

Work Safety Code

7th Edition – July 2022



Note: To reflect circumstances in the field, some statements have been reproduced in their entirety, although they do not fully comply with the implementing regulation of the Charter of the French Language.

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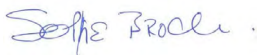
Preface

Worker safety is Hydro-Québec's key concern. We need to put the required tools and framework in place to provide all Hydro-Québec and supplier employees with a safe work environment.

The Work Safety Code establishes the safety principles for the hazards associated with energy sources found in the workplace. The Code is a corporate directive and related guidelines may clarify its application. Hydro-Québec and supplier personnel performing work on or near Hydro-Québec's facilities must comply with the principles and provisions of the Code.

Everyone's safety depends on adequate knowledge of work processes, planning, job hazard analysis and proper work supervision. Workers must have the knowledge and skills required to perform work safely. As a team, we need to work together to implement effective hazard prevention and control measures in the day-to-day performance of our work.

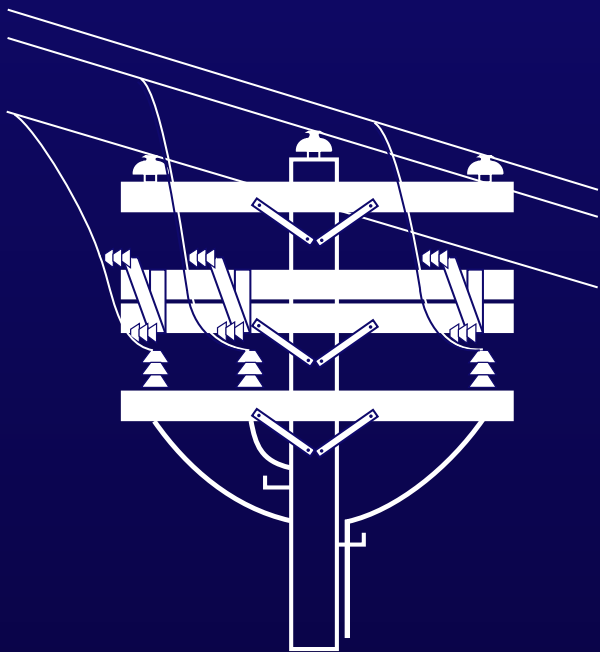
Let's make a commitment to pool our efforts to create such a safe workplace for all of us.



Sophie Brochu
President and Chief Executive Officer

Committee Mandate Work Safety Code

The most recent version of the mandate is available on the intranet site of the Work Safety Code.



Distribution

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General

1 Introduction

1.1 Purpose

The Work Safety Code sets out the measures to be applied so that workers can perform work safely. Safety measures touch on the hazards related to power sources in Hydro-Québec generating, transmission, distribution, and telecommunications facilities.

1.2 Scope

The Work Safety Code applies to work performed by Hydro-Québec and contractor personnel on or near Hydro-Québec's energized or de-energized facilities.

In an emergency, if someone's safety is in jeopardy, full application of the Work Safety Code is not required. Once the emergency is under control, the Code applies again in full.

The Work Safety Code applies to work in areas designated as "construction sites" for facilities or parts of facilities that have already been commissioned.

The Work Safety Code does not apply to:

- Facilities or parts of facilities designated as "construction sites" that have never been commissioned.

In such cases, the *Québec Safety Code for the Construction Industry* applies up to the commissioning stage.

1.3 Sector standards

The Work Safety Code applies when work is being done on certain specific facilities with special characteristics.

The principles of the Work Safety Code apply and are described in the applicable guidelines (*A.73-03, A.73-04 and D.24-26*).

2 Training and qualification

The rules pertaining to the training and qualification of Hydro-Québec and contractor personnel are defined in the guideline entitled Work Safety Code Training and Qualification (*HQ-SST-N-1003*).

3 Inquiries

Any inquiries related to the understanding of this Work Safety Code must be submitted using the procedure set out in the guideline entitled *Mécanisme de compréhension du Code de sécurité des travaux (SST-N-100)* [Inquiries relating to the Work Safety Code].

4 Monitoring enforcement of the Work Safety Code

Hydro-Québec Distribution must implement an audit program to enforce compliance with the Work Safety Code and related guidelines in order to confirm that parties are aware of and use the prescribed guidelines.

The audit program must include the following:

- Roles and responsibilities in coordinating, planning, conducting audits and implementing corrective action
- Criteria relating to auditor qualifications and selection
- Audit scope
- Annual audit frequency
- Methods to be used and analysis of findings
- Production of reports

The audit plan must be submitted to the Work Safety Code Committee.

Audit findings and conclusions along with all action plans must be documented and communicated to the workers involved and the parties responsible for the corrective actions, and submitted annually to the Work Safety Code Committee.

Distribution

1 Application to lines

The Work Safety Code applies to overhead and underground lines from terminal box connections or at the tension insulators in a substation to a customer's connection point, as well as the customer's metering facilities.

1.1 Selection of safety regime

In accordance with the provisions of the Code and depending on the type of work being done, the safety regime is selected according to the rules set out in the guideline entitled *Choix du régime de travail pour l'exécution des travaux sous tension et hors tension sur les lignes aériennes moyenne tension (D.24-19)* [Selection of safety regime for energized and de-energized work on medium-voltage overhead lines].

1.2 Clarifications

1.2.1 Communications with operator

When there is a Hold Order, the operator and WIC must be able to communicate with one another. In areas where direct communication is difficult, a telephone, cell phone, relay or any other means of communication can be used. If no communication is possible, the Work Authorization applies.

1.2.2 Electrical isolation points

Energy-isolating device that enables separation in an electrical circuit that can be verified visually or positively

according to the applicable guideline. The procedures for performing a visual or positive check of the separation of an electrical isolation point are set out in the guideline *Critères de vérification des dispositifs d'isolement des sources d'énergie (D.24-20)* [Criteria for verifying energy-isolating devices].

1.2.3 Underground sector methods

In cases where the Work Safety Code cannot be fully applied due to specific characteristics of the facilities or parts of facilities, sector-specific methods will be developed by the affected sectors and will include the:

- temporary rules of application of the Work Safety Code
- schedule for replacing non-compliant equipment

The methods will be developed jointly with the local health and safety committees (CLSS) involved and submitted to Work Safety Code Committee for assessment.

1.2.4 Lockout Sheet

A Lockout Sheet must be drawn up when locking out an energy-isolating device is more complex. Otherwise, the lockout procedures are based on the Safety Measures Sheet, in compliance with the requirements set out in the reference document for locking out Distribution energy-isolating devices (*HQ-SST-M-1002 Élaborer et utiliser une Fiche de cadenassage [Developing and using a Lockout Sheet]*).

2 Definitions

Device

Any component in a facility (e.g., circuit breaker, transformer, disconnect switch, reactor).

Related Work Authorization

Work authorization related to the designated WIC's Work Authorization.

Telecommunications network component

Any element part of the telecommunications network.

Delegated worker

Authorized worker who performs the lockout for the WIC.

Energy-isolating device

Device that physically prevents electrical or mechanical energy from being transmitted or released.

Note: Pushbutton switches and similar controls are not energy-isolating devices.

Autonomous power

Power from an autonomous source that does not contribute to the operation of a device, apparatus or facility, for the purpose of conducting a test.

Auxiliary power

Electrical power (750 V and less), either radiant or optical, that contributes to the operation of a telecommunications network device or component.

Induced power

Electrical power generated inductively or capacitively.

Main power

Electrical power at a voltage of more than 750 V present or flowing through a facility or in a device.

Switchperson

An authorized worker who carries out or supervises switching operations under the orders of an operator.

Operator

An authorized worker from Hydro-Québec designated by an administrative unit as being in charge of operating specific facilities.

Security guard

An authorized worker from Hydro-Québec who is in charge of applying the safety measures set out in this Code. This worker may suspend work if there is a hazard that may put workers' safety at risk, and then notifies their supervisor.

Note: For the sake of readability, this term will not be repeated in the document. A security guard has the same duties as a worker in charge (WIC), with the exception of work coordination.

Facility

A group of apparatus and conductors or telecommunications network components, such as overhead or underground lines or telecommunications links, taken as a whole or in part.

Authorized worker

A worker who meets the qualification criteria specified in the Work Safety Code (HQ-SST-N-1003).

Initiated worker

A worker who has taken the introductory course on the Work Safety Code ("Initiation au Code de sécurité des travaux").

Electrical isolation point

Energy-isolating device that enables separation in an electrical circuit that can be verified visually or positively according to the applicable guideline (D.24-20).

Team leader (responsible)

Authorized worker who oversees the work and is responsible for applying the safety measures applicable to their team in the work zone.

Note: Depending on the type of job, qualification under the Work Safety Code is not required for Hydro-Québec or contractor personnel required to act as team leaders. The types of jobs concerned by the qualification can be found in the training and qualification guideline (HQ-SST-N-1003).

