

Energy Isolation Practice

1.0 Purpose

The purpose of the energy isolation practice is to provide the operational framework for isolation and control of energy sources in the workplace. Isolation is required to reduce or eliminate the risk to workers exposed to hazardous energy during operations, maintenance, and repair activities.

2.0 Scope

This practice applies to all Cenovus worksites and encompasses all work activities. This practice is intended to ensure consistency and compliance with company, industry, and regulatory expectations relating to the isolation of energy sources in the work place.

3.0 Pre-Job Hazard Assessment

A pre-job hazard assessment is required for all work where isolation will be used to isolate an energy or product source.

There may be more than one hazardous energy sources (e.g. electrical, mechanical, pneumatic, hydraulic, chemical, nuclear, and thermal) or sources of hazardous products (H₂S, CO, etc) that may be present. Proper identification ensures that all sources are isolated prior to commencing work.

The pre-job hazard assessment should be used to ensure that all energy sources are accounted for and effectively controlled. The pre-job hazard assessment should address the following:

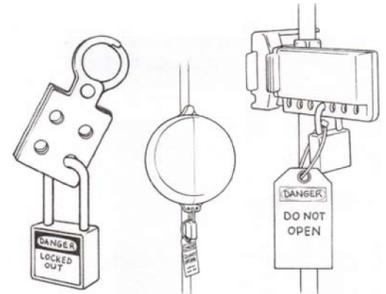
- The type of energy source and the energy isolation method needed
- The identification of authorized workers who are permitted to complete the required isolation procedures, verify procedure completeness, and ensure a zero energy state has been achieved

4.0 Minimum Requirements

- Any worker conducting an energy isolation activity must attach their own lockable securing device, typically a keyed lock, to the energy isolation device (e.g. breaker, switch, valve etc), verify that the hazardous energy has been effectively isolated and ensure a zero energy state has been achieved.
- If more than one worker is working at a location where hazardous energy sources have been isolated, the first worker to apply their own lockable securement device must verify that the hazardous energy source has been effectively isolated and ensure a zero energy state has been achieved. Each additional worker must apply their own securing device to the energy isolation device and verify the zero energy state.
- All tags attached shall be signed by the individual installing them indicating the date and time installed
- Coded padlocks must be used in conjunction with coded tags
- Each lock will only have **one** key (if a second key is available, it must be secured with limited access, e.g. a locked cupboard that is only accessible by a supervisor)
- Cenovus operations personnel shall be the first to install their lockout device and tag and the last person to remove their lockout device and tag

5.0 Energy Isolation Requirements

1. **Hazardous energy or product identification:**
 - a. Determine all hazardous energy sources and determine how the energy is applied to the equipment or machinery identified in the work scope. All equipment, machinery, process systems, or piping intended to be a part of the work scope must be identified and evaluated to determine if isolation is required.
 - b. Determine all hazardous product sources and determine how the product may interact with people, equipment or machinery identified in the job scope.
2. **Initiate shut-down:** Notify all workers who may be affected by the equipment shut down and then begin the shut down process.
3. **Isolate hazardous energy sources:** Isolate any and all potentially hazardous energy sources by placing the applicable energy isolation devices in the proper position and applying a securement device (examples displayed) with a tag that contains the name, date and phone number of the worker applying the device. Any raised components or other potential mechanical energy sources need to be adequately blocked or pinned in place. Product sources may need to be neutralized prior to work commencing (e.g. iron sulphides)



Note: All electrical isolation activities must be conducted in accordance with the Cenovus Electrical Safety Program

4. **Release stored energy:** All stored, residual, or potentially hazardous energy must be drained, bled down, discharged, or de-energized.
5. **Energy isolation verification:** Verify proper energy isolation and ensure that a zero energy state has been achieved prior to work commencing.
6. **Proceed with work:** Safe work permitting and other site procedures must be followed for completion of work.

5.1 Removal of Energy Isolation Securement Device

1. **Verify:** Ensure that the work scope has been completed and accepted for service.
2. **Notification:** Notify all workers in the immediate work area of the intention to restore energy to the equipment and ensure that there are no personnel, tools, or loose parts on or around the equipment going to be energized.
3. **Securing device removal:** Only the individual who installed the original securing device and tag can remove the device providing that all other personal locks from other workers are removed (*refer to section 8.0 if the worker who placed the original isolation device is not available*).
4. **Guards:** Ensure all guards are in place and will function correctly.
5. **Initiate start-up:** Have a competent worker initiate the start-up or reflow of the equipment while verifying proper operation.

