

	LOCKOUT/TAGOUT ALL-HSE-PRC-179	Retention Code: CG01 - CA
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Table of Contents

	Page
1.0 Purpose	3
2.0 Hazards to Mitigate	3
3.0 Procedure-Specific Roles and Responsibilities	4
3.1. Supervisors	4
3.2. CPC Representative	4
3.3. Workers	4
4.0 Procedure	4
4.1. Additional Equipment Required	5
4.1.1. Additional Personal Protective Equipment (PPE)	5
4.1.2. Additional Equipment	5
4.2. Lockout Devices	5
4.2.1. Isolation Locks.....	5
4.2.2. Personal locks	5
4.2.3. Isolation Securing Devices	5
4.2.4. Tags	6
4.2.5. Lock Boxes.....	6
4.3. Preparation	6
4.3.1. Equipment Shutdown	6
4.3.2. Isolation Verification.....	6
4.4. Exclusive Control	7
4.5. Individual Lockouts (Single or Multiple Worker)	7
4.6. Group Lockouts (Using Lock Boxes).....	8
4.7. Complex Group Lockouts.....	8
4.8. Securing Remotely Controlled Locations.....	9
4.9. Electrical Isolations	9
4.9.1. Isolation Task Responsibilities	9
4.10. Placing Equipment Back into Operation.....	9
4.11. Shift, Crew Change and Handover	10
4.11.1. CPC Representative.....	10
4.11.2. Workers.....	10
4.12. Lock Removal Authorization.....	10
5.0 References	11
6.0 Document Retention	11

Appendix A – Definitions.....12
Appendix B – Standard Tag13
Appendix C – Revision Record14

1.0 Purpose

This Procedure establishes the minimum requirements for performing lockout/tagout (LOTO) across all ConocoPhillips Canada (CPC) operations.

This Procedure does not apply to the following situations:

- Minor equipment adjustments or service activities (e.g. testing or troubleshooting) that meet **all** of the following criteria:
 - It is essential that the equipment continues to run.
 - Alternate protection methods are used (machine guards or a local control switch) ensuring workers are not exposed to sources of energy.
 - A hazard assessment or task analysis has determined that there is no risk of injury to the worker or other workers nearby.
 - An approved, written business or functional unit procedure is utilized.
- Work on corded or plugged equipment (includes quick release air or hydraulic lines) that meets **all** of the following criteria:
 - Unplugging the equipment results in complete isolation from all energy sources.
 - The plug or connector is kept in sight and within easy reach so that no one else can accidentally plug in the equipment.
 - The plug or connector is under the exclusive and immediate control of the worker at all times.
 - A hazard assessment or task analysis has determined that there is no risk of injury to the worker or other workers nearby.
 - An approved, written business or functional unit procedure is utilized.
- Work on electrical systems performed by certified personnel as permitted by the Electrical Work Procedure.
- Complex lockouts, see Section 4.7.

2.0 Hazards to Mitigate

- Arc Flash
- Electrocutation
- Explosion
- Fire
- Fluids release
- Oxygen deficient or enriched atmosphere
- Releases from pressurized systems
- Sparking
- Static electricity
- Stored energy – line of fire
- Toxic gas

- Unexpected activation or movement of equipment

3.0 Procedure-Specific Roles and Responsibilities

3.1. Supervisors

- Ensure workers are competent and trained to perform energy isolation and LOTO activities.
- Ensure a competent CPC Representative is designated to supervise the equipment isolation and lockout.
- Provide adequate isolation devices and locks to workers.
- Provide authorization for removal of a worker's lock when required.

3.2. CPC Representative

- Ensure interlocking systems are not involved and equipment is protected against this type of operational start-up.
- Assess the potential impact of the isolation and lockout/tagout on additional equipment or processes.
- Determine, approve and document the isolation method.
- Inspect all locks and tags prior to signing off the Isolation Certificate.
- Ensure the Isolation Certificate is completed and attached to the permit/hazard assessment.
- Inspect the work area and adjacent areas to determine they are in a safe condition.
- Notify affected workers in adjacent work areas, including panel operators where applicable, when equipment is removed from or returned to service.