Worker in charge (WIC)

Hydro-Québec or contractor authorized worker who is in charge of applying the safety measures of this Code. When there is more than one team, the WIC is responsible for coordinating the work in the work zone.

Designated worker in charge

An authorized worker, appointed by a group of WICs, who is in charge of locking out the isolation points of the protected zone common to those WICs.

Underground system:

This worker is also responsible for the coordination and/or installation of the grounds defined with the WICs.

Work zone

Area established by the WIC and the team members at the site where the work is to be carried out. If the work zone involves more than one structure, these must be easily accessible between them and enable visual contact.

Protected zone

Area established by the operator by means of isolation points corresponding to a WIC's needs and within which measures taken by the operator enable the WIC to establish a work zone.

3 Equipment

Lockout box

Lockable box used by the WIC and team members designed to allow workers to check whether there are any lockout padlock keys.

Lockout padlock

A series of padlocks opened using the same key, bearing the same alphanumeric serial number and used for lockout purposes.

Individual padlock

Lock or series of locks with a single key marked with the worker's name for the duration of the work, and for which only that worker has the key.

Transfer envelope

Envelope used by the WIC to carry out an indirect change in WIC when no lockout box is used. The envelope contains at least the Safety Measures Sheet. It is designed so that the seal number, safety regime number, identification and location of the work can be seen.

Lockout Sheet

Form containing all the information related to the lockout and verification of the isolation of the energy-isolating devices (*HQ-SST-M-1002*).

Note: During the deployment period, the absence of any Lockout Sheets does not prevent work from being performed.

Safety Measures Sheet (SMS)

Form used to enter all the information concerning the lockouts and safety measures put into place for the safety regime being used.

Accord tag

Blue and white tag marked "ACCORD" used when work is to be done under the Accord regime.

Self-protection tag

Yellow and white tag that reads "NE PAS MANŒUVRER – AUTOPROTECTION" [No switching – Self-protection] displayed when work is to be done under the Self-protection regime.

Lockout tag

Red and white tag that reads "APPAREIL CONDAMNÉ – DÉFENSE DE MANŒUVRER" [Device locked out – No switching] used when work is to be done under a Work Authorization regime.

Hold Order tag

Green and white tag that reads "RETENUE" [Hold Order], used for work done under the Hold Order regime.

Note: On the operators' monitors, the Accord, Work Authorization and Hold Order tags as well as the Concession safety measure are represented by icons.

Lockout hasp

Device that allows several locks to be installed.

Transfer seal

Single-use device with unique numbering installed on a lockout box or transfer envelope to ensure lockout continuity. Used only when there is an indirect change in WIC.

4 Safety regimes

The types of safety regimes include:

- Work Authorization
- Accord
- Self-protection
- Hold Order

When the work is performed by Hydro-Québec personnel under a Work Safety Code regime, the latter are held by Hydro-Québec authorized personnel. However, support or expertise provided by Hydro-Québec personnel is permitted in a work zone for which the Work Safety Code regime is held by contractor personnel, provided the work is performed by the contractor.

4.1 Work Authorization regime

4.1.1 Application

The Work Authorization regime applies to de-energized work performed by Hydro-Québec and contractor personnel on or near Hydro-Québec facilities operating at 750 V or more under an operator's responsibility.

This regime also applies when work requires the withdrawal from service of a facility located in an area where no communication is possible between the operator and the WIC.

4.1.2 Application procedure

The work is performed in accordance with Hydro-Québec Distribution's safety standards (*D.25-05*).

No work is permitted on an energy-isolating device serving as an electrical isolation point for the protected zone (*D.24-20*).

No work is allowed that may alter the state of an energy-isolating device serving as an isolation point.

When a designated WIC is used, the operator issues Work Authorizations that are related to the designated WIC's Work Authorization.

Before starting work in a delimited work zone, there must be agreement with the WIC on the work to be done in his zone.

4.1.3 Outage request

When scheduled work has to be done under a Work Authorization, an outage request must be submitted to the operator in accordance with the operating rules (C.36-01). The outage alone is not sufficient to authorize the work.

When there is a communication gap, the withdrawal from service must first be authorized by the operator, who issues a Work Authorization number to the WIC. Through this agreement, the operator delegates the responsibility for establishing and removing the protected zone.

Relevant information regarding the protected zone as well as all other information needed to plan and carry out the work must be provided to the WIC before work begins.

4.1.4 Establishing the protected zone

The operator must establish or have established the isolation points ensuring the protected zone. The operator disables, or has someone disable, the energy-isolating devices(s) of motorized devices acting as electrical isolation points. The operator confirms, or has someone confirm, that the isolation has been verified (D.24-20).

The operator performs, or has someone perform, a zero-voltage check using an approved detector or according to the applicable guideline (D.24.21).

Protected zones must never overlap. However, different protected zones may have common isolation points.

4.1.5 Lockout of protected zone (see Table 2, Lockout)

Each worker must protect themselves by attaching a padlock to prevent any accidental re-energization of the facility, part of the facility or component on which

they are working. Lockout Sheets must be used when they have been drawn up for the work to be performed.

The energy-isolating devices serving as electrical isolation points for the protected zone must be verifiable visually or positively according to the applicable guideline (D.24-20).

Note: Before performing the work to be done, the lockout device must be installed, when it exists.

The lockout can be done once the protected zone has been established, or at the same time when performing switching operations to create the protected zone.

Lockout modes

There are two possible lockout modes: Priority mode and Delegated Worker mode.

However, at the work site, the lockout is always done in Priority mode.

When there is an interruption in customer service, the lockout mode is chosen to minimize the outage.

Note: The criteria for selecting the lockout mode are presented in the "Lockout of protected zone" table.

I Priority lockout mode

The WIC or team leader comes to an agreement with the operator on the size of the protected zone.

The WIC or designated WIC and at least one team member or their delegated worker(s) lock out the energy-isolating devices acting as isolation points for the protected zone in accordance with the Safety Measures Sheet and, where applicable, the associated Lockout Sheets. (For the designated WIC, the other WICs act as members of the team for lockout purposes.)

The use of delegated workers is allowed in Priority mode.

The entire team should participate with the WIC in the lockout process in order to become familiar with the energy-isolating devices (*HQ-SST-M-1002*).

For these lockouts, after verifying the isolation, the WIC or the designated WIC uses one or a series of lockout padlocks. Each padlock must be installed using a lock-out hasp.

When the energy-isolating device is non-lockable, lockout tags must be used, on each phase of all of the energy-isolating devices, that bear the sequential number of the Safety Measures Sheet (Guide FMS Distribution) (see Appendix II, Lockout).

In addition, the WIC or designated WIC enters the sequential number of the Safety Measures Sheet on these tags.

The WIC or designated WIC retrieves and places the key(s) used for the lockout of the isolation points in the lockout box for which they are responsible.

Note: When a designated WIC is responsible for a work area, they also acts as WIC.

a) Continuation of lockout procedure – Designated WIC and other WICs

The designated WIC forwards to the other WICs the information related to the lockout using the Safety Measures Sheet and, where applicable, the associated Lockout Sheets.

Each WIC, including the designated WIC, places an individual lock on the designated WIC's lockout box.

The operator issues the Work Authorization to the designated WIC in accordance with Section 4.1.6.

The operator and the designated WIC agree to not alter the protected zone, except as specified in Section 9.1.

All the WICs sign the Safety Measures Sheet certifying that they are in agreement with the size of the protected zone and the instructions received. The designated WIC signs the Safety Measures Sheet once all the WICs have signed it, the safety measures under the WIC's responsibility are installed, and the designated WIC has authorized the other WICs to begin their work.

Underground system:

The designated WIC coordinates the measures required for installing the grounds with the other WICs. These WICs then complete the relevant sections of the Safety Measures Sheet (see Section 5, "Establishing safety measures for the work zone").

Note: When employees are only needed to install grounds, they must use their individual padlocks to lock out the designated WIC's lockout box. They remove the lockout box once the grounds have been installed.

Each WIC places their own key, used to lock the designated WIC's lockout box, in their own lockout box. The WICs then complete their Safety Measures Sheets for their respective work zones.

b) Continuation of lockout procedure – WIC and team members

The WIC completes the Safety Measures Sheet with the members of their team.

The WIC sends the relevant information using the Safety Measures Sheet and, if applicable, the associated Lockout Sheets.

Each team member, including the WIC, places an individual lock on the WIC's lockout box.

This is done after locking out the energy-isolating devices for any energy sources that are present that may constitute a hazard for the entire team.

Note: When employees are only needed to install grounds, they must use their individual padlocks to lock out the WIC's lockout box. They remove the lockout box once the grounds have been installed.

