Table of Contents

1.0 PURPOSE ................................................................................................................................................. 2

2.0 APPLICATION ............................................................................................................................................. 2
  2.1 EXCEPTIONS ................................................................. ........................................................................... 2

3.0 REFERENCES ............................................................................................................................................ 3

4.0 DEFINITIONS ........................................................................................................................................... 4

5.0 RULES ....................................................................................................................................................... 7

6.0 STANDARD PROCEDURES AND GUIDELINES ..................................................................................... 8
  6.1 ZES WEBSITE PLACEMAT ................................................................. .................................................. 9

7.0 MATERIALS .............................................................................................................................................. 9

8.0 ACCOUNTABILITIES ............................................................................................................................. 10
  8.1 MANAGER, MAINTENANCE & ENGINEERING, ONTARIO OPERATIONS ................................................ 10
  8.2 MINE/PLANT MANAGERS ..................................................................................................................... 10
  8.3 MANAGER OF SAFETY ............................................................................................................................ 10
  8.4 SUPERINTENDENTS ............................................................................................................................... 10
  8.5 SUPERVISORS ......................................................................................................................................... 10
  8.6 DESIGNATED TAGGER .......................................................................................................................... 11
  8.7 LOCAL TAGGER ....................................................................................................................................... 11
  8.8 REMOTE TAGGER ................................................................................................................................ 11
  8.9 ISOLATION EQUIPMENT OPERATOR .................................................................................................. 11
  8.10 TAGGER USING A LOCK BOX ............................................................................................................. 12
  8.11 TAGGER NOT USING A LOCK BOX ..................................................................................................... 12

9.0 EQUIPMENT IDENTIFICATION ................................................................................................................ 12
  9.1 IDENTIFYING ELECTRICAL ENERGY ISOLATION DEVICES ............................................................... 12
  9.2 OTHER ENERGY ISOLATION DEVICES ................................................................................................ 12

10.0 TRAINING ................................................................................................................................................ 12
  10.1 ADMINISTRATION ................................................................................................................................. 12
  10.2 CONTROL ............................................................................................................................................... 13
  10.3 TRAINING MODULES .......................................................................................................................... 13
  10.4 TRAINING MODULE LEARNING OBJECTIVES .................................................................................. 14

11.0 PROGRAM MONITORING AND MEASUREMENT ................................................................................ 15

12.0 APPENDICES ............................................................................................................................................. 16
  Appendix A: Material Illustrations ................................................................................................................ 17
  Appendix B: Forms .......................................................................................................................................... 22
  Appendix C: Revision Notes ........................................................................................................................ 31
1.0 PURPOSE

This procedure describes the administrative processes required to maintain the ZES Program procedures and training.

2.0 APPLICATION

The ZES (Zero Energy State) Program is applicable at all Vale Ontario operations.

<table>
<thead>
<tr>
<th>Parameters for Electrical Locking &amp; Tagging</th>
</tr>
</thead>
<tbody>
<tr>
<td>Up to 600 volts</td>
</tr>
<tr>
<td>• Employees must be trained and qualified to ZES003</td>
</tr>
<tr>
<td>Greater than 600 volts and up to 15kV</td>
</tr>
<tr>
<td>• Employees must be trained and qualified to ZES003</td>
</tr>
<tr>
<td>• <strong>Power Department</strong> will follow MPROC-55001 High Tension Lines, High Tension Switching Procedure between 600 volts and up to 15kV</td>
</tr>
<tr>
<td>• <strong>All other departments</strong> will follow MPROC-50001 Electrical Department Switch Room and Substation Access Procedure</td>
</tr>
<tr>
<td>o Employees must be trained and qualified electrical tradespersons or have been trained, qualified and permitted through MPROC-50001</td>
</tr>
<tr>
<td>o Requires communication with the plant’s Electrical Department to establish the level of involvement required from them</td>
</tr>
<tr>
<td>Greater than 15 kV</td>
</tr>
<tr>
<td>• Requires Power Department</td>
</tr>
</tbody>
</table>

2.1. EXCEPTIONS

o High tension power lines and related equipment are under the direct control of the Power Department i.e. all 230kV, 69kV, and 44kV lines and equipment. All personnel must follow Power Department procedure MPROC-55001 High Tension Lines, High Tension Switching Procedure

o Overhead lines and related equipment below 15kV must follow plant specific policies and procedures

o Equipment greater than 15kV not owned by the Power Department e.g. Cottrell, must follow plant specific policies and procedures
3.0 REFERENCES

The following references were used in the development of the ZES Program or are related to it. Reference should always be made to the most current official version of these regulations. All procedures and training modules will identify these references.