3.3. Workers

- Follow the isolation and lockout/tagout method as determined by the hazard assessment and/or site specific procedure.
- Attach their personal lock(s) with an identifying tag and keep control of the key(s) in their possession at all times.

4.0 Procedure

The following requirements are applicable to all isolations and lockouts. Information specific to the type of lockout being performed is included in the following sections.

- Work must not proceed until the absence of energy and/or harmful substances has been verified. Workers must stay out of the line of fire when testing for absence of energy.
- If electrical work is to take place, isolation must be verified using a meter or approved testing device as per the Electrical Work Procedure.
- When an energy-isolating device is locked out, the lock must not prevent access to other energy-isolating devices that could cause injury to workers.
- A permit and hazard assessment must be conducted for all work completed under an isolation and lockout/tagout unless specifically exempted under an Exclusive Control (Section 4.4).
- An Isolation Certificate must be prepared for all isolations unless specifically exempted under an Exclusive Control (Section 4.4).

- This Isolation Certificate must be referenced on all additional permits or hazard assessments where work is being performed under that isolation.
- When practicable, reference the applicable P&ID, electrical single line drawing, pipeline maps, or gathering system drawings to identify all isolation points.
- All permits/hazard assessments and Isolation Certificates must be available at the work site.
- All workers directly involved with the work, or working at other locations that may be affected by the lockout, must be informed of the lockout and the isolation points.
 - All personnel working on isolated equipment have the right to verify the isolation points.
 - Changes in work conditions or approved work scope require a revalidation of the isolation method and communication to affected workers prior to continuing with the work.

4.1. Additional Equipment Required

4.1.1. Additional Personal Protective Equipment (PPE)

- Refer to the permit or hazard assessment and applicable Business Unit procedures for appropriate task PPE.

4.1.2. Additional Equipment

- Determine additional equipment requirements based upon the permit/hazard assessment and applicable Business Unit or functional group procedures.
- Where required, electrical testing equipment for verifying electrical isolations (*this equipment may only be used by qualified individuals*).

4.2. Lockout Devices

4.2.1. Isolation Locks

- May be individually keyed or keyed alike if used in multiple lock sets for group lockouts.
- Combination locks may not be used for isolation locks.
- Isolation locks are to be used for isolation purposes only.

4.2.2. Personal locks

- Each worker working under an isolation must have an individually keyed personal lock unless specifically approved under an approved complex group lockout plan.
- Each worker **must** maintain exclusive control of their key at all times.
- Must be traceable to the worker who is using the lock.
- Contractors must supply personal locks for their workers.
- Combination locks may not be used for personal locks.

4.2.3. Isolation Securing Devices

- May include valve covers, chains, cables, breakers covers, etc. and must render the equipment inoperative and hold the energy-isolating device in its off or safe position.

- Devices must be strong enough to withstand inadvertent opening without the use of excessive force, unusual measures or destructive techniques.

4.2.4. Tags

- Must be attached to each isolation point.
- May not be used as a substitution for a lock at an isolation point.
- The minimum information required on the completed tag includes:
 - The reason for the lockout.
 - The full name (printed) and signature (not initial) of the person who performed the lockout (or other tracking identification if electronic systems are utilized).
 - The date the lockout was performed.
- The standard tag for use in Canada is attached in Appendix B.
 - Integrated Safe System of Work (ISSoW) tags may be used in place of these tags.

4.2.5. Lock Boxes

- Must be able to securely contain all isolation lock keys and number of locks need for the job task.

4.3. Preparation

4.3.1. Equipment Shutdown

- When the equipment has completely stopped, the energy sources must be isolated with the appropriate energy-isolating device.
 - This may involve turning off electrical power, blocking movable parts, venting trapped vapor pressure, bleeding hydraulic lines, retracting nuclear sources, or releasing spring tension energy.
- There may be more than one energy source or source of hazardous materials that may be present.

