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**1.0 PURPOSE**

This procedure describes the mandatory processes required for removing red or blue locks if the person is not on the property.

**2.0 APPLICATION**

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

Parameters for Electrical Locking & Tagging	
Up to 600 volts	<ul style="list-style-type: none"> <li>Employees must be trained and qualified to ZES003</li> </ul>
Greater than 600 volts and up to 15kV	<ul style="list-style-type: none"> <li>Employees must be trained and qualified to ZES003</li> <li><b>Power Department</b> will follow <b>MPROC-55001 High Tension Lines, High Tension Switching Procedure</b> between 600 volts and up to 15kV</li> <li><b>All other departments</b> will follow <b>MPROC-50001 Electrical Department Switch Room and Substation Access Procedure</b> <ul style="list-style-type: none"> <li>Employees must be trained and qualified electrical tradespersons or have been trained, qualified and permitted through MPROC-50001</li> <li>Requires communication with the plant's Electrical Department to establish the level of involvement required from them</li> </ul> </li> </ul>
Greater than 15 kV	<ul style="list-style-type: none"> <li>Requires Power Department</li> </ul>

**2.1. EXCEPTIONS**

- 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
- Overhead lines and related equipment below 15kV must follow plant specific policies and procedures
- 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 this document or are related to it. Reference should always be made to the most current official version of these regulations.

- 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

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

**Cascaded Lock Bock:** 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

**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.

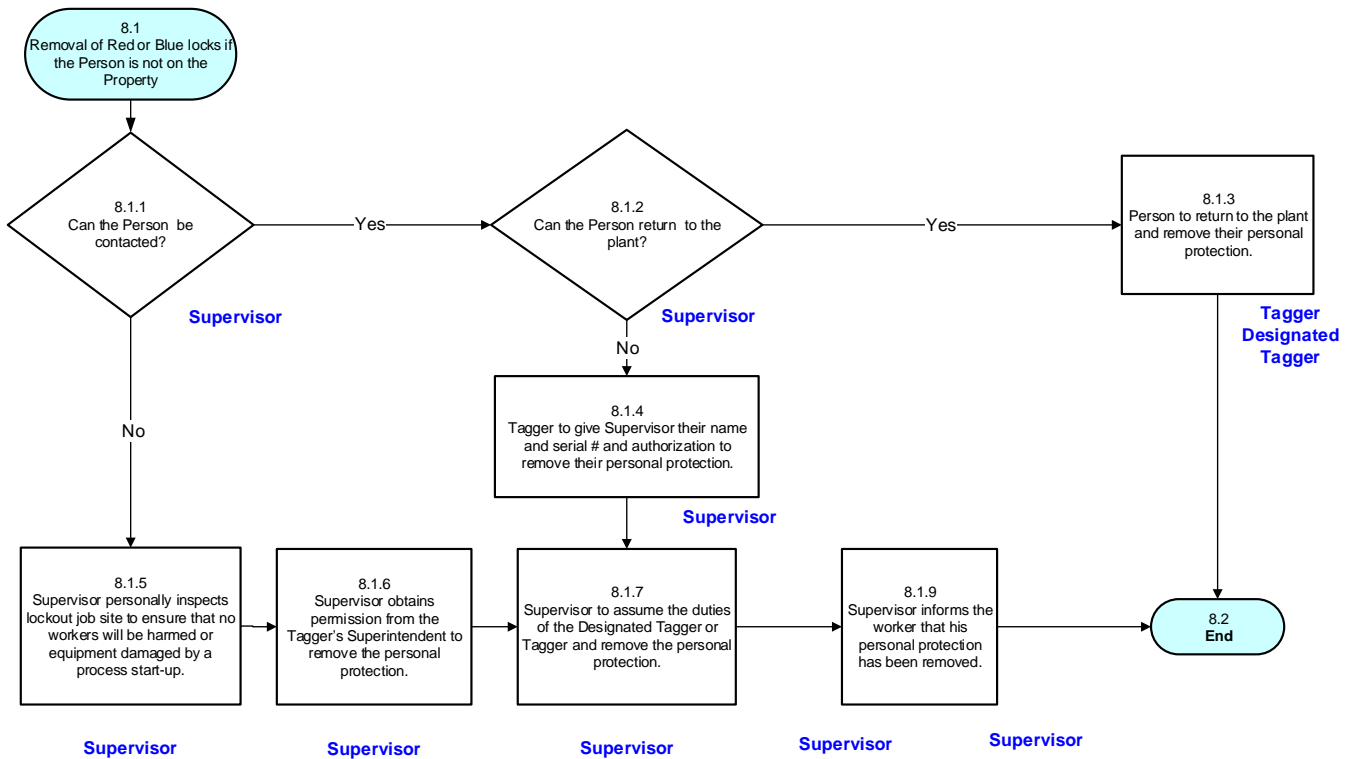
**Variance:** an approved plant specific measure put in place when it is impractical or unsafe to follow the Zero Energy State Locking and Tagging Procedure

**Zero Energy State:** a state where all hazardous energy has been isolated and de-energized, or otherwise controlled to manage risk.