6.0 Equipment Specific Isolation Procedure

All Cenovus sites shall develop equipment specific isolation procedures for all equipment requiring isolation. This type of procedure and all supporting documentation (P&ID, single line diagrams, etc) should be posted near the equipment or made available in a common location for immediate access. The procedure should include:

- Equipment shut down procedures
- The hazardous energy that is present by type and magnitude (i.e. 110v electrical, 30PSI compressed air)
- The energy isolation points and required securement devices needed
- Any blocking or pinning activities needed
- Other energy mitigating/securing activities needed
- Bleed down and zero energy verification activities

7.0 Group Isolation Procedure

If a job task requires a large number of workers to be working on a piece of equipment, machinery, or process system requiring isolation, or if a large number of locks are required to isolate all hazardous energy sources, a group isolation procedure may be used.

The following requirements must be met:

- A designated worker must be made responsible for the initial activation of the energy isolation devices and supervision of the initial placement of the energy isolation securement device
- The group isolation procedure and all supporting documentation (P&ID, single line diagrams, etc) must be posted in the immediate work area for worker reference, which also features a completed and signed isolation checklist that identifies all areas of isolation on the equipment, machinery, or process system
- All keys from the securement devices must be stored in a key locking system, such as a lock box
- Each worker conducting work on the equipment must review the isolation procedure, verify a zero energy state, and apply a personal lock to the key securing system
- Upon the completion of work, each worker who installed a lock on the key securing system must remove their lock prior to the energy isolation devices being removed

8.0 Transfer of Control

A worker who has placed a personal lock on an energy isolation securement device or on a key locking system that has been re-assigned to a new position before the work is completed, or the work is extended from one shift to another must ensure they transfer their lock control in a documented manner.

Prior to departing the work area, the vacating worker shall remove their personal lock from the securement device or key locking system and immediately replace it with the new workers personal lock providing no other worker is endangered by this change.

8.1 Emergency Removal

In an emergency or where the worker who installed the securement device is unavailable, the site supervisor or designate may remove the securement device after first ensuring that no worker or facilities will be endangered by such removal. This type of personal lock removal is required to be documented and stored at the work site. An example of a form to document an emergency lock removal can be found Appendix B here.

9.0 Energy Isolation Exemptions

The following situations may not require the application of the isolation practice:

Direct control: In the event that the energy isolation device or connection point is in direct control of the worker; *i.e. a worker who unplugs a portable drill to replace a drill bit is not required to lockout the equipment*

Electrical work: In the event that electrical work is required to be completed on a live circuit by a qualified electrician. The electrician must conduct their work in accordance with the Cenovus Electrical Safety Program.

10.0 Periodic Evaluation

To ensure that an isolation device is working effectively within a work area, periodic evaluations are encouraged to identify areas of opportunity. Evaluations should be documented and maintained as an inspection record.

11.0 Training

Formal training on site specific isolation procedures is required for all workers who are required to isolate hazardous energy. The training should include the use, application, and limitations of the various isolation securement devices available within their work area.

12.0 Governing and Reference Documents

12.1 Internal Governance

Document Type	Governance Documents
Policy	Corporate Responsibility Policy
Framework	Cenovus Operations Management System (COMS)
Policy	Enterprise Risk Management Policy
Regulatory	Alberta OHS Regulation – Part 8
Regulatory	Alberta OHS Code (2009) – Part 2, Part 15, Part 22 Part 37
Regulatory	Saskatchewan OHS Regulation – Part X, Part XXV, Part XVIII,

12.2 Internal References

Document Ref. #	Internal Reference Documents
CEN-EHS022	EH&S/Operations Risk Management Practice
CENPM020	Electrical Safety Program
CEN376	Lock-Out-Tag-Out Logbook (form)
CEN526	Lockout Sheet Audit (form)

13.0 Change Management

Proposed changes to this standard can be directed to EH&S Document Management

14.0 Definitions and Acronyms

Definitions and acronyms for safety documents are described in the link below:

Cenovus CEN-EHS243, Definitions and Acronyms

Energy isolation device means a mechanical device, that when utilized or activated physically prevents the transmission or release of energy (i.e. breaker, switch, valve, electrical cord, etc).

Energy isolation securement device or mechanism means anything, such as a personal lock, that holds an energy isolation device in its "off" or "safe" position. When installed, the securement device must not be able to fall off or allow the energy isolation device to move from its "off" or "safe" position. The securement device or mechanism must be strong enough to avoid inadvertent opening.

Group lockout mechanism means any device or mechanism that, when used as part of a group lockout system, permits each individual employee to use his personal lockout device to physically secure energy-isolating device(s) during servicing or maintenance.

Hazardous energy means any energy, including mechanical (e.g. power transmission apparatus, counterbalances, springs, pressure, gravity), pneumatic, hydraulic, electrical, chemical, nuclear, and thermal (e.g. high or low temperature) energies, which could cause injury to workers.