4.3.2. Isolation Verification

- Prior to starting work, the CPC Representative will ensure the machinery, equipment or piping system has been de-energized or de-pressured and the energy-isolating devices have been rendered inoperative.
 - Perform a bump test on all equipment that has the potential to actuate, start or engage.
 - Remote start systems, remote switches, panel systems or permissive circuits must be evaluated prior to completing a bump test
 - ◆ If a manual switch or bypass is not available to override the above when performing a bump test, the isolation must be verified by a qualified individual (*as per the Electrical Work Procedure*).

- Where breakers are used as part of an isolation (e.g. electric motor isolation to work on a pump, etc.), the absence of voltage does not need to be verified when a successful bump test has been performed.
- Ensure piping systems are de-pressured and isolated.

4.3.2.1. Electrical Isolation Verification

- When performing electrical work requiring an electrical isolation:
 - Conduct a test to validate the absence of voltage; document test on the Isolation Certificate.
 - Test must be conducted by a qualified individual prior to starting work.
 - The absence of voltage must be revalidated after a change in conditions or after an extended work break where care and control of the isolation has not been maintained.
 - ♦ It is not required that revalidation tests be documented on the Isolation Certificate.

4.4. Exclusive Control

- When a designated worker(s) maintains sole exclusive control of the isolated piping or process system, the requirement to attach locks and complete an Isolation Certificate will not apply if *all* of the following criteria are met:
 - The worker(s) is a full-time equivalent employee.
 - The worker(s) has continuous control of each energy-isolating device and each energy-isolating device is immediately accessible and identifiable to the worker.
 - The absence of energy has been verified.
 - The energy-isolating device is secured in the isolated position against inadvertent movement.
 - The task is covered under an approved hazard or risk assessment (e.g. Task Risk Assessment, etc.).
 - A procedure is available that includes the process for securing the energy-isolating devices.
 - The worker(s) does not leave the isolation unattended.
 - Work in adjacent areas is not creating additional risk.

4.5. Individual Lockouts (Single or Multiple Worker)

- Each energy-isolation device (e.g. disconnect switch, circuit breaker or valve) must be locked out by all workers involved in the task.
- Each worker must attach an individually keyed padlock(s) and tag(s) to the isolation securing device for all energy or product sources (e.g. circuit breakers, switchboxes, valves and controls).
 - When multiple workers lock onto an isolating securing device with a hasp or scissors, the CPC Representative must attach the first lock and tag at each isolation point.
 - The number of locks used at each isolation point must equal the number of persons working on the job
 - Each lock must be identified on the isolation certificate.

- The worker attaching their padlock is responsible for testing and confirming that the energy source(s) has been effectively isolated and there exists a 'zero' energy state. This is accomplished by bump testing the equipment or verifying the absence of pressure.
 - When there are multiple workers locking onto an isolation point, the CPC Representative will test and confirm, on behalf of all workers, that the energy sources have been effectively isolated as above.
- When the work is completed, the CPC Representative must be the last person to remove their lock/tag from the lockout scissors at each isolation point when multiple workers are involved.
- Each worker must maintain exclusive care and control of their key(s) at all times.

4.6. Group Lockouts (Using Lock Boxes)

- Used when a number of workers are working on machinery or equipment at the same time, particularly, if a large number of energy-isolation devices must be locked out.
- The CPC Representative must attach an isolation lock with a tag on the isolation securing device for each energy-isolating device.
 - Record the lock numbers for each energy-isolating device on the Isolation Certificate.
 - The key(s) for each isolation lock will be placed into a secured lock box.
 - If using keyed alike locks in a lock set, all keys for the lock set must be accounted for in the lock box
- A second competent worker must verify that the energy sources have been effectively isolated. The CPC Representative will place the padlock keys for each isolation point into a lock box that is locked by all workers.

Note: In British Columbia, there must be a second qualified worker who will independently attach a second lock to each energy-isolating device when using a lock box. This worker's name must be identified on the Isolation Certificate as the person attaching the additional locks.
- Once effective energy isolation has been tested and before starting the work activity, each worker involved in the work will then attach their padlock with a tag to the lock box.
 - The number of locks on the lock box must equal the number of workers performing the task.
 - Each personal lock applied to the lock box must be documented on the Lock Box Register.
- The CPC Representative must be the last person to remove their personal lock from the lock box.