II Lockout mode for delegated workers

a) Delegated workers

At the operator's request and for the WIC or designated WIC, two delegated workers who are not part of the team perform the lockout for the *protected zone or part of the zone as follows*:

- After verifying the isolation, they use one or a number of lockout padlocks. Each padlock must be installed using a lockout hasp.
- When the energy-isolating device is non-lockable, lockout tags must be placed on each phase of all of these energy-isolating devices that bear the sequential number of the Safety Measures Sheet (Guide FMS Distribution) while waiting for other mechanisms to be established by the lockout working group, as specified in Appendix II.
- Enter on the Safety Measures Sheet the identification of the isolation points, the numbers of the padlocks that were used, and their names.
- Place at a predetermined location the key(s) for the lockout padlocks that were used as well as the Safety Measures Sheet and, where applicable, the associated Lockout Sheets.
- Communicate the actions taken to the operator.

b) The WIC or designated WIC:

- Retrieves, at a predetermined location, the lockout key(s) as well as the Safety Measures Sheet and, where applicable, the associated Lockout Sheets.

- Makes sure that the electrical isolation points entered on the Safety Measures Sheet match those required for the protected zone according to the as-built diagram.
- Confirms the isolation points transmitted by the operator against those entered on the Safety Measures Sheet.
- Places the key(s) for the padlocks used by the delegated workers in the lockout box for which he/she is responsible.
- Continues the lockout procedure:
 - Designated WIC and other WICs; see 4.1.5 a)
 - WIC and team members; see 4.1.5 l b)

4.1.6 Work Authorization issued to the WIC or designated WIC

The operator issues the Work Authorization by providing a Work Authorization number. The operator and the WIC or designated WIC agree not to alter the protected zone, except as specified in Section 9.1.

Note: In the case of a designated WIC, the Work Authorization is issued in 4.1.5 l a).

4.2 Accord regime

4.2.1 Application

The Accord regime applies to work carried out by Hydro-Québec and contractor personnel on energized or de-energized auxiliary power at 750 V or less that may affect the operator.

The Accord regime also applies during:

- Operating checks on control boxes that may affect the Hold Order

- Tests requiring main power on facilities under the responsibility of an operator
- Work on the telecommunications network affecting the Hold Order regime
- Energized or de-energized work on automatic controls that may affect the Hold Order

4.2.2 Application procedure

The work must be performed in accordance with Hydro-Québec Distribution's safety standards (*D.25-05*).

Before starting work in a delimited work zone, there must be agreement with the WIC on the work to be done in their zone.

4.2.3 Advance request

When work has to be done under the Accord regime, an advance request must be submitted to the operator, in accordance with the operating rules (*C.36-01*).

4.2.4 Issuing the Accord regime

The operator issues the Accord regime to the WIC by providing the Accord regime number. The operator checks whether one or more safety regimes have been issued in accordance with the applicable guidelines (*C.36-04, B.72 MA 2110, TEL-GES-P-31-05-001-O*).

4.3 Self-protection regime

4.3.1 Application

The Self-protection regime applies to work performed by Hydro-Québec and contractor personnel on facilities not under operator responsibility, as well on the devices indicated in Section IV. These situations consist of:

I De-energized medium-voltage facilities

- Facilities under construction that have not been connected to the power system
- Facilities being dismantled that have been decommissioned and will not be put back in service
- De-energized medium-voltage metering facilities at the customer's premises

II Energized or de-energized low-voltage facilities

- Facilities operated at 750 V or less
- Metering facilities operates at 750 V or less

III Devices

- Transformers, associated circuit breakers and surge arresters

IV Devices under the operator's responsibility

Applies to the devices mentioned below once they are isolated from the system when the jumpers connecting them to the medium-voltage system have been disconnected (*D.25-04*):

- Condensers, surge arresters, line switches, line disconnectors, and line circuit breakers

4.3.2 Application procedure

The work is performed in accordance with Hydro-Québec Distribution's safety standards (*D.25-05*).

For this regime, no control number is issued to personnel performing the work. However, the WIC must notify the operator when customers are affected by work on the devices mentioned in 4.3.1 III or during work on the devices mentioned in 4.3.1 IV.

Before starting work in a delimited work zone, there must be agreement with the WIC on the work to be done in his zone.

4.3.3 Advance request

No advance request may be sent to the operator during work under the Self-protection regime.

4.4 Hold Order regime

4.4.1 Application

The Hold Order regime applies to energized work performed on or near facilities operated at 750 V or more.

4.4.2 Application procedure

The work is performed in accordance with Hydro-Québec Distribution's safety standards (*D.25-05*).

The Hold Order regime is a guarantee given by an operator to a WIC that (*C.36-02*):

- the apparatus supplying power to the line or device under the Hold Order regime will not be reclosed without the WIC's consent in the event the device should trip or open
- all the protection systems required to issue the Hold Order are connected
- circuit breaker and protection system maintenance is performed in accordance with applicable guidelines (*B.41.12 MM 4110, TET-APE-N0001, TET-AUT-N-1.7.1.1*)
- no work will be done on the required protections

A Hold Order may be recalled at any time at the operator's request.

4.4.3 Advance request

When work has to be done under the Hold Order regime, an advance request must be sent to the operator, in accordance with the operating rules (C.36-01).

4.4.4 Establishing the Hold Order

I For non-remotely-controlled circuit breakers

The operator:

- connects, or has someone connect, the fast neutral ground, if the device is equipped with it
- disconnects, or has someone disconnect, the reclosers, if the device has any
- makes sure that auxiliary power is present for reclosing circuit breakers
- removes, or has someone remove, the reclosing fuse for reclosing breakers, if the devices are equipped with it
- identifies, or has someone identify, the control and reclosing devices using Hold Order tags, except for line circuit breakers

II For remotely-controlled circuit breakers:

The operator:

- connects, or has someone connect, the fast neutral ground, if the device is equipped with it
- disconnects, or has someone disconnect, the reclosing devices
- identifies, or has someone identify, the reclosing and control devices using Hold Order tags

III Locking out of non-remotely-controlled line circuit breaker reclosers

The WIC or a delegated worker on the team locks the reclosing devices using a lockout padlock and hasp. There are as many lockout padlocks as there are Hold Orders.

For locations where locking out is not feasible, Hold Order tags must be used while entering the sequential number of the Safety Measures Sheet (Guide FMS Distribution).

4.4.5 Issuing the Hold Order

The operator issues the Hold Order to the WIC by giving them a Hold Order number. The WIC enters the Hold Order number on the Safety Measures Sheet.

5 Establishing safety measures for the work zone

For the Work Authorization, Accord and Hold Order regimes, the planning of the safety measures to be taken for establishing the work area begins once the WIC has the number of the safety regime issued by the operator.

I Work Authorization

There may be several work zones within a protected zone, but no work zones may overlap.

Underground system:

Note: For a designated WIC, the safety measures under their responsibility are established in 4.1.5 I a).

5.1 Planning the safety measures

The WIC and the team members plan the required measures for establishing the work zone. For instance, they must:

- A) Define the work zone based on the work to be performed

Note: The installation or replacement of conductors allows a work zone to be established that exceeds the accessibility and visual contact criteria defined in Section 2 Definitions.

- B) Identify the safety measures to apply

- 1) Control re-energization caused by induced energy, lightning or accidental re-energization.

At no time should the protection provided by the grounding devices be affected by the opening of an electrical circuit when work is being performed.

Identify, according to applicable guidelines, the location(s) chosen for installing the grounding devices that provide protection against the risk of re-energization by induced energy, lightning or accidental re-energization according to the type of work being done and the short-circuit current (*D.25-05, D.24-16, D.25-09, F.24 A 4101, F.24 A 4201, F.24 A 4202*).

- 2) Identify the energy sources

The WIC and the team members must make sure that potentially hazardous energy sources of all types have been eliminated. Some types of work require the application of an energy control method; in such a case, refer to the applicable guidelines (*B.6-01, D.25-05*).

If such energy sources constitute a hazard for the entire team, they must be eliminated at the start of the work.

If such energy sources constitute a hazard for only part of the team, they must be eliminated during the work.

- C) Enter the safety measures identified in B) on the Safety Measures Sheet.

The WIC completes, with the members of their team, the Safety Measures Sheet and, where applicable, the associated Lockout Sheets.

5.2 Applying the safety measures (see Table 2 – Lockout)

The WIC applies, or has someone apply, the safety measures determined by the team.

- A) Control re-energization caused by induced energy, lightning or accidental re-energization.

Assign a person in charge of performing a zero-voltage check using an approved voltage detector or according to the applicable guideline (D.24.21).

Assign personnel in charge of installing, at the chosen location and according to the applicable guidelines, the grounding devices that protect against the risk of re-energization due to induced power, lightning or accidental re-energization (D.24-16, F.24 A 4101, F.24 A 4201, F.24 A 4202).

Note: The zero-voltage check must be performed immediately before installing the grounds (D.24-16).

I Work Authorization

In the case of a designated WIC in an underground facility, this step is performed in 4.1.5 I a).