- Occupational Health and Safety Act
  - Ontario Regulation 854, Sections 160, 185
  - Ontario Regulation 632/05, Confined Spaces Section 14
- CSA-Z460 Control of Hazardous Energy
4.0 DEFINITIONS

The following are terms utilized in the ZES Program procedures and training.

**Authorized**: a person who has been given permission to perform the task

**Cascaded Lock Box**: a lock box that contains the keys from an identified red project lock that has been affixed to the exterior of another lock box or lock boxes

**De-energized**: disconnected from all energy sources and not containing residual or stored energy.

**Do Not Operate Tag**: a yellow reusable tag that indicates authorization from the System Operator must be obtain before removing tag or operating of the device (used by Electrical Tradespeople)

**Delayed Starts**: used to delay the operation of a process, or start of a motor, pump, fan, etc. The time can be varied depending on the requirements and typically uses time delay relays to accomplish it.

**Designated Tagger**: a qualified worker or another person who installs and removes project personal protection and manages status tags

**Device**: a piece of equipment or a mechanism designed to serve a special purpose or perform a special function

**Energy Source**: any source of electrical, mechanical, hydraulic, pneumatic, chemical, thermal, gravity, pressurized, flow of material or other stored energy.

**Energy Isolating Device**: a mechanical device that physically prevents the transmission or release of energy, such as a disconnect of switches, valves, spades, or blocks

**Equipment**: any machine driven by electricity or any other prime mover, and/or combination of machines that operates as a system / process, such as pumps, fans, electric motors, mobile machines, vessels, piping, valves, etc.

**Frequency Drive**: a type of motor controller used with AC motors to vary the frequency and voltage supplied to the motor (In doing so, it can vary the motor speed to match the load requirements of the motor such as controlling the speed of a conveyor belt, fan, mine hoist, etc.)

**Grounding Device**: an approved device to mechanically connect electrical conductors to ground

**Ground Tag**: a green tag identifying that a grounding device has been installed on the circuit

**Hold Off Tag**: Affixed to fused disconnects or breaker control handles by a linesman or P&C technician (tag issued by the Systems Operator) to prevent individuals from reclosing a tripped device

**Isolation Equipment Operator**: a qualified person who operates the Energy Isolation Device

**Interlocks**: Used in electrical circuits, it is usually a device (common switch, infrared beams, photo detectors, etc.) used to prevent undesirable actions in a piece of equipment, machine or process.

**Isolate**: a process use or action taken to introduce any number of approved physical barriers between the equipment and sources or forms of energy and/or process material. Isolation Equipment Operator: a qualified person who operates the Energy Isolation Device (i.e. controls, valves, etc.)
Isolation Equipment Operator: a qualified person who operates the energy isolation device.

Lock Box: a lockable device with provision to secure/see and count keys and hold forms that can be used in two applications: 1) By a Designated Tagger to secure keys and hold the lock box form 2) By a Local Tagger to secure the remote tagging form and hold the lock box form

Lock Extender: a red device used to allow multiple personal protection locks to be installed on an energy isolating device

Lockout Device: a mechanical means of locking an energy isolation device, using a Personal Protection Lock.

Local Tagger: a qualified person who uses a Remote Tagger to install the Local Tagger’s personal protection locks and tags on energy isolating devices

Personal Protection Lock: an approved single keyed red lock capable of locking an energy isolating device or a lock box

Personal Protection Tag: an approved red tag that is used in conjunction with a personal protection lock to lock and tag an energy isolating device

Project Lock: an approved single keyed blue lock that is used by a Designated Tagger to secure keys in a lock box

Protected Worker: a Tagger who has installed personal protection and has verified a Zero Energy State

Qualified: a competent person designated by his/her employer as being qualified because of knowledge, training and experience to safely perform an assigned task.

Remote Tagger: a qualified person who operates, locks and tags energy isolation devices on behalf of a Local Tagger

Running Repairs: a repair to a piece of mobile equipment that is in an energized state (Two types of running repairs: 1. Running repairs with power ON + key ON / engine not running and the electric/hydraulic motor is not energized – personal protection tag required in operators control area 2. Running repairs with key ON / engine running or electric / hydraulic motor energized – personal protection tag and a qualified operator required in operator’s control area)

Soft Starts: Used with AC motors to reduce the load and torque on the powertrain and current surge during start up. Allow the motor to slowly (softly) ramp up to full speed.