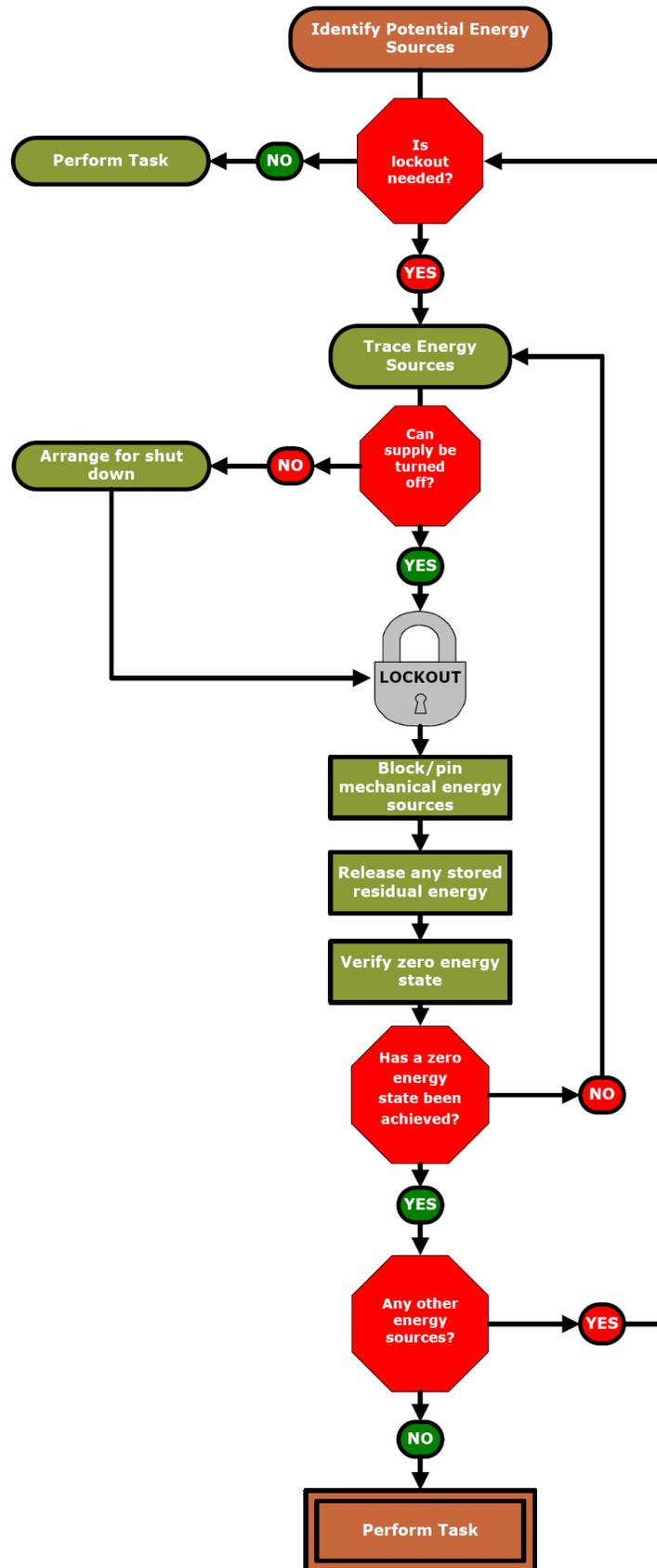
Lockout means the placement of an isolation securement device in accordance with an established procedure that ensures the equipment or machinery cannot be operated until the isolation device is removed.

Tag means handwritten, pre-printed, or colour-coded device constructed of material suitable for the application. Tags typically provide directions "DO NOT OPERATE" and display the name and signature of the person installing them as well as the time, date, and purpose of the isolation.

Tagging means the practice of attaching tags to the lockout devices to provide critical information about the status or condition of equipment, piping, or processes that have been locked out.

Zero energy state means the removal of any potential or stored energy such as, but not limited to electrical, mechanical, pneumatic, hydraulic, chemical, nuclear, and thermal sources.

Appendix A - Energy Isolation Process Flowchart



Appendix B - Lock Removal Form

Authorization for Removal

Date: _____ Time: _____

Lock Type (*circle applicable*): Personal Operations Trade/Dept. Other: _____

Name on lock: _____

Number on lock: _____

List below all attempts to verify and locate the owner of the above lock.

Comments/Remarks

Operations Review

Job/WO#: _____

Company individual is employed with: _____

Signature of Authorization (Shift Lead, Lead Operator, etc.)

Print name: : _____

Lock removed by: _____

Witnessed by: _____

Completed copies to be stored at the worksite