In the case of a designated WIC, once the work has been started and for safety reasons, no additional work zone may be established without the consent of the WIC and the designated WIC.

B) Eliminate the energy sources

All team members should take part in the lockout process in order to become familiar with the energy-isolating devices (*HQ-SST-M-1002*).

Each worker must protect themselves by attaching a padlock to avoid any accidental re-energization of the facility, part of the facility or component on which they are working. Lockout Sheets must be used when they have been drawn up for the work to be performed.

The energy-isolating devices serving as safety measures must be verifiable visually or positively according to the applicable guideline (*D.24-20*).

When the energy sources present in the work zone may constitute a hazard for the entire team, after verifying the isolation, the energy-isolating devices are locked out with a padlock and hasp using the Safety Measures Sheet and, if applicable, the associated Lockout Sheets.

1 Accord, Self-protection or Hold Order

The WIC and the team members can also use their individual padlocks and a hasp to lock out the energy-isolating devices that present a hazard for the entire team.

When a lockout box is being used, the WIC places the key(s) used to lock out the energy-isolating devices in the lockout box for which they are responsible. Each team member, including the WIC, places an individual lock on the lockout box. In the case of

a WIC who is also acting as the designated WIC, a second lockout box may be required.

For energy sources that constitute a hazard for only part of the team, each worker must lock out, using the Safety Measures Sheet and, where applicable, the associated Lockout Sheets, the energy-isolating devices with an individual padlock and a hasp. The WIC also attaches his individual lock. These lockouts are done before work begins and may be removed when no longer required.

When the energy-isolating device is non-lockable, lockout tags must be used that are identified according to the safety regime and bearing the sequential number of the Safety Measures Sheet (Guide FMS Distribution) (see Appendix II, Lockout).

5.3 Delimiting the work zone

When a work zone is established by distribution system personnel on a distribution facility located inside a substation, that work zone must be delimited with markers. Markings must be placed to comply with approach distances and so that they can be seen by workers to keep them from crossing the work zone boundaries (*HQ-SST-N-9001*).

6 Instructions to personnel

The WIC informs the team members of the area of the protected zone and of the lockout, if applicable, of the area of the work zone, along with the safety measures that have been installed. The WIC provides the instructions to personnel according to the Safety Measures Sheet application procedures.

The team members sign the Safety Measures Sheet to certify that they understand and agree with the information and the instructions that were given. The WIC signs the Safety Measures Sheet only once all the team members have signed it and he or she has authorized the start of the work.

Before entering the work zone, each worker must have been given the instructions to personnel, signed the Safety Measures Sheet and attached an individual padlock, where applicable (according to reference document D-24-12). Any worker unfamiliar with this Code must be accompanied by an authorized worker.

Note: When setting up the work station at the pole or performing energized work under the Hold Order, the ground monitoring steps must be applied as required in the work plan (B.6-01 and D.25-05).

Instructions to personnel may be provided before the temporary grounds are installed by a worker performing his work in the same structure. He signs the Safety Measures Sheet after installing the temporary grounds.

Overhead system:

When only one worker is designated to install the safety measures, they may sign the Safety Measures Sheet before accessing the structure only if all the grounding assemblies provided for the creation of the work zone are installed directly in that structure.

I Work Authorization

Note: Initial instructions to personnel are provided, in the presence of a designated WIC, with the other WICs and the required personnel. (See Section 4.1.5 I a).

7 Presence of worker in charge (WIC)

The WIC must be present in the work zone when work is being done in order to provide adequate supervision.

The WIC must not allow work to be performed in more than one work zone at a time.

I Work Authorization

The designated WIC must be present in the protected zone when work is being done. However, he may briefly leave the protected zone after notifying the other WICs if doing so is related to the purpose of the work and does not affect worker safety.

8 Change in worker in charge (WIC)

A) Direct change in WIC

When a direct change in WIC is planned, the following procedure applies:

- If a safety regime has been issued, the operator is notified of the change. The operator confirms the safety regime number. Under a Work Authorization, the operator confirms the isolation points for the protected zone to the new WIC.
- The new WIC retrieves the Safety Measures Sheet and the Lockout Sheet(s) from their predecessor. In completing the appropriate box, the new WIC certifies having been informed by their predecessor of the safety measures taken and of being in agreement with them. The new WIC must also accept the lockout that was performed or check it before accepting it (except for the isolation verification steps, which are considered as having been completed).
- The new WIC installs their individual padlock and their predecessor removes their padlock.

I Work Authorization

When there is a change in designated WIC, the group of WICs chooses a new designated WIC and the same procedure as with a direct change in WIC applies. In addition, the former designated WIC informs the new designated WIC of the lockout of the isolation points for the protected zone.

In the case of a designated WIC (underground system), they inform the new designated WIC of the safety measures that were applied.

B) Indirect change in WIC

When an indirect change in WIC is planned, meaning that the WICs do not cross paths physically, the following procedure applies:

The WIC leaving the work zone must:

- Enter the transfer seal number in the appropriate box on the Safety Measures Sheet
- If a lockout box is being used:
 - Install the transfer seal on the lockout box
 - Have the individual padlocks removed from the lockout box and remove their individual padlock
- When no lockout box is used, a transfer envelope must be used:
 - Place the Safety Measures Sheet and, where applicable, the associated Lockout Sheets inside the transfer envelope. (Position the Safety Measures Sheet so that the seal number, safety regime number, identification and location of the work can be seen)
 - Place the transfer seal on the envelope

- Place the lockout box or transfer envelope and the Safety Measures Sheet at a predetermined location and, where applicable, the associated Lockout Sheets
- If a safety regime has been issued by the operator, the WIC shall inform the latter of the measures that were taken

Note: No work may be performed when a transfer seal is placed on a lockout box or transfer envelope.

The new WIC must:

- Retrieve the lockout box or transfer envelope and the Safety Measures Sheet from the predetermined location and, where applicable, the associated Lockout Sheets
- Make sure the transfer seal number matches the number on the Safety Measures Sheet

Note: If the seal number does not match the one on the Safety Measures Sheet, or if the transfer seal has been tampered with, lockout continuity cannot be ensured.

- Place their individual padlock on the lockout box, if required
- Remove the transfer seal from the lockout box or transfer envelope
- If a safety regime has been issued by the operator, notify the latter of the change and confirm the safety regime number (under a Work Authorization, the operator confirms the isolation points for the protected zone to the new WIC)
- Check the lockout in Priority mode before accepting it (except for the isolation verification steps, which are considered as having been completed), or accept the lockout performed in Delegated Worker mode

- Complete the appropriate section on the Safety Measures Sheet. In signing, the new WIC certifies having verified the safety measures taken by their predecessor and of agreeing with them.

C) Unforeseen absence

In case of an unforeseen absence on the part of the WIC, the immediate superior designates a new WIC and notifies the operator. The absent WIC's individual padlock remains in place and the immediate superior takes the necessary action with the employee as per Appendix 1, if required.

The immediate superior and a team member inform the new WIC of the safety measures taken by the latter's predecessor and the rest of the procedure for the direct change in WIC applies.

1 Work Authorization

In case of an unforeseen absence on the part of the designated WIC, the immediate superior and the other WICs select a new designated WIC and the immediate superior informs the operator. The immediate superior and the WICs inform the new designated WIC of the status of the lockout of the isolation points for the protected zone, and the remainder of the procedure involving the direct change in WIC applies.

In the case of a designated WIC (underground system), they inform the new designated WIC of the safety measures that were applied.

9 Work interruptions

When work is stopped by the WIC, the latter must make sure that all team members have left the work zone. The WIC prohibits anyone from returning to the work zone and schedules the time and place for everyone to meet before work is resumed.

Upon returning, the WIC makes sure that safety measures are being applied, reminds workers of the instructions, enters the information on the Safety Measures Sheet, and authorizes access to the work zone.

When a lockout box is used, it must be unlocked at the end of the workday by all the team members, except for the WIC and one team member.

1 Work Authorization

When a designated WIC is used, all the lockout boxes are removed at the end of the workday, except for the designated WIC's box, which remains locked out by the designated WIC and all the WICs. When, at the end of the workday, the designated WIC no longer has any other WICs under their responsibility, they apply the procedure established for the WIC.

9.1 Modification of protected zone (Work Authorization)

When, during work under the Work Authorization regime, the protected zone has to be increased or reduced and this requires the locking out and unlocking of the isolation points in the protected zone, the following rules must be observed:

- There can only be one Work Authorization in the protected zone
- The modification applies only in Priority lockout mode

- The new isolation points must not be located in another protected zone
- The change in isolation points must be authorized by the operator and the new isolation point(s) for the protected zone are defined by the operator established under their responsibility and agreed to with the WIC involved
- The change in isolation points must be determined in accordance with the provisions of sections 4.1.4 and 4.1.5
- A modification of the protected zone may be planned to reduce the interruption in customer service

Note: In the overhead system, up to four modifications to a protected zone are allowed.

