take all reasonable steps to ensure the job is fully isolated and de-energised in order to achieve effective isolation.

To achieve effective isolation, the personnel shall:

- Isolate each energy source;
- Remove all stored energy i.e. bleed off air, operate all hydraulic controls; and
- Prove a zero energy state.

2.1 Isolating Kinetic or Gravitational Energy

Relying on hydraulic rams or pistons to control kinetic or gravitational energy is not acceptable. The use of approved and correctly rated mechanical devices such as pins, slings or chains and or support stands is acceptable. These securing devices shall be locked in place where possible and included as an isolation point.

2.2 Test – Proving Effective Isolation

All isolations shall be proven to be successful using an appropriate method for the energy and equipment type, including:

- Each isolation point shall be proven separately;

- All test instruments and test apparatus shall be tested and calibrated by an approved testing authority on a periodic basis. Records of such tests should be retained; and
- Equipment used to verify that a system is de-energised shall be proven to be in correct working condition before and after each use.

2.2.1 Proving an Electrical Isolation

For work on uninsulated low voltage electrical apparatus the electrical supply shall be isolated, locked and tagged before the electrician shall test for dead using a voltmeter.

NOTE: This procedure does not apply to high voltage isolation.

2.2.2 Proving Air or Hydraulic Isolations

For air and hydraulic operated equipment, the air or fluid shall be isolated and the system pressure shall be bled to zero and confirmed there is no remaining pressure or other factors that may return, apply or increase the pressure in the system, with the drain locked in the open position, and included as an isolation point. A try / test should be conducted to ensure isolation has been successful.

2.2.3 Proving For Work Adjacent to Radiation Devices

Radiation Isolations - All radiation devices shall be isolated and tested for leakage if work is to be carried out within one (1) metre of the device.

2.2.4 Try / Test

As a final test for all equipment, the equipment shall be attempted to be started (Try / Test) to see whether the equipment will start, **if safe to do so**. This process should only be used by the first person to isolate. Subsequent people should not attempt to start a piece of equipment if someone has already isolated it as it may put them at risk.

2.3 Lock and Tag

Personal isolation lock(s) shall only be placed and removed by the owner.

Each personal isolation lock(s) shall have a personal danger tag (s) attached to it by locking through the brass eyelet on the tag.

Each person must have their own personal isolation lock(s) attached directly to the isolation point(s) or hasp on the isolation point. No person is permitted to work under the protection of another person's personal isolation lock.

All equipment that can generate or contain harmful sources of energy shall have a designated isolation point(s).

NOTE: Where the isolation of a harmful source of energy through the use of a personal isolation lock is not possible due to the design of the isolation point, the use of a personal danger tag attached to the isolator is permitted. Each time this process is undertaken it must be formally approved by the Supervisor. A defect or hazard report should be generated to have the isolation point modified to accept a lock.

To complete a lockout personnel shall:

- Fill out a personal danger tag (s) so others can identify who has isolated and for what purpose;
- Attach their personal isolation lock(s) through the brass eyelet of the personal danger tag(s);
- Secure the lock and tag to the isolation point(s) or locking device(s);
- Remove the key once locked and keep it in his/her possession at all times Note: The key must never be given to another or left in a place other than on the users' person; and
- Check that the personal isolation lock(s) physically prevents the isolator from being moved.

NOTE: If equipment is unfit for service or unsafe to return to service the isolation points shall be placed in the off position and an out of service tag attached to all relevant isolation points. Out of service tags shall not be used as part of the isolation process in the case where workers are working on that equipment.

2.3.1 Group Isolations

If a group of people are undertaking work together, each person's personal isolation locks and personal danger tags shall be applied as follows:

- The first person to attach a personal isolation lock(s) to a point of isolation must use a scissor clip (hasp) to allow other persons to utilize the same point of isolation. For larger numbers of people a second or third hasp may be installed in a vacant hole in the previous hasp; and
- When using a hasp, the Supervisor shall attach the hasp to the isolation point and place their personal isolation lock with their personal danger tag on the hasp first.