Status Tag: an approved white tag identifying why an energy isolating device may not be operated so as to protect equipment

Station Guarantee Tag: a white, reusable numbered tag used by Power Department to identify the fact that a certain device is being used to protect a person or group of persons while working on or near equipment

Superintendent: the level of management that supervisors who are in charge of equipment and/or processes report to.

Tagger: a qualified worker who installs and removes his/her personal protection and manages status tags.

Variance: an approved plant specific measure put in place when it is impractical or unsafe to follow the Zero Energy State Locking and Tagging Procedure
Zero Energy State: a state where all hazardous energy has been isolated and de-energized, or otherwise controlled to manage risk.
5.0 RULES

1. One Person – One Lock

   This means that when an individual is in a position that requires lockout protection then that person must have a lock on either the isolation / de-energization device(s) or on the lockbox.

   Where the energy isolating device is not capable of being locked out, or the use of locks is unsafe, then red personal protection tags shall be used in conjunction with an approved variance.

2. A RED Personal Protection Tag is the only tag to be used for personal protection on energy isolating devices.

3. Only a Tagger can install / remove his/her personal protection.

   When the worker has not been trained as a Tagger, a Designated Tagger will put a lock box in place. The Designated Tagger will instruct the worker to install and remove their identified red personal protection lock. An example is if a specialist is required for an emergency repair on a mine cage hoist and will only be on site for a short period of time and training is not practical.

   If the tagger is unable to, or fails to, remove their personal protection, the Supervisor can remove the personal protection by following procedure MPROC-60008 Removal of Red or Blue Lock if the Person is not on the Property.

4. Taggers shall remove their Personal Protection by the end of their working shift.

5. DO NOT operate an energy isolating device that has personal protection on it.

6. DO NOT operate an energy isolating device unless qualified and authorized to do so.

   Energy Isolation Devices may have hazards that are not readily apparent and therefore should not be operated by someone that is not familiar with those hazards.


   Verify the zero energy state by attempting to start electrical equipment, bleeding pressurized systems, etc. Note –Interlocks may prevent equipment from starting rather than the fact that the equipment has been correctly isolated.

8. RED Personal Protection and BLUE Project Locks are to have ONLY ONE KEY.

9. A RED personal protection lock shall be used ONLY for personal protection and not be used for any other purposes.

10. A BLUE project lock shall be used ONLY for securing keys in a lock box and not be used for any other purposes.

11. Personnel who require personal protection from electrocution shall have positive isolation from all sources of power.

   Other methods of protection can be used by qualified personnel when trouble shooting electrical circuits.

12. Only qualified personnel can install grounds on electrical equipment.
One ground tag and one additional Personal protection tag is to be installed, the ground tag is to be installed on the disconnect switch adjacent to the personal protection tag and the second personal protection tag is to be installed on the grounding device at the point of connection with the grounding system.

Each time the personal protection tag is removed from the disconnect switch the ground tag, grounding conductor and clamp, and personal protection tag attached to the grounding conductor or clamp shall also be removed.

13. Control power or pilot pressure shall not be used for personal protection.

Personal protection cannot be placed on a stop push button for an electric motor.

Personal protection cannot be placed on a solenoid controlling the air to a cylinder; the main air supply for the cylinder must be isolated, de-energized, locked and tagged.

14. Defective energy isolating devices are to be immediately tagged with a status tag.

15. A Status Tag is required to identify the condition of equipment or why it cannot to be operated.

When work is incomplete, equipment is on hold or defective a Status Tag shall be installed stating the reason.

16. Do not remove a status tag unless authorized to do so.

Authorization to remove a status tag can be given by:
- Any Tagger who is continuing the work as stated on the status tag.
- The Tagger’s Supervisor.
- The Operating Superintendent or his/her designate in charge of the equipment or process.

17. A variance to a Zero Energy State Locking and Tagging procedure is only valid in the plant/mine that has developed and approved it. (Refer to SAF-ZES-60010 Plant Specific Locking and Tagging Variance standard procedure for full details.)

18. If a spade, also known as a blind or blank, is introduced into a piping system as an Energy Isolating Device to protect a worker, the flange shall be locked and tagged utilizing a blind flange lockout device where possible. If a blind flange lockout device cannot be installed, one bolt must be secured with a lock and tag. All bolts must be installed, sequenced and torqued to manufacturer’s specifications. The person(s) being protected must have a lock and personal protection tag on the lockout mechanism used or on the lock box associated with the lockout device.