Underground system:

Unscheduled work:

- **Modifications to the protected zone may be done for generator tests, when replacing switches, or when repairing a problem that was discovered during the work and when such a repair was not included in the planning stage. In these cases, the expansion of the zone must be limited to the first isolation point that follows the current protected zone and that allows work to be performed inside the new protected zone.**
- **An energy-isolating device serving as an isolation point may be used as many times as required to complete the work without necessarily going back to the initial point.**

Chronology

- a) The WIC stops the work and makes sure that all the team members are outside of the work zone.

- b) The WIC leaves the work uncompleted in the work zone. The grounds may be kept for an expansion. When the protected zone is reduced, the grounds are removed in the reduced zone only.
- c) After performing a zero-voltage check, the new isolation point(s) are entered on the Safety Measures Sheet and, where applicable, on the associated Lockout Sheets.
- d) The new energy-isolating devices serving as isolation points are locked out before the removal of the lockout on the former energy-isolating devices.
- e) Before resuming work, the WIC and team members agree on the size of the new protected zone and make sure that all the safety principles and measures in the Code are implemented.

10 Operating checks and/or tests

10.1 Operating checks involving auxiliary power

When work is being performed under the Work Authorization, Accord or Self-protection regime and auxiliary power is required for the checks, the WIC informs the team members and then proceeds as follows:

- a) If auxiliary power is required at the start of the work, the energy-isolating devices are not locked out. Once the checks have been completed, the WIC proceeds with the lockout or removal of the lockout, if required.
- b) When new construction is done under the Self-protection regime, before conducting tests or operating checks, the WIC must:

- Provide the operator with a detailed plan and status report for the work
- Specify the location and scope of the tests

For new facilities, the tests and operating checks must be performed in accordance with Hydro-Québec Distribution's safety standards (*D.25-05*).

10.2 Tests involving autonomous power sources

When work is performed under a Work Authorization or Self-protection regime and tests must be done using autonomous power sources, the WIC:

- Makes sure that the power source does not constitute a hazard for their team and in such a case, access to the work zone must be reserved to persons whose presence is required to perform the tests, and personnel not required for the tests must be evacuated
- Makes sure that no power can be released from their work zone by electrically isolating it from all other adjacent work zones

I Work Authorization

Underground system:

- **The WIC must take a new Work Authorization for the voltage generator. A computer lockout links the concession to the Work Authorization to prevent the operator from issuing the Work Authorization when a concession has been issued (*C.36-03*).**

10.3 Checks and operation involving main power

The WIC must hand in the Work Authorization before performing operating checks involving main power.

If the checks require connecting the device to the power system, the WIC must apply the Accord regime (excluding the devices mentioned in 4.3.1 III).

Overhead system:

- During work performed under the Self-protection regime mentioned in 4.3.1 IV that require operating tests in the presence of main power, return the device to the operator and obtain an Accord regime

When main power is required from the start of the work to perform checks, the energy sources are not locked out. Once the checks have been completed, the WIC proceeds with the lockout if required.

10.4 Tests and operating checks during metering work

The tests and operating checks are performed under the Self-protection regime and Hydro-Québec Distribution's safety standards (*D.25-05*).

11 Removal of safety measures in a work zone

a) Worker in charge (WIC)

Once the work has been completed, the WIC makes sure that all safety measures they and the team members have carried out in the zone are removed as follows:

- Evacuate unrequired personnel, notify them that the work zone has been closed, and prohibit anyone from returning to or accessing the area
- Remove the individual padlocks of personnel not required for the removal of the safety measures or

have them sign the Safety Measures Sheet when no lockout box is used.

Together with the personnel required for the removal of the safety measures, the WIC:

- Removes or has someone remove the markings, if required
- Removes or has someone remove the grounds, if required
- Removes the individual padlocks with the personnel or has them sign the Safety Measures Sheet when no lockout box was used
- Makes sure that all the lockout devices they and their team have installed have been removed using the Safety Measures Sheet and, where applicable, the Lockout Sheets once the protection being provided is no longer required (*HQ-SST-M-1002*)
- If a designated WIC is present under the Work Authorization regime: They remove their individual padlock from the designated WIC's lockout box and hand over their signed Safety Measures Sheet to the designated WIC

Lockout Sheets must be used when they have been drawn up for the work to be performed.

b) Designated WIC (Work Authorization)

Once the work has been completed, the designated WIC makes sure that all safety measures implemented are removed by:

- Ensuring that the WICs have evacuated all personnel that are not required in each work zone and have prohibited anyone from returning to or accessing the area

- Ensuring that they have received the completed Safety Measures Sheet(s) from the WICs
- Removing their individual padlock from the lockout box or has the Safety Measures Sheet signed by the other WICs when no lockout box was used

Underground system:

Together with the workers required for the removal of the safety measures, the designed WIC in the underground system:

- Removes or has someone remove the grounds
- Removes, together with the workers, the individual padlocks from the lockout box or has the Safety Measures Sheet signed when no lockout box was used

Note: In the underground system, when personnel are only needed to remove the grounds, each worker must use their individual padlock to lock out the lockout box of the WIC or designated WIC and sign the Safety Measures Sheet before proceeding. Each worker removes the padlock from the lockout box once the grounds have been removed or signs the Safety Measures Sheet when no lockout box was used.

12 End of work

12.1 End-of-work notice

When a safety regime is issued by the operator, the WIC or designated WIC provides the operator with the end-of-work notice by returning the regime number and indicating the state in which the facility is being returned.

For the actions listed in 4.3.1 I and II, no end-of-work notice must be provided to the operator under this regime.

When customers are affected by the work in 4.3.1 III or when work is done on the devices listed in 4.3.1 IV, the WIC provides the operator with the end-of-work notice by indicating the state in which the facility is being returned.

The WIC or designated WIC signs the Safety Measures Sheet.

I Work Authorization

When there is a communication gap, the WIC, upon returning, provides the operator with the information required to enter the outage data.

Note: The operator cannot accept the return of the designated WIC's Work Authorization until all related Work Authorizations have been returned.

12.2 Removal of lockout devices in the protected zone Work Authorization/ Removal of Hold Order

- a) Unlocking in the protected zone under a Work Authorization regime

Lockout Sheets must be used when they have been drawn up for the work to be performed.

Removal of lockout devices may be done as successive switching operations are performed.

I Priority mode

The WIC or the designated WIC makes sure that all the lockout materials they or their team have installed have been removed using the Safety Measures Sheet and, where applicable, the associated Lockout Sheets (*HQ-SST-M-1002*).

II Delegated worker mode

The WIC or designated WIC leaves the key(s) and the Safety Measures Sheet signed in the "End of work" section at a predetermined location and, where

applicable, the associated completed Lockout Sheets, and notifies the operator.

Delegated workers:

- Retrieve the key(s), the Safety Measures Sheet and, where applicable, the associated Lockout Sheets
- Confirm the end of the work by checking for the WIC's signature on the Safety Measures Sheet and, where applicable, the associated Lockout Sheets
- Remove the lockout devices using the Safety Measures Sheet and, where applicable, the associated Lockout Sheets
- Complete the Safety Measures Sheet and, where applicable, the associated Lockout Sheets

b) Removal of Hold Order

When removing the lockout on the reclosing devices of circuit breakers on non-remotely-controlled lines, the WIC makes sure that all the lockout devices they and their teams have installed have been removed.

The operator:

- Removes, or has someone remove, the Hold Order tags on the reclosing and control devices
- Puts back, or has someone put back, the reclosing fuse for the reclosing breakers
- Reconnects, or has someone reconnect, all reclosing devices
- Disconnects, or has someone disconnect, all fast neutral grounds

13 Specific types of work

13.1 Work involving overhead distribution facilities and transmission lines

When work must be performed in a work zone that involves both distribution and transmission facilities, such work is performed by two WICs: one who is authorized for work on distribution facilities and the other for transmission facilities. However, the work must be done on one facility at a time and by one WIC, with the other WIC acting as the security guard for their facility.

Each WIC contacts their operator to obtain the regime.

However, when work is to be carried out in a structure with both transmission line and distribution facilities, and if the work to be performed on the distribution facilities does not require any safety measures involving a safety regime for the transmission facilities, then no security guard is required.

Note: Following regional agreements with the various health and safety committees, work may be performed by a single WIC if the latter is authorized for both distribution and transmission facilities. The WIC must contact the Distribution Control Center (DCC) and Regional Control Center (RCC) to obtain the safety regimes.

13.2 Electricity generating facility (EGF)

An electricity generating facility (EGF) is a group of equipment used to generate electrical power. It consists of the switchyard (if applicable), the generating units, and the instrumentation and protection equipment (E.12-01, E.12-02, E.12-05, E.12-06).