**5.0 REMOVAL OF RED OR BLUE LOCKS – PERSON IS NOT ON THE PROPERTY**

The following flowchart outlines the mandatory steps required for the removal of red or blue locks if the person is not on the property.

**Removal of Red or Blue locks if the Person is not on the Property  
ZES Flowchart #8**



## 6.0 ZES PROCEDURE – FLOWCHART #8

### FC: 8.1 REMOVAL OF RED OR BLUE LOCKS IF THE PERSON IS NOT ON THE PROPERTY

The purpose of this flowchart is to outline the steps that must be taken to remove the personal protection when the Tagger is not on the property.

Occasionally, a Tagger may leave the property without removing their personal protection. The equipment might be required to run while they are absent.

The supervisor who wants to run the equipment is accountable to manage the process.

This process is to be performed when the tagger has left the property without removing their personal protection and the equipment is required to run.

**NOTE:** This procedure is also applicable if a Designated Tagger or Subsequent Designated Tagger is not available to remove the blue lock from a lock box.

#### FC: 8.1.1 CAN THE TAGGER BE CONTACTED?

The purpose of this process is to contact the Tagger if possible.

The Tagger has left the property without removing their personal protection. The equipment is required to run.

The first question to be answered is:

- Can the Tagger be contacted?

It is important to determine the whereabouts of the Tagger and to make contact if at all possible. The Supervisor will determine the number of contact attempts that are appropriate with due diligence. The Supervisor will determine why the Tagger left the property.

The Supervisor will attempt to contact the Tagger with due diligence by doing the following:

- Phoning the Tagger at home.
- Talking to co-Taggers who may know where the Tagger is.
- Phoning family members, if known.

The Supervisor will attempt to contact the Tagger at any location where they are expected to be if practical.

Based on the phone responses, the Supervisor will answer the question:

- Can the Tagger be contacted?

If the answer is 'Yes', then proceed to step 8.1.2.

If the answer is 'No', then proceed to step 8.1.5.

**FC: 8.1.2 CAN THE TAGGER RETURN TO THE PLANT?**

The purpose of this step is to get the Tagger to return to the plant.

The Tagger is not on the property. The equipment is required to run. The Tagger has been contacted.

The question to be answered is:

- Can the Tagger return to the plant?

Having the Tagger return will help in a couple of ways:

- They can remove their personal protection.
- They can assist in any incident investigation.

The Supervisor is responsible for answering this question.

The Supervisor will explain to the Tagger that the personal protection must be removed so that the equipment can be run. The Supervisor will request that the Tagger return to the plant to remove his or her personal protection.

Based on the tagger's response, the Supervisor will answer the question:

- Can the tagger return to the plant?

If the answer is 'Yes', then proceed to step 8.1.3.

If the answer is 'No', then proceed to step 8.1.4.

**FC: 8.1.3 TAGGER TO RETURN TO THE PLANT AND REMOVE THEIR PROTECTION**

The purpose of this step is to have a Tagger remove their personal protection so the equipment can run.

The Tagger has left the property and returned at the request of the supervisor.

The Tagger no longer requires the protection so they remove it.

The Tagger must remove the personal protection before the equipment is run.

The protection is removed by following the steps outlined in procedure *SAF-ZES-60003 Tagger Removing Personal Protection* and/or procedure *SAF-ZES-60004 Designated Tagger Removing Protection with a Lock Box*.

This step may take some time depending on the distance that the Tagger must travel to return to the plant.

#### **FC: 8.1.4 TAGGER TO GIVE SUPERVISOR THEIR NAME AND SERIAL # AND AUTHORIZATION TO REMOVE THEIR PERSONAL PROTECTION**

The purpose of this step is for the Supervisor to obtain authorization from the Tagger to remove the personal protection.

The tagger has been contacted and will not be returning. The equipment is required to run. The supervisor must obtain authorization to remove the personal protection from the tagger. The authorization is given once.

The supervisor will explain to the tagger that the personal protection will be removed so that the equipment can be run. The supervisor will make it explicitly clear that the tagger is no longer protected.

The tagger will authorize the supervisor to remove the personal protection on their behalf. They will provide their full name and serial number to the supervisor. The authorization must be obtained before the personal protection is removed.

#### **FC: 8.1.5 SUPERVISOR PERSONALLY INSPECTS LOCKOUT JOB SITE**

The purpose of this step is to ensure that the equipment can be started safely once the personal protection is removed.

The tagger is not on the property and cannot be contacted. The equipment is required to run.

The supervisor must ensure that the equipment is otherwise capable of running before obtaining authorization to remove the personal protection.