6.0 STANDARD PROCEDURES AND GUIDELINES

The Ontario Operations Zero Energy State Locking and Tagging Program provides standard procedures, guidelines, forms, job aids, and training to provide workers with the ability to protect themselves from all sources of energy or material that flow to a process or equipment.
6.1. **ZES WEBSITE PLACEMAT**

The ZES Placemat shown below provides an easy to navigate interface to all of the ZES Program components: procedures, guidelines, forms, training, material lists etc. Access the placement via any of the ZES links on the Vale Global Intranet – Sudbury Website:


![ZES Website Placemat](image)

**Figure 1 - ZES Website Placemat**

Clicking on a topic area on the placemat will open the related resource for review or reference. The most current version of this placemat will be displayed on the Vale Global Intranet ZES link.

**NOTE:** External contractors can access ZES Program components via an external Web link to Vale’s Maintenance and Engineering Standards at the following URL:  [http://extportal.vale.com/maint/sud/index.html](http://extportal.vale.com/maint/sud/index.html)

7.0 **MATERIALS**

A material list is found in this document in *Appendix A: Material Illustrations.*
8.0 ACCOUNTABILITIES

8.1. MANAGER, MAINTENANCE & ENGINEERING, ONTARIO OPERATIONS

The Manager of Maintenance & Engineering, Ontario Operations is accountable for the following:

a) The ZES Program
b) The development of divisional training packages
c) Authorizing changes to the program.
d) Ensuring divisional training is delivered for Vale and non-Vale personnel.

8.2. MINE/PLANT MANAGERS

The Mine/Plant Managers are accountable for the following:

a) Ensuring the program is implemented
b) Developing and delivering site specific training
c) Communicating changes in the program, incident experience, and auditing results
d) Conducting periodic reviews of active variances at their respective plants
e) Ensuring all personnel receive the ZES core training
f) Ensuring that all workers and supervisors receive the ZES training modules that are required for their respective plant/mines
g) Identifying equipment and energy isolating devices
h) Conducting periodic reviews of worker qualifications

8.3. MANAGER OF SAFETY

The Manager of Safety is accountable for the following:

a) Auditing of the Program

8.4. SUPERINTENDENTS

Superintendents are accountable for the following:

a) Ensuring compliance with the ZES Program in their areas of accountability.

8.5. SUPERVISORS

Supervisors are accountable for the following:

a) Ensuring that workers who lock and tag are trained and qualified in ZES modules required.
b) Ensuring that workers who are required to operate energy isolation devices are trained and qualified to operate energy isolation devices.
8.6. DESIGNATED TAGGER

The Designated Tagger is accountable for the following:

a) Identifying the energy isolating devices for the project and the method for isolating and de-energizing
b) Getting permission to shut down the equipment or process
c) Isolating the equipment
d) Installing the personal protection locks and tags
e) De-energizing any stored energy
f) Verifying a zero energy state on the equipment
g) Filling out lock box forms and installing blue project locks
h) Removing project personal protection locks and tags
i) Installing and removing status tags

8.7. LOCAL TAGGER

The Local Tagger is accountable for the following:

a) Identifying the energy isolating devices for the assigned job and the method for isolating and de-energizing
b) Getting permission to shut down the equipment or process
c) Completing Remote Tagging Form
d) Ensuring that the Remote Tagger completes their Remote Tagging Form
e) Communicating with the Remote Tagger to install / remove their red personal protection locks and tags
f) Ensuring that any stored energy is de-energized
g) Ensuring that a Zero Energy State is verified on the equipment
h) Installing a lock box and blue project lock when other Taggers, working on the same job require personal protection
i) Managing the key for the blue project lock
j) Installing / removing Status Tags

8.8. REMOTE TAGGER

a) The Remote Tagger is accountable for the following:

b) Operating the energy isolating devices and installing/removing the personal protection as per the Local Tagger’s instruction.
c) Filling in the Remote Tagging Form
d) Securing the key(s) for the Local Tagger’s red personal protection locks.

8.9. ISOLATION EQUIPMENT OPERATOR

The Isolation Equipment Operator is accountable for the following:

a) Safely operating the energy isolating devices
8.10. TAGGER USING A LOCK BOX

The Tagger using a Lock Box is accountable for the following:

a) Ensuring that they are working on the same project as recorded on the Lock Box Form
b) Installing their personal protection on the correct Lock Box
c) Removing their personal protection
d) Communicating the status of the equipment to the Designated Tagger

8.11. TAGGER NOT USING A LOCK BOX

A Tagger not using a lock box is accountable for the following:

a) Identifying the energy isolating devices for the assigned job and the method for isolating and de-
energizing
b) Getting permission to shut down the equipment or process
c) Isolating the equipment
d) Installing their personal protection locks and tags
e) Ensuring that any stored energy is de-energized
f) Ensuring that a Zero Energy State is verified on the equipment
g) Removing their personal protection locks and tags
h) Installing / removing Status Tags

9.0 EQUIPMENT IDENTIFICATION

9.1. IDENTIFYING ELECTRICAL ENERGY ISOLATION DEVICES

The equipment identification must allow a person to positively identify the energy isolating device(s) and the
energy isolation device locations(s).