Note: Only EGFs that are not operated by HQD and that have an installed capacity of 250 kW or more are covered by this section.

13.2.1 Work Authorization regime

When the establishment of the protected zone involves opening an energy-isolating device acting as an isolation point between the work zone and the EGF, all of the procedures under the Work Safety Code shall apply.

When creating the protected zone, isolation points of less than 750 V must be considered as an isolation point for the protected zone when there is a possibility of electrical backfeed.

13.2.2 Hold Order regime

The following applies:

- *The EGF must be equipped with a remote control system at the DCC to lock out its main circuit breaker (C.42-01).*
- When the remote control system is unavailable at the DCC, the EGF operator must guarantee to the Hydro-Québec operator that the terms of Section 4.4 will be met. Otherwise, the WIC opens and locks out the energy-isolating device serving as Hydro-Québec's isolation point located as close as possible to the EGF for the duration of the work.
- Reclosing is not allowed at the EGF.
- The active setting of the EGF's overcurrent protection is coordinated with the system's fast neutral setting, if equipped with one (*E.12-02*).
- The EGF is equipped with a mechanism that prevents the circuit breaker from closing when there is no voltage on the distribution line.
- All the other terms of the Work Safety Code apply.
- EGF personnel must be trained on Hydro-Québec's guidelines (e.g., Work Safety Code, Operating Code).

13.2.3 Maintenance

The maintenance of equipment used to integrate the EGF into Hydro-Québec's power system must be performed in accordance with applicable guidelines. Maintenance monitoring must be provided to Hydro-Québec in accordance with the maintenance programs indicated in the guidelines (*E.12-03*).

For an EGF with a medium- or low-voltage connection, when maintenance is performed on the transformer or disconnecting device at the EGF delivery point, an energy-isolating device serving as an isolation point must be opened by the producer and locked out by Hydro-Québec's WIC inside the EGF to protect against accidental re-energization.

13.3 Emergency de-energization

Emergency de-energization is used when a worker's safety is at risk.

Emergency de-energization is limited to the following situations:

- To eliminate the possibility of electrification, arcing during a rescue, fire, immediate danger, etc.
- To perform a switching operation on a defective or restricted facility to eliminate the possibility of arcing.
- For any other work or equipment covered by an agreement with the provincial health and safety committee (CPSS) (e.g., guideline relating to small conductors).

Emergency de-energization must only be used for safety purposes. The work is generally of short duration and the facilities must always be considered energized.

The procedure is as follows:

- Hydro-Québec or contractor personnel contacts the operator to request that the facility be de-energized, or remain so, and not be re-energized without their consent.
- Hydro-Québec or contractor personnel check for zero voltage, if applicable, depending on the type of work.
- Hydro-Québec or contractor personnel must use insulating tools, if applicable and depending on the type of work, to completely eliminate any hazards for the persons involved.

Once the hazard has been eliminated, restoration work is done according to the safety rules and measures set out in the Work Safety Code.

13.4 Management of medium-voltage underground cables

When working in underground distribution facilities containing energized or de-energized cables (new construction, dismantling), safety measures must be in place to protect personnel from any re-energization or tests on one of the existing cables.

The Work Authorization regime applies when work is done on a cable core on the distribution system.

The Work Authorization regime applies to work in a structure where one of the cables under the responsibility of an operator is stripped.

The Work Authorization regime applies to work in a structure containing a faulty cable (not localized), except when work involves isolating the faulty cable.

Given the complexity of the underground system, the different types of structures and, in some cases, shared use of underground structures with third

parties, the concession is a way to ensure the safety of people working in these structures. The terms of application of the concession are covered by a guideline (C.36-03).

13.5 Work performed by medium-voltage customers or third parties

When maintenance work must be carried out at an industrial customer's premises that requires de-energizing a Hydro-Québec medium-voltage facility, or if such work is performed by a third party that is unable to observe the minimum approach distance of a Hydro-Québec medium-voltage facility, the procedures set out in the applicable guidelines must be applied (*D.28-01, C.36-14, E.32.1-01*).

13.6 Work in Distribution substations by TransÉnergie personnel

When work is to be performed by TransÉnergie personnel on apparatuses located in Distribution substations operated at 49 kV or less (excluding substations on the Island of Montreal), a security guard from the Distribution chapter is required. However, TransÉnergie personnel must be familiar with the Distribution chapter and a worker authorized with respect to the Substation chapter must be part of the team in order to oversee the performance of the work and enforce the safety measures in the work zone.

Appendix I

Padlock Control

A) Principles

There is only one key for lockout padlocks and individual padlocks.

No copies may be made of such keys.

The name of the worker who places their individual padlock must be clearly indicated on the padlock if no record is kept.

If the key or an individual padlock is defective or if the key has been lost, only the employee involved who is present at the work site can cut their own padlock.

At all times, before authorizing that a padlock be cut, the immediate superior must make sure that doing so does not jeopardize anyone's health, safety or physical well-being.

B) Procedure to authorize the cutting of an individual padlock

If an individual lock remained attached because it was forgotten or due to an unforeseen absence, the WIC must contact their immediate superior to notify them of the situation.

Before cutting an employee's padlock, the immediate superior should always consider waiting for the employee to return the same day or on the following days. If the operator has no other choice, they may cut the padlock only after strictly following the steps outlined below:

- 1) Make sure that the employee who owns the padlock to be removed is no longer at the work site.
- 2) Use all reasonable means to reach the employee directly.
- 3) If the employee is no longer at the work site but can be reached, the immediate superior must inform them of the situation and ask them to come back to the work site to remove their padlock, if they are reasonably able to do so.
- 4) If the employee is no longer at the work site and cannot be reached, or is not reasonably able to return to the work site, the immediate superior must complete the designated form documenting all of the following actions that have been taken:
 - a) The immediate superior contacts their superior or replacement to obtain the latter's consent to authorize the forgotten padlock to be cut.
 - b) The immediate superior confirms with the WIC that the employee has left the work zone and determines whether it is safe to cut the lock.
 - c) The immediate superior, accompanied by the WIC, cuts the individual padlock that was left in place. If the immediate superior is not reasonably capable of going on site, upon receiving their superior's approval, they authorize the WIC to cut the padlock while accompanied by a team member.
 - d) The immediate superior must meet with the owner of the padlock when the latter returns to work to notify them that their padlock has been cut. The immediate superior completes the form by documenting the notice and a copy is sent to the employee and to the health and safety committee concerned.

C) Procedure to authorize the cutting of a lockout padlock

If a lockout padlock has been forgotten, after confirming that the safety regime was handed in, the immediate superior removes the padlock, or has someone remove it, using the key.

When a lockout padlock must be cut following a defect or if the key has been lost, the WIC notifies the members of their team and contacts their immediate superior to inform them of the situation. The immediate superior may authorize that a lockout padlock be cut, but must complete the required form by documenting all the following actions that were taken:

- 1) When required, make sure that the safety regime has been given to the operator.
- 2) Contact their immediate superior or substitute to obtain the latter's consent to authorize the padlock to be cut.
- 3) The immediate superior, accompanied by the WIC, cuts the padlock that was left in place. If the immediate superior is not reasonably able to come to the site, they may authorize the WIC to cut the padlock.
- 4) Fills out the form and sends a copy to the health and safety committee concerned.

D) Padlock cutting tracking form

Each time a padlock is cut, it must be entered on the appropriate form by the immediate superior and kept for one (1) year.

Appendix II

Installation of lockable energy-isolating devices

In an effort to reduce the number of non-lockable energy-isolating devices, Hydro-Québec Distribution will continue its efforts to make lockable energy-isolating devices available.

A) Energy-isolating device at the beginning of a distribution line

The first energy-isolating device of a distribution line installed outside a substation or generating station must be lockable for any new construction or when major upgrading work is planned.

B) Efficient isolation of energy-isolating devices

Energy-isolating devices that were not designed to be locked out must be securable in an efficient isolation position. They are recognized as being secured in an efficient isolation position if:

- They are only switchable using a hot stick or the isolation is performed by applying a safety regime from the Work Safety Code
- Because of their design and location in a restricted environment, they cannot be closed inadvertently
- They are equipped with a lockout tag installed in accordance with Hydro-Québec Distribution's lockout reference document (*D.24-12*)

Any energy-isolating device that meets these criteria can be introduced and used on the distribution system.

C) Blade switches

Hydro-Québec Distribution is committed to ensuring the sustainability of a lockout method for blade disconnect switches.

D) Other lockout methods

Other methods may be developed to make devices lockable and to use them following an agreement between the parties concerned.

E) Availability of energy-isolating devices

Hydro-Québec Distribution undertakes to continue monitoring electrical apparatus manufacturers to integrate lockable energy-isolating devices into the distribution system provided that such equipment complies with HQD's certification criteria.