4.7. Complex Group Lockouts

- Used for larger projects, facility turnarounds, or when interconnected equipment or systems can be adversely affected.
- A written lockout procedure and work plan that provides an equivalent level of safety must be developed to ensure a level of protection equivalent to that provided by the group lockout process.
- The complex group lockout procedure and work plan must be approved by a Director of Inspection (in Alberta) or The Board (in British Columbia).

4.8. Securing Remotely Controlled Locations

- Where remotely controlled systems control the operation of machinery, equipment, piping, a pipeline or process system that cannot be isolated using the procedures listed above, procedures must be put in place that result in a level of isolation and protection equal to that provided by normal procedures.

4.9. Electrical Isolations

- Ensure all sources of electrical supply are identified (*see single line diagram or panel schedule*).
- De-energize (turn off) the identified circuit.
 - When functioning a breaker, ensure body position is away from the line of fire and facing away.
- Utilize one of the following methods to secure the energy-isolating device:
 - Attach an isolation securing device to the energy-isolating device, or
 - Employ the lock on the panel door or attach a lock hasp on the panel door, as long as the lock does not prevent access to other energy devices that could cause injury to workers.
- Tape over the breaker and cardboard signs hanging over the breaker panel notifying others are not permitted.

Note: In British Columbia, locking the cover door is not permitted as the lock must not prevent access to other energy-isolating device (i.e. circuit breakers) supplying machinery or equipment that could cause injury to workers.

4.9.1. Isolation Task Responsibilities

Equipment	Systems Under 750 Volts	Systems Over 750 Volts
Individual Motor Starters	Operations/Maintenance	Qualified Electrical Person <i>(Note 1)</i>
Distribution Panels (120v/240v)	Operations/Maintenance	<i>Not Applicable</i>
Facility Main Breakers/Incoming Supply – excludes pump jacks	Qualified Electrical Person	Qualified Electrical Person <i>(Note 1)</i>

Note 1: There are currently three sites within WCBU which have ARC RESISTANT SWITCHGEAR – These sites can be switched by operations as the equipment inherently protects the operator from any electrical internal faults. Switching can only occur with all of the equipment doors closed. The LSD’s of these locations are as follows:

- Westerose 13-34-045-28 W4
- Wembley Doig G 16-04-072-08 W6
- Wolf Gas Plant 5-1-51-15 W5

4.10. Placing Equipment Back into Operation

- Before removing locks and returning the equipment back to service, the worker in charge must:
 - Ensure all equipment guards are properly replaced.
 - Ensure all workers are accounted for.

- Notify all workers of the intention to restore energy to the equipment prior to removing the isolation securing or flow-stopping devices.
- Confirm that no worker will be endangered when the energy-isolating devices are opened or activated to return the equipment to service.
- Prior to restarting equipment, the Isolation Certificate must be completed to ensure all locks are accounted for, all isolation securing devices have been removed and all energy-isolating devices are in the correct position.

4.11. Shift, Crew Change and Handover

- When authority for an area, facility, or work location is transferred to another worker, responsibility for the locking and tagging devices must also be transferred.
- If an effective handover of the isolation/lockout cannot be achieved, the isolation must be re-validated by the incoming personnel.

4.11.1. CPC Representative

- Ensures that each outgoing worker removes their locks and tags.
- Completes or transfers the permit and isolation paperwork.
- Identifies the location and types of all isolation points with the incoming CPC Representative.
- Ensures there is an effective transfer of control by removing their padlock from the lock box only after the incoming worker in charge attaches their padlock to the lock box.
- Notifies adjacent work areas or locations affected by the lockout of the work (includes permit) handover.

4.11.2. Workers

- Workers on a new shift must attach their locks as required in this procedure.

4.12. Lock Removal Authorization

- The CPC Representative may cut off and remove a worker's locking and tagging devices if **ALL** the following conditions are met:
 - The worker is unavailable or cannot be contacted to remove the locking and tagging devices when the work has been completed and it becomes necessary to restart the equipment.
 - Reasonable attempts have been made to contact the worker and are documented.
Note: A worker must be notified at the start of their next shift if the worker's personal lock(s) have been removed since the worker's previous shift.
 - The job and work site has been inspected by the CPC Representative.
 - All affected workers have been notified.
 - The Lock Removal Authorization Form is completed, signed off and attached to the permit/hazard assessment.