9.2. OTHER ENERGY ISOLATION DEVICES

The identification of other energy isolation devices must allow a person to positively identify the energy
isolating device(s) for the equipment.

The identification is not required when the arrangement of the equipment and the energy isolation device(s)
allows a person to positively identify the energy isolating device(s) for the equipment.

10.0 TRAINING

10.1. ADMINISTRATION

The Manager Safety shall make available training that will ensure all individuals understand the purpose
and procedures within the Ontario Operations Zero Energy State Locking and Tagging Program. The
training will be common for both Vale and non-Vale personnel.
10.2. CONTROL

The Manager Safety will approve the delivery method and agent for the Ontario Zero Energy State Locking and Tagging Program training. The Mine/Plant Managers will approve the delivery method and agent for any site-specific locking and tagging training.

10.3. TRAINING MODULES

The following chart outlines the Zero Energy State training modules available to individuals:

<table>
<thead>
<tr>
<th>Module</th>
<th>Topic</th>
<th>Pre-requisite</th>
<th>Who?</th>
</tr>
</thead>
<tbody>
<tr>
<td>ZES001</td>
<td>Core</td>
<td>None</td>
<td>All Vale and non-Vale employees on property</td>
</tr>
<tr>
<td>ZES003</td>
<td>Isolating, Locking &amp; Tagging</td>
<td>ZES001</td>
<td>Anyone who requires personal protection and manages status tags</td>
</tr>
<tr>
<td>ZES003.1</td>
<td>Remote Tagging</td>
<td>ZES001, ZES003</td>
<td>Anyone who requires personal protection using remote tagging</td>
</tr>
<tr>
<td>ZES003.2</td>
<td>Mobile Tagging</td>
<td>ZES001, ZES003</td>
<td>Anyone who requires personal protection on running mobile equipment.</td>
</tr>
<tr>
<td>ZES003.3</td>
<td>Designated Tagger</td>
<td>ZES001, ZES003</td>
<td>Anyone who installs and removes project personal protection (lock boxes) and manages status tags</td>
</tr>
<tr>
<td>ZES004</td>
<td>Supervisor</td>
<td>(All the above modules)</td>
<td>Anyone who supervises others requiring personal protection or managing status tags</td>
</tr>
<tr>
<td>ZES003r</td>
<td>ZES Review - yearly</td>
<td>Anyone trained on ZES001, ZES003, ZES003.1, ZES003.2, ZES003.3 or ZES004 who wishes to maintain their authorization to conduct locking and tagging procedures must complete this yearly review.</td>
<td>All Vale and non-Vale employees on property who are authorized (via one of the specific ZES training modules) to conduct specific locking and tagging procedures.</td>
</tr>
</tbody>
</table>

Vale, Learning & Development, Zero Energy State Training (ZES) URL:

10.4. TRAINING MODULE LEARNING OBJECTIVES

ZES001 Core
- Recognize the ZES Core training module as one of several training modules available
- Demonstrate respect for the link between ZES training and the need to reduce injuries related to the hazard of unexpected release of stored energy
- Assess the risk involved in working on equipment and processes involving stored energy, based on specific scenarios, and using the HomeSafe risk assessment chart
- Recognize the need to protect personal safety when approaching areas identified by personal protection locks or tags
- Know where to access all ZES Program resources on the Vale Intranet

ZES003 Isolating, Locking & Tagging
- Recognize the objectives and limitations of the ZES003 Module
- Recognize the general risks associated with isolating mechanical and electrical energy
- Recall definitions, rules, accountabilities, and safe practices required of a qualified Isolation Equipment Operator (IEO)
- Recognize the link between ZES Rules and Ontario regulations
- Identify the stages of the isolating process for Installing Personal Protection
- Recognize the general risks associated with isolating electrical energy
- Identify and operate common electrical isolating devices involved in isolating energy
- Perform energy isolating on common electrical equipment
- Know where to access all ZES Program resources on the Vale Intranet