NOTE: It is the responsibility of each person who 'locks on' to verify that the correct isolation method has been used for the work they are undertaking.

2.4 De-Isolate

Following completion of the task for which isolation was required the following steps shall be completed prior to de-isolation:

- Check that the job is correctly completed including the return of guards, removal of scrap parts, packaging, rags, papers, spilled oils and lubricants, etc;
- Ensure others are clear of the area of operation of the equipment;
- Remove personal isolation lock and personal danger tag;
- Test operation of equipment, if operation is unsatisfactory, return to full isolation procedure to recommence repairs, or place out of service tag if repairs are not intended at that time.

2.5 Incomplete Task

Where a person is leaving a task (such as end of shift or reassigned to another task) for which an isolation has been conducted, and the task is not complete then the person shall remove their personal isolation locks (s) and or personal danger tag(s). The person shall then place an Out of Service Tag that explains the incomplete task.

3 Isolation Equipment

3.1 Isolation Locks



Personal isolation lock(s) are issued to each person. A personal isolation lock shall:

- be red in colour and immediately recognisable as a personal isolation lock;
- have a key that can only be removed when the lock is closed;
- be used in conjunction with a personal danger tag(s); and
- have a single unique key and no duplicate or master keys available.

Numbers of locks issued to each person will vary depending on need.

NOTE: Contractors must supply and replace as necessary Queensland Hydro approved locks and tags to their personnel

3.1.1 Key Misplaced

In the event that a person misplaces the key to their personal isolation lock(s) a thorough search shall be conducted for the missing key. If the search is unsuccessful the lock owner and the Supervisor shall verify that the lock in question is in fact that which is issued to the person and that the removal of that personal isolation lock shall not endanger others. The person shall then remove and destroy that personal isolation lock.

The Supervisor shall record the circumstances in an Incident Report and arrange for the replacement of the lock.

3.1.2 Lock Misplaced

The loss of a personal isolation lock(s) shall be reported immediately to the Supervisor. A thorough search shall be conducted for the missing lock.

The Supervisor shall arrange for the replacement of the lock(s).

3.1.3 Key Found

Any person who finds an isolation lock key shall hand it to their immediate Supervisor who will ensure it is secured until its owner can be located. If the owner cannot be located the key must be destroyed.

3.1.4 Person Forgotten to Remove Lock

When a person has left site and forgotten to remove their personal isolation lock the following process shall be followed by the Supervisor:

- Verify that the person has left site by contacting them; and
- If practical to do so recall the person to site to remove their personal isolation lock(s) and or personal danger tag(s).

If the equipment is required to be de-isolated and it is not practical to recall the person or, bringing them back poses an unacceptable fatigue risk, the Supervisor shall complete following steps:

- thoroughly inspect the work area, accompanied by a person competent in the plant or equipment design and systems;
- verify that no other person can be impacted through removal of the isolation, and everyone working on the equipment has stopped work;
- remove the personal isolation lock (s) and or personal danger tag(s);
- complete an Incident Report; and
- arrange for the replacement of the locks.

NOTE: This latter process applies if the person is unable to be contacted.

3.2 Tags

Where a procedure lists a Queensland Hydro Tag, this should be used where possible. Otherwise, if not specified, over the counter tags are acceptable that replicate the examples in this procedure.

3.2.1 Personal Danger Tag(s)



Personal Danger Tag(s) are used to assist in protecting people, by identifying who is working on that plant or equipment and explaining the reason for the isolation. Under no circumstances are Out of Service Tags to be used in place of the Personal Danger Tags.

A Personal Danger Tag must be attached to any personal isolation lock that is placed on any point of isolation, or with any other means of isolation, where a lock cannot be placed.