5.0 References

- Electrical Work Procedure (ALL-HSE-PRC-167)
- Lock Removal Authorization Form (ALL-HSE-FRM-2114)
- Isolation Certificate (ALL-HSE-FRM-2103)
- Lock Box Register (ALL-HSE-FRM-2104)
- Alberta OHS Code, Part 15, Managing the Control of Hazardous Energy
- British Columbia OHS Regulation, Part 9, Confined Spaces
- British Columbia OHS Regulation, Part 10, De-energization and Lockout
- Saskatchewan OHS Regulations, Part 10, Machine Safety
- ConocoPhillips Life Saving Rules

6.0 Document Retention

Records must be retained in accordance with ConocoPhillips’ Document Retention Schedule.

Record	Owner	Classification	Retention
Isolation Certificate	Business Units	HE11 – CA	2 Years
Lock Removal Authorization	Business Units	HE11 – CA	2 Years
Lock Box Register	Business Units	HE11 – CA	2 Years

Appendix A – Definitions

Blind Flange: A flange used for isolation purposes rated to the design pressure of the piping system or equipment being isolated.

Bump Test: Attempting to start equipment by using the normal starting controls following the installation of the electrical isolation breaker, to verify that the equipment will not start (includes attempting to start control valves and other equipment). Note: most bump tests are electrical, but bump testing includes all equipment that actuates, starts, engages, or turns. Caution as the Distributed Control System (DCS) might prevent equipment from starting, not the breaker. Bump tests are designed to test that the main electrical breaker has been successfully isolated, or that (when normal starting practice is followed) the equipment will not start.

CPC Representative: Can be any CPC employee, contract employee or contractor assigned by CPC who is responsible for performing or verifying isolations. The representative must be deemed competent in the activity being completed.

Electrical Work: Any activity that involves contact with electrical conductors or electrical equipment. This will include opening any electrically energized cabinets, Motor Control Center (MCC) cubicles, motor junction boxes, transformer enclosures, etc. Electrical work also encompasses disconnecting or reconnecting any electrical equipment, motors, switches or distribution equipment.

Energy-Isolating Device: Devices that control an energy source. These devices may include manually operated electrical circuit breakers, disconnect switches, motor starter, fuse, line valves, or other blocking device that block or isolates energy. Push buttons, selector switches (e.g. tail switches) and other control circuit type devices are **not** energy-isolating devices.

Energy Source: Any electrical, mechanical, hydraulic, pneumatic, chemical, thermal, or other source of energy of potential harm to workers. Proper identification ensures that all sources are isolated prior to starting service or performing maintenance work.

Isolated: To have separated, disconnected, de-energized or de-pressured.

Isolation Securing Device: A device used to ensure the energy-isolating device is maintained in its off or safe position. Devices may be an integral component of the energy-isolating device or an external device (e.g., valve or circuit breaker cover, etc.).

Lockout: The use of a lock or locks to render machinery or equipment inoperable or to isolate an energy or product source. The purpose of a lockout is to prevent an energy or product isolating device (such as a switch, circuit breaker, or valve) from accidentally or inadvertently being operated while workers are performing maintenance or service on machinery or equipment.

Secured: Ensuring that an energy-isolating device cannot be released or activated without the use of excessive force, unusual measures, or destructive techniques.

Tagout: The placement of a warning tag attached to a locking device, to a gas system component, or to a flow-stopping tool identifying the worker who attached the lock, and the time and date of attachment.

Work Break: Any stoppage in activity where continuous care and control of the isolation/work site has not been maintained. Examples of work breaks include the start of a new work day or a shift where the site has been unattended.

Appendix B – Standard Tag

Below is a sample standard tag for use in Canada. ISSoW tags may be used in place of the standardized tags.



Appendix C – Revision Record

Page#	December 31, 2014	Previous Information	Risk Assessment
Various	Complete document rewrite. Removed redundant information and transferred to new document format.		Low
	Exclusive Control added.	None	Low – within requirements of legislation and reflects current state.