ZES003.1 Remote Tagging
- Recognize key terms related to remote tagging and locking
- Identify key remote tagging accountabilities
- Complete the Remote Tagging Form per ZES practice
- Recognize the process involved in remotely installing personal protection
- Provide reasons for the need for clear communication between Local and Remote Taggers
- Adjust the process for removing personal protection in accordance with four key scenarios:
  1) Work is completed – lock box in use
  2) Work is completed – no lock box in use
  3) Work is incomplete – lock box in use
  4) Work is incomplete – no lock box in use
- Know where to access all ZES Program resources on the Vale Intranet

ZES003.2 Mobile Equipment Tagging
- Recognize key terms related to tagging of mobile equipment
- Identify key mobile tagging accountabilities
- Recognize the unique actions involved in "Running Equipment" tagging applications
- Know where to access all ZES Program resources on the Vale Intranet
ZES PROGRAM Administration

ZES003.3 Designated Tagger
- Recognize the link between ZES rules and Ontario regulations.
- Recognize the role and accountabilities of Designated Tagger
- Understand how to set up and use a lock box (forms, keys, installation and removal)
- Understand the accountabilities of a Designated Tagger
- How to assign a subsequent Designated Tagger
- Understand the various cascading lock box applications
- Know where to access all ZES Program resources on the Vale Intranet

ZES004 Supervisor
- Follow ZES procedure for removal of a lock if an employee has left the property.
- Recognize the ZES procedure for implementing a specific plant variance or to make a request for a ZES Program change.
- Recognize key accountabilities.
- Locate ZES resource materials as needed.
- Check personnel’s performance of ZES activities.
- Provide feedback on how to perform ZES tasks properly.
- Use SLAM, walkarounds, and job observation to fulfill supervisory duties related to ZES.
- Facilitate safety meetings to reinforce ZES trained
- Know where to access all ZES Program resources on the Vale Intranet

ZES003R – Periodic Review
- This module is designed reinforce the ZES procedures and concepts learned in ZES001, ZES003, ZES003.1, ZES003.2, ZES003.3 or ZES004
- Anyone who has completed any of the above modules and who wants to maintain their authorization to conduct locking and tagging procedures must complete this review yearly

11.0 PROGRAM MONITORING AND MEASUREMENT

The Manager of Safety shall assess the effectiveness of each of the elements of the Ontario Operations Zero Energy State Locking and Tagging Program.

A report of findings will be generated and sent to the Mine/Plant Managers.
12.0 APPENDICES

APPENDIX A: Material Illustrations
APPENDIX B: Forms
APPENDIX C: Revision Notes
Appendix A: Material Illustrations

#1 – Red Personal Protection Locks

Red Personal Protection Lock (Plastic)
- Supplier: Vallen
- Supplier Part Number: BRD 99552
- Short Description: PADLOCK SAFETY 1.5 IN KD RED 1 KEY

Red Personal Protection Lock (Aluminum)
- Supplier: Vallen
- Supplier Part Number: BRD Y3780860
- Short Description: LOCK CUSTOM ALUM 1KD RED -PN: BRD Y37
#2 – Blue Project Locks

Blue Project Lock (**Plastic**)
- **Supplier:** Vallen
- **Supplier Part Number:** BRD 99556
- **Short Description:** PADLOCK  SAFETY  1.5 IN  KD  BLUE  1 KEY

![Blue Plastic Lock](image)

Blue Project Lock (**Aluminum**)
- **Supplier:** Vallen
- **Supplier Part Number:** BRD Y3780861
- **Short Description:** LOCK  CUSTOM ALUM 1KD  BLUE  -PN: BRD Y3

![Blue Aluminum Lock](image)
#3 – Lock Extenders

Lock Extenders
Supplier: Vallen
Supplier Part Number: **BRD 65375**
Short Description: LOCKOUT HASPS 1 IN DIA

![Lock Extenders Image]

#4 – Full Size Lock Box

Red Group Lock Box (Size 11 inches by 12.5 inches)
Supplier: Vallen
Short Description: LOCKOUT BOX: GROUP; RED
Material Number: **15647153**

![Full Size Lock Box Image]

Short Description: HOLDER; PAPER; FOR LOCKOUT PROCEDURES
Material Number: **15611987**
#5 – Small Size Lock Box
Clear Small Lock Box (Size 6 inches by 5.5 inches)
Supplier: Vallen
Short Description: LOCKOUT, SAFETY;BX,CLR;FFT: GROUP

Material Number: 15664472

#6 – Status Tag
White Status Tag – CAUTION DO NOT OPERATE
Supplier: Nickel Acme Printers Inc.
Short Description: TAG, SAFETY;CAUTION DO NOT OPRT
Material Number: 15583121

Polyethylene option:
13045095 TAG; TYPE: SAFETY; CAUTION DO NOT OPERATE EQUIPMENT STATUS; MATERIAL: POLYETHYLENE; COLOR: BLACK/RED/WHITE; ORIFICE: W/O ORIFICE; SIZE: 3.125X6.25IN; BOX 1000 UNITS - 15583121T NICKEL ACME PRINTERS

Note: The use of a permanent marker for marking, and scissors will be required to cut tag.
#7 – Personal Protection Tag

Red Personal Protection Tag – DANGER DO NOT OPERATE

Supplier: Nickel Acme Printers Inc.

Short Description: TAG; DANGER PROJECT TAG; DO NOT OPERATE

Material Number: 15693455

Note: When using a red Personal Protection Tag, it is suggested to remove the string from the tag and then attach the tag directly to the shackle of the red Personal Protection Lock by sliding the shackle through the provided hole in the tag (as shown below).

Polyethylene option:

13045092 TAG; TYPE: SAFETY; DANGER DO NOT OPERATE PERSONAL PROTECTION; MATERIAL: POLYETHYLENE; COLOR: BLACK/RED; ORIFICE: W/O ORIFICE; SIZE: 3.125X6.25IN; BOX 1000 UNITS - 15693455T NICKEL ACME PRINTERS

Note: The use of a permanent marker for marking, and scissors will be required to cut tag.
Appendix B: Forms

Printable forms can be accessed from the ZES websites (See Section 6.1 in this document)

JOB AID – USING CASCADING LOCK BOXES
The lock box forms are available in WORD versions to accommodate 8, 16, 24, 48, and 56 energy isolating devices. If greater than 56 devices is required, the form can be easily modified to expand the table if required. Caution should be taken to ensure the numbering sequencing for devices is maintained in chronological order i.e. 57, 58, 59 etc.
The last two pages of the Lock Box Form provide reference flowcharts for the ZES procedures applicable to installing and removing personal protection to and from the Lock Box.
### ZES Program Change Request Form

**Ontario Operations Zero Energy State Locking and Tagging Program**

<table>
<thead>
<tr>
<th>Originating Plant:</th>
<th>Date:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Originator:</td>
<td></td>
</tr>
</tbody>
</table>

**Reason for the Request:** (State why the locking and tagging program should be changed.)

**Background Information:** (Include such things as history, investigation recommendations and best practices.)

**Impact on Safety:** (Will the program change reduce / increase the risk of a downgrading incident?)

**Alternatives:** (What are some other things that have been considered in lieu of a program change?)

**Approval to send request to the Manager of Safety, Health & Environment:**

<table>
<thead>
<tr>
<th>Approved</th>
<th>Plant / Mine Manager's Signature</th>
<th>Date</th>
</tr>
</thead>
</table>

**Approval to develop the draft program change:**

<table>
<thead>
<tr>
<th>Approved</th>
<th>Manager of Safety, Health &amp; Environment</th>
<th>Date</th>
<th>Development Team Leader</th>
</tr>
</thead>
</table>

**Approval to implement the program change:**

<table>
<thead>
<tr>
<th>Approved</th>
<th>Manager of Safety, Health &amp; Environment</th>
<th>Date</th>
</tr>
</thead>
</table>

**Note:**

The Manager of Safety, Health & Environment must approve the program change before it can be implemented.

---

The use of this form is described in SAF-ZES-40011 - Procedure to Make Changes to the ZES Program

Revised April 2019
REMOTE TAGGING FORM
PLANT SPECIFIC LOCKING & TAGGING VARIANCE

Ontario Operations – Safety Central Services

Ontario Operations Zero Energy State Locking and Tagging Program
Plant-specific Locking and Tagging Variance

Request Form

Originating Plant:  

Originator:  

Date:  

Equipment:  

Reason for the Request: (State why standard locking and tagging is inadequate.)

Duration of the Variance: (State time period that the variance will be in effect, i.e. one day or permanent.)

Background Information: (Include such items as history, manufacturer’s recommendations and best practices.)

Impact on Safety: (Will the variance reduce or increase the risk of a downgrading incident?)

Alternative: (What are some other things that have been considered in lieu of a variance. Why are they considered unworkable?)

Approval to Develop the Variance:

☐ Approved  

Manager’s Signature:  

Date:  

Development Team Leader:  

EMOCE

A manager must approve the development of a variance to the Ontario Operations Zero Energy State Locking and Tagging Procedure.

The manager must appoint a “Variance Development Team Leader” to manage the variance development.