Lockouts

Hydro-Québec Distribution will maintain a joint working group composed of union and management members. The working group's mandate is to validate the lockout protocols for non-lockable energy-isolating devices until they are replaced with lockable devices, which will no longer require the use of lockout tags.

A mandate provides a framework for the context, purpose, method of operation and roles and responsibilities of the participants and the committee.

As part of this mandate, the working group must:

- Consider the various work-related contexts in its recommendations (e.g., scheduled work, night outages, service restoration, emergency plans with mobile crews)

- Develop realistic and viable solutions in the form of an action plan with timelines, in accordance with CSA Z460-05, Control of Hazardous Energy: Lockout and Other Methods
- When new lockout means are established, validate the chosen solutions through pilot projects with users

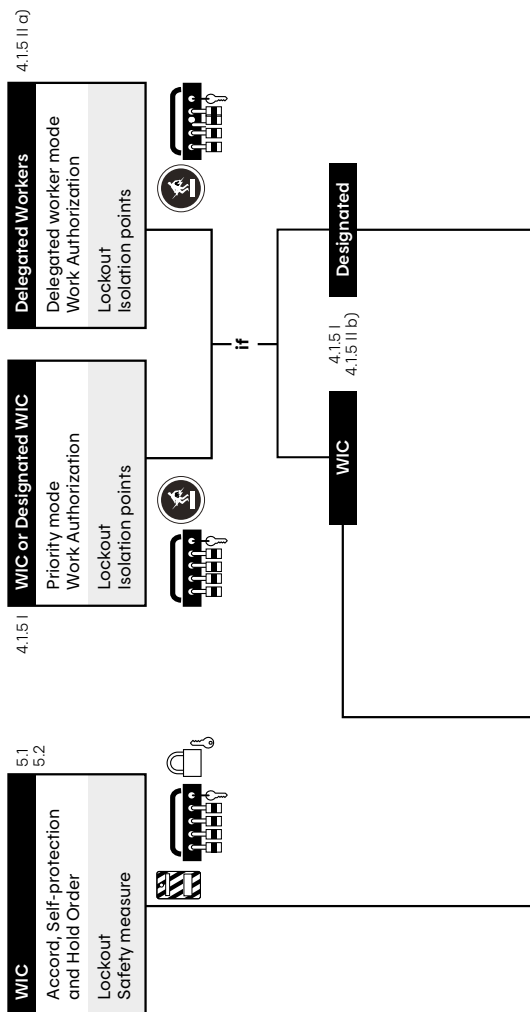
Table 1 – Lockout of protected zones

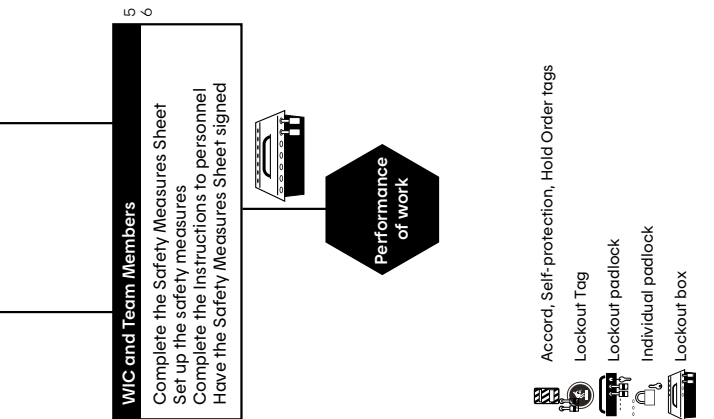
Work Site	Priority Mode	Delegated Worker Mode
Underground system Overhead system	If lockout lasts less than 60 minutes	If lockout lasts more than 60 minutes
Overhead system consisting of one or more underground system energy-isolating devices	At all times	When two trades cannot be present at the same time

Notes

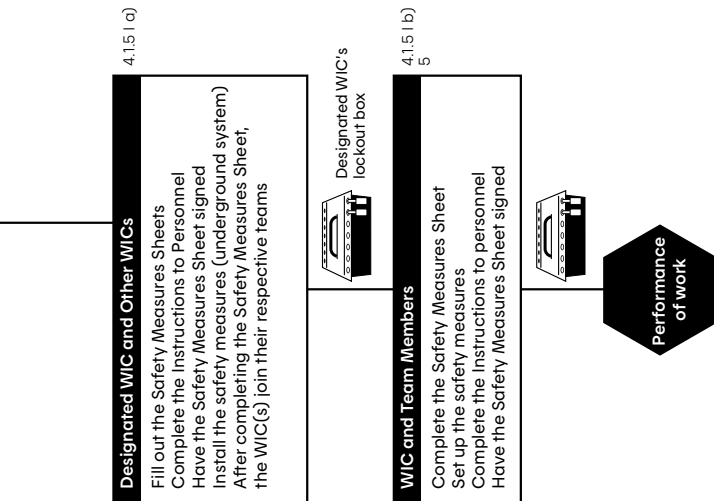
- At the location where the work is being done, the lockout is always done in Priority mode.
- An agreement must be reached with the health and safety committees regarding special cases.

Table 2 – Lockout



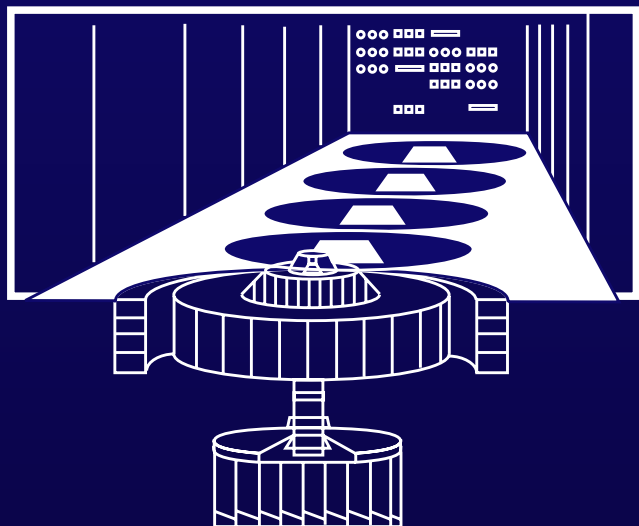


5 6



4.1.5 | a)

4.1.5 | b)
5



Generating Stations

Generating Stations



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General

1 Introduction

1.1 Purpose

The Work Safety Code sets out the measures to be applied so that workers can perform work safely. Safety measures pertain to the hazards related to energy sources in Hydro-Québec's generating, transmission, distribution, and telecommunications facilities.

1.2 Scope

The Work Safety Code applies to work performed by Hydro-Québec and contractor personnel on or near Hydro-Québec's energized or de-energized facilities.

In an emergency, if someone's safety is in jeopardy, full application of the Work Safety Code is not required. Once the emergency is under control, the Code applies again in full.

The Work Safety Code applies to work in areas designated as "construction sites" for facilities or parts of facilities that have already been commissioned.

The Work Safety Code does not apply to:

- Facilities or parts of facilities designated as "construction sites" that have never been commissioned.
- A generating station that is designated as a "construction site," is not connected to the grid and is no longer under the responsibility of an operator.

In such cases, the *Québec Safety Code for the Construction Industry* applies up to the commissioning stage.

1.3 Sector standards

The Work Safety Code applies when work is being done on certain specific facilities with special characteristics.

The principles of the Work Safety Code apply and are described in the applicable guidelines (A73-03, A73-04 and D.24-26).

2 Training and qualification

The rules pertaining to the training and qualification of Hydro-Québec and contractor personnel are defined in the guideline entitled *Work Safety Code Training and Qualification (HQ-SST-N-1003)*.

3 Inquiries

Any inquiries relating to the understanding of this Work Safety Code must be submitted using the procedure set out in the guideline entitled *Mécanisme de compréhension du Code de sécurité des travaux (SST-N-100)* [Inquiries relating to the Work Safety Code].

4 Monitoring enforcement of the Work Safety Code

Hydro-Québec must implement a compliance auditing system regarding enforcement of the Work Safety Code and the related guidelines to confirm that the parties involved are aware of and apply the prescribed guidelines.

The audit program must include the following:

- Roles and responsibilities in coordinating, planning, conducting audits and implementing corrective action
- Criteria relating to auditor qualifications and selection
- Audit scope
- Annual audit frequency
- Methods to be used and analysis of findings
- Production of reports

The audit plan must be submitted to the Work Safety Code Committee.

Audit findings and conclusions along with all action plans must be documented and communicated to the workers involved, the parties responsible for the corrective actions, and submitted annually to the Work Safety Code Committee.

Generating Stations

1 Application to generating stations

This chapter specifies how the Work Safety Code applies during work performed in generating stations and other structures.

However, it does not cover work carried out on power transformers even when located inside a generating station.

For thermal and hydraulic generating stations with bulb-type generating units, the development of sector standards must comply with this Code and specify the latter's application.

2 Definitions

Device

Any component of a facility (e.g., circuit breaker, transformer, disconnect switch, reactor or gate).

Apparatus

Group of devices in a facility (e.g., switching, transforming or generating apparatus).

Thermal generating station

Electric generating station that uses fossil fuel (e.g., oil or gas) as the energy source.

Telecommunications network component

Any component of the telecommunications network.

Energy-isolating device

Device that physically prevents electrical or mechanical energy from being transmitted or released.

Note: Pushbutton switches and similar controls are not energy-isolating devices.

Autonomous power

Power from an autonomous source that does not contribute to the operation of a device, apparatus or facility.

Auxiliary power

Mechanical, hydraulic, pneumatic, electrical energy (750 V and less), whether radiant or optical, that contributes to the operation of a telecommunications network device, equipment or component.

Induced power

Electrical power generated inductively or capacitively.

Main power

Electrical power at a voltage of more than 750 V present or flowing through a facility or in a device.

The following are also considered main power:

- Any other energy source powering an electric generator
- Water flowing through hydraulic control structures

Equipment

Materials and machinery used for the maintenance of a facility such as a passenger elevator, traveling crane, freight elevator, sprinkler system, telephone or PA system.

Switchperson

An authorized worker who carries out or supervises switching operations under the orders of an operator.

Operator

An authorized worker from Hydro-Québec designated by an administrative unit as being in charge of operating specific facilities.

Security guard

An authorized worker from Hydro-Québec who is in charge of applying the safety measures set out in this Code. This worker may suspend work if there is a hazard that may put workers' safety at risk, and then notifies their supervisor.

Note: For the sake of readability, this term will not be repeated in the document. A security guard has the same duties as a worker in charge (WIC), with the exception of work coordination.

Facility

A defined set of devices and apparatuses or telecommunications network components, such as generating stations, hydraulic structures or telecommunications rooms, taken as a whole or in part.

Gated spillway

Water-retaining structure that regulates and controls river flow by releasing water through gates into the river.

Uncontrolled spillway

Water-retaining structure that regulates and controls river flow without gates by releasing excess water over its crest into the river.

Authorized worker

A worker who meets the qualification criteria specified in the Work Safety Code (*HQ-SST-N-1003*).

Initiated worker

A worker who has taken the introductory course on the Work Safety Code ("Initiation au Code de sécurité des travaux").

Electrical isolation point

An energy-isolating device that allows a protected zone to be separated in an electrical circuit and that can be visually or positively verified according to the applicable guideline (*P-SEC-N-027*).

Mechanical isolation point

An energy-isolating device that prevents the transmission of mechanical energy in a protected zone and that can be visually or positively verified according to the applicable guideline (*P-SEC-N-027*).

Team leader (responsible)

Authorized worker who oversees the work and is responsible for applying the safety measures applicable to his team in the work zone.

Note: Depending on the type of job, qualification under the Work Safety Code is not required for Hydro-Québec or contractor personnel required to act as team leaders. The types of jobs concerned by the qualification can be found in the training and qualification guideline (HQ-SST-N-1003).

Worker in charge (WIC)

Hydro-Québec or contractor authorized worker who is in charge of applying the safety measures of the Code. When there is more than one team, the WIC is responsible for coordinating the work in the work zone.

Lockout

A device or system whereby the state of a control or mechanism allows or prevents the operation of another device (e.g., access control). When physical protective measures (e.g., pins, locks, blocks or chains) are required, they must be capable of withstanding any force to which they will be subjected (after a full lockout) with an adequate safety factor in accordance with the relevant standards.

Work zone

Area established by the WIC and the team members at the site where the work is to be carried out.

Protected zone

Area established by the operator by means of isolation points corresponding to a WIC's needs and within which measures taken by the operator enable the WIC to establish a work zone.

3 Equipment

Lockout box

Lockable box used by the WIC and team members designed to allow workers to check whether there are any lockout padlock keys.

Lockout padlock

A series of padlocks opened using the same key, bearing the same alphanumeric serial number and used for lockout purposes.

Individual padlock

A lock or series of locks with a single key marked with the person's name for the duration of the work, and for which only that worker has the key.

Transfer envelope

An envelope used by the WIC to carry out an indirect change in WIC when no lockout box is used. The envelope contains at least the Safety Measures Sheet. It is designed so that the seal number, safety regime number, identification and location of the work can be seen.

Lockout Sheet

Form containing all the information related to the lockout and verification of the isolation of the energy-isolating devices (HQ-SST-M-1002).

Note: The fact that there is no Lockout Sheet does not prevent the lockout from being performed; however, it must be carried out according to the action plan in the applicable guideline.

Safety Measures Sheet (SMS)

Form used to enter all the information concerning the safety measures put into place for the safety regime being used.

Work Authorization Form

Form used to enter all the information related to the protected zone. The operator delivers a protected zone to the WIC under conditions agreed upon with the latter.

Accord tag

Blue and white tag marked "ACCORD" that is used when work is to be done under the Accord regime.

Self-protection tag

Yellow and white tag that reads "NE PAS MANŒUVRER – AUTOPROTECTION" [No switching – Self-protection] displayed when work is to be done under the Self-protection regime.

Lockout tag

Red and white tag that reads "APPAREIL CONDAMNÉ – DÉFENSE DE MANŒUVRER" [Device locked out – No switching] used when work is to be done under a Work Authorization regime.

Note: On the operators' monitors, the Accord and Work Authorization tags are represented by icons.

Lockout hasp

Device that allows several locks to be installed.

Transfer seal

Single-use device with unique numbering installed on a lockout box or transfer envelope to ensure lockout continuity. Used only when there is an indirect change in WIC.

4 Safety regimes

The types of safety regimes are as follows:

- Work Authorization
- Accord
- Self-protection

When work is performed by Hydro-Québec personnel under a Work Safety Code regime, the latter are held by Hydro-Québec authorized personnel. However, support or expertise provided by Hydro-Québec personnel is permitted in a work zone for which the Work Safety Code regime is held by contractor personnel, provided the work is performed by the contractor.

4.1 Work Authorization regime

4.1.1 Application

The Work Authorization regime applies to work performed in generating stations, upstream or downstream of the generating station and upstream or downstream of gated hydraulic control structures, with no main power, to ensure the safety of Hydro-Québec and contractor personnel on facilities under the Hydro-Québec operator's responsibility (*GEN-N-881*).

It also applies to work upstream or downstream of an uncontrolled spillway when the latter is adjacent to a generating station and this safety regime must be used for one or more generating units if the work requires that they be shut down.

4.1.2 Selection of isolation points for the protected zone (Table 1)

I Mechanical isolation points for work performed between a gate upstream of the wicket gates and the tailgate

The mechanical isolation points are selected using the specific Lockout Sheet according to one of the following cases:

Case A

When the work has to be done outside the scroll case and involves no contact with rotating or moving parts, the mechanical isolation that enables a protected zone to be created is achieved by:

- Case A1. Wicket gates closed at 0% with oil pressure² eliminated at the servomotor; locking out of servomotors.¹

or

- Case A2. Closing a gate upstream of the wicket gates.

Case B

When the work to be done is outside the scroll case and requires the presence of workers or their tools in the path of a moving or rotating generating unit part, the mechanical isolation that creates the protected is achieved by:

- Closing a gate upstream of the wicket gates
- Opening the wicket gates
- Locking out the servomotors
- Eliminating the oil pressure² at the servomotors

For submerged generating units, when, when inadvertent movement cannot be rule out, the following methods are used:

- Installation of downstream stoplogs (or gates)

or

- Use of piston brakes in jacking mode

¹ Bolt capacity must have been certified through a generating station assessment; in such a case, Case A1 cannot be applied.

² Includes electrical energy in the case of an electrically-powered servomotor.

- Installation, where applicable, of a mechanical lock (e.g., blocks)
- Closed and locked-out isolation valve(s)

Case C

When the work to be performed requires the presence of personnel inside the scroll case, the mechanical isolation used to create the protected zone is achieved by:

- closing a gate upstream of the scroll case and the associated bypass valve, if any
- setting up the tailgate if the scroll case is lower than the downstream level and in locations where there are major variations in the downstream level over very short periods of time
- opening the wicket gates
- locking out the servomotors
- eliminating oil pressure² at the servomotors
- depressurizing the hydraulic circuit of the blades in the case of variable-blade turbines

When carrying out the work, the WIC ensures that access to the scroll case remains open.

For Case B or C, when work is done on one of the components serving as a mechanical isolation point consisting of servomotors, the oil intake valve(s)² and the drain valve(s) to establish the protected zone, this component is replaced by:

- The air-oil pressure tank open to the atmosphere with dissipated mechanical energy

or

² Includes electrical energy in the case of an electrically-powered servomotor.

- Removal of a physical component with dissipated mechanical energy

II Mechanical isolation points for upstream/downstream work

When a Work Authorization is required