3.2.1.1 Accidental Tag Removal

In the event of a Personal Danger Tag(s) being removed accidentally these steps shall be followed:

- The person who is aware of the problem shall apply his or her own personal isolation lock(s) and Personal Danger Tag(s) and inform the person whose tag was removed, immediately;
- Upon being notified the person whose Tag was removed shall fill out another tag and re-attach it; and
- Inform the Supervisor and person of the occurrence and steps taken.

3.2.1.2 Discovery or Personal Danger Tag(s) – Not Attached

In the event of a completed personal danger tag(s) being discovered that is not attached to the stated equipment these steps shall be followed by the person who discovered the tag:

- Inspect the equipment on behalf of that person and advise them that the Tag has been found; and
- If the person cannot be found, then the person discovering the tag shall apply their own personal Isolation Lock(s) and Personal Danger Tag(s) on the stated equipment and report the discovery and steps taken to their Supervisor.

3.2.2 Out of Service Tag



An out of service tag is used to identify unsafe or unserviceable equipment. The tag is designed to prevent damage to equipment and alert other people of potential danger.

The out of service tag shall not be used for personal protection or general information.

The out of service tag is to be used by a person who detects an unsafe or unserviceable piece of equipment that must not be started / operated.

3.2.2.1 Out of Service Tag - Placement

Complete all sections of the tag.

If equipment has an isolator, turn this to the “off” position.

Securely place tag on either the main or local isolator, or controls for a particular function that is out of service, or a highly visible location on the equipment.

Equipment on which an out of service tag has been placed shall not be moved or operated, except to ascertain the nature of the malfunction or to move the equipment to a safe position for maintenance / repairs to be conducted.

3.2.2.2 Out of Service Tag - Removal

The tag shall only be removed when:

- The work required to rectify the situation is complete; or
- The equipment is cleared for safe operation by the Supervisor.

3.3 Hasps



Example of lock-out system with a tag and the padlocks of two Workers

A Hasp is used to allow the practical fitment of several persons' Personal Isolation Locks to a single isolation point. These devices make it impossible to re-energise the isolation switch without the complete removal of all persons' Personal Isolation Locks.

When group isolation is required, the Supervisor shall act as the main isolator.

4 Disciplinary Procedure

Breaches of this Lock Out Tag Out procedure may constitute a breach of Queensland Hydro Life Saving Rules and as such may be subject to disciplinary action being taken. An incident investigation will be undertaken as per **Incident Management Procedure (HS-PRO-0026)** and where it is determined there is a confirmed breach of this procedure, disciplinary outcomes will be determined in accordance with **Fair and Just Culture Procedure (HS-PRO-0027)**.

5 Procedural Awareness

Personnel shall be made aware of this procedure and the general principles of isolation as part of the company induction.

Responsibilities

Who	What
Supervisor	<ul style="list-style-type: none"> Ensure that Personal Isolation Lock(s) are only removed in strict accordance with the specific requirements within this procedure; and Ensure personnel working on site know the location of main isolators for major equipment on site as well as specific procedures for isolation of that equipment.
Worker	<ul style="list-style-type: none"> Maintain up to date knowledge of the requirements of this procedure, energy sources and isolation points on equipment they are using; Apply a personal isolation lock and tag test for dead before working on equipment; Not remove a personal isolation lock or a personal danger tag of another person; Not tamper with or override any isolations; and Use isolation equipment for its intended use only.
Project Director	<ul style="list-style-type: none"> Ensure there are processes in place to confirm personnel understand this procedure, are issued their own personal isolation lock and have access to personal danger tags; Ensure there are processes in place to confirm plant and equipment containing harmful sources of energy are capable of being isolated and locked out.

- Ensure there are processes in place to ensure personnel who breach this procedure are subject to disciplinary action.

References

Document code	Document title
HS-PRO-00026	Incident Management Procedure
HS-PRO-00027	Fair and Just Culture Procedure