The “Variance Development Team Leader” will create a Management of Change record in the EMOCE system, within the plant-specific locking and tagging variance.

Note:

A variance cannot be implemented until the manager approves the EMOCE record. The EMOCE record is approved when the superintendent signs off Item 3b on the “Responsibility List” tab of the EMOCE record.
# ZES AUDIT FORM

## Procedure
The program audit will determine conformance of each of the elements of the Ontario Operations Zero Energy State Locking and Tagging Program. A report will be generated and sent to the Manager of Specialty Engineering and the Mine/Plant Manager.

## ZES Audit Checklist

<table>
<thead>
<tr>
<th>Project / Site</th>
<th>Date</th>
<th>Auditor</th>
</tr>
</thead>
</table>

### Conformance to Program

<table>
<thead>
<tr>
<th>GENERAL LOCKING AND TAGGING</th>
<th>Yes</th>
<th>No</th>
<th>Hazard Level</th>
<th>SHELL</th>
<th>Comments / Positive Recognition</th>
</tr>
</thead>
<tbody>
<tr>
<td>Are all sources of energy isolated using a proper red lock and tag?</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Has the paper tag been used, and filled out correctly?</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Are locking devices applied properly?</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Is the locking device proper for the application?</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Are the isolation points easily identified and located?</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Has the equipment been verified to be at Zero Energy State?</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Where work has stopped, but the job is incomplete, have status tags been used to protect equipment?</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### LOCKBOX PROCEDURES

<table>
<thead>
<tr>
<th>Is the Lock Box accessible?</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Is the Lock Box Form with the Lock Box?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Is the lock box form current?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Does the Lock Box Form identify the project?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Does the Lock Box Form identify the procedure being followed (if applicable)?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Does the device description on lock box form match the device labeling where applicable?</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
PLANNED INSPECTION – LOCK BOXES
Appendix C: Revision Notes

Revision notes describe what was changed, and if applicable, why it was changed, and the plan to implement the change, including whether changes are retroactive. The revision notes are a summary of the changes and may not necessarily be a complete list. A risk code is entered each revision and if applicable, the revision notes will describe how risk was addressed for the revision.

<table>
<thead>
<tr>
<th>Risk Code</th>
<th>Risk Category</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>The revision is a minor change and/or introduces no risk.</td>
</tr>
<tr>
<td>B</td>
<td>Risk has been addressed for this revision by the reviewer and approver. Low risk or no new hazards identified.</td>
</tr>
<tr>
<td>C</td>
<td>For this revision, a risk management tool has been used to address risk and minimize hazards. This risk assessment has been document and is available through Maintenance Engineering.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Rev</th>
<th>Revision Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>7</td>
<td>July 25, 2019 Ownership of ZES Program transitioned to Ontario Operations Safety – Central Services. Risk Code A – minor change and introduces no risk. Changes include: Header of program documentation and reference number changes for example: MPROC-60000 now SPI-ZES-60000. Location of documents and forms on Websites remain the same. FORMS have no change other than “reference numbers” to the documents where applicable.</td>
</tr>
<tr>
<td>6</td>
<td>Updates made to incorporate the changes made to introduce a new format for Lock Box Forms. Risk Code: A - The revision is a minor change and/or introduces no risk. Training through Learning &amp; Development available for all those involved with locking and tagging using lock boxes. All plant L&amp;D Representatives to provide plants with introduction to the new lock box forms. All plants to be in compliance with new forms on January 1, 2019.</td>
</tr>
<tr>
<td>5</td>
<td>Revision of Section 2 - Application to clarify locking and tagging requirements for different voltages and involvement levels required of Electrical Department and Power Department. Risk Code for this revision is A – The revision introduces no risk. Section 6.1 Updated ZES Placemat to reflect current URLs/links.</td>
</tr>
</tbody>
</table>
| 3   | Ontario Operations Zero Energy State Locking & Tagging Program, formatted content in the program related to various processes into separate documents: i.e., procedures, guidelines as applicable. The reason for reform:  
  • To update the format to meet the minimum requirements of documents maintained in the Maintenance Standard Document Management System  
  • To maintain procedures on the Maintenance Standards Website for easy access for internal and external reference  
Content related to administration, rules, accountabilities, and training reformatted into a procedure MRPOC-60000 – ZES Program Administration. |
| 2   | Accountability in the Ontario Operations Zero Energy State Locking and Tagging Program updated to reflect changes in the new organizational structure. (Glen O’Neil, March 31, 2009) |
| 1   | Implemented the Ontario Operations Zero Energy State Locking and Tagging Program. (Fred Stanford), June 15, 2008 |