The supervisor will perform the inspection before obtaining authorization to remove the personal protection. The inspection must ensure that all equipment hazards and hazards to people are adequately controlled. The inspection will include:

- The lock box, if used. Ensure that the lock box is protecting no other taggers.
- Energy isolating devices. Ensure that the devices are protecting no other taggers.
- Logbooks pertinent to the equipment. Any logbook entries must lead the supervisor to believe that the equipment is ready to be run.
- Permits. There must be no outstanding work permits, confined space work permits, burning permits etc. for the equipment.
- A tour of the equipment. The tour will include:
  - The equipment assembly. The equipment must be assembled.
  - Guarding. All guards must be in place.
  - Tools and loose items are to be moved to a safe location.
  - Workers in the vicinity must be warned.

Resources for the Supervisor include:

- Log books
- Permits

The inspection must be performed before requesting the authorization for the removal of the personal protection.



### **FC: 8.1.6 SUPERVISOR OBTAINS PERMISSION FROM TAGGER'S SUPERINTENDENT TO REMOVE THE PERSONAL PROTECTION**

The purpose of this step is to have the Supervisor obtain authorization from the Tagger's Superintendent to remove the personal protection.

The tagger is not on the property and could not be contacted.

The supervisor must obtain authorization to remove the personal protection.

The supervisor will explain to the Superintendent that the personal protection must be removed so that the equipment can be run. The Supervisor will explain why the equipment must run.

The Supervisor will report their attempts to contact the Tagger.

The Supervisor will report the findings of their inspection. They will outline their plan to prevent the tagger from returning to the workplace.

The Superintendent will authorize the Tagger's Supervisor to remove the personal protection. The authorization is given once.

The Tagger will be prevented from returning to the workplace until they have been directly notified that their personal protection has been removed. The Supervisor will make it explicitly clear to the Tagger that he or she is no longer protected.

The authorization from the Superintendent must be obtained before the Supervisor can remove the Tagger's personal protection.

### **FC: 8.1.7 SUPERVISOR TO ASSUME THE DUTIES OF THE DESIGNATED TAGGER OR TAGGER AND REMOVE THE PERSONAL PROTECTION**

The purpose of this step is to remove the personal protection of the absent Tagger.

The Tagger is not on the property. The equipment is required to run. The Supervisor has obtained authorization from the Tagger's Superintendent to remove the personal protection.

The Supervisor will perform the absent tagger's duties as a Tagger or Designated Tagger to remove the personal protection. The personal protection is removed once.

If the Tagger's personal protection is installed on the lock box, the Supervisor will perform the Tagger's duties to remove personal protection by following the steps outlined in procedure *SAF-ZES-60004 Designated Tagger Removing Protection with a Lock Box*.

When the lock is a project lock, the Supervisor will perform the Designated Tagger's duties to de-isolate and re-energize the equipment. Refer to procedure *SAF-ZES-60004 Designated Tagger Removing Protection with a Lock Box*.

If the Tagger's personal protection is installed on an energy isolating device, the supervisor will perform the Tagger's duties to remove personal protection by following the steps outlined in procedure *SAF-ZES-60003 Tagger Removing Personal Protection*.

In all the above cases, the supervisor will cut and remove the absent tagger's lock as required. The personal protection will be removed after authorization has been obtained from the Superintendent.

### **FC: 8.1.8 SUPERVISOR INFORMS THE WORKER THAT THEIR PERSONAL PROTECTION HAS BEEN REMOVED**

The purpose of this step is to make it explicitly clear to the Tagger that they are no longer protected.

An absent Tagger's personal protection has been removed.

The Tagger must be prevented from returning to the workplace until they have been directly notified that their personal protection has been removed.

The Supervisor will make it explicitly clear to the Tagger that he or she is no longer protected.

This step is to be performed as soon as the absent Tagger returns to the property.



**7.0 APPENDICES**

APPENDIX A: Revision Notes

**Appendix A: 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

Risk Code:	Risk Category
A	The revision is a minor change and/or introduces no risk.
B	Risk has been addressed for this revision by the reviewer and approver. Low risk or no new hazards identified.
C	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.

Rev	Revision Notes
5	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.
4	Revision of <b>Section 2 - Application</b> 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 <b>A</b> – The revision introduces no risk.
3	Ontario Operations Zero Energy State Locking & Tagging Program, Section 6 Procedures, 6.8 Flowchart 8 and its related CPQQRT <ol style="list-style-type: none"> <li>Formatted content into a maintenance standard "procedure" document: <i>MPROC-60008 Removal of Red or Blue Locks if Person is not on the Property</i>. The reason for re-format:                             <ul style="list-style-type: none"> <li>To update the format to meet the minimum requirements of documents maintained in the recently established Maintenance Standard Document Management System</li> <li>To maintain the procedure on the Maintenance Standards Website for easy access for internal and external reference.</li> </ul> </li> </ol>
2	March 31, 2009 <b>Ontario Operations Zero Energy State Locking &amp; Tagging Program Ontario</b> Division changed its organizational structure. ZES Program document updated: "Section 7 – Accountabilities" to reflect the new organization structure
1	June 15, 2008 Implemented the <b>Ontario Operations Zero Energy State Locking and Tagging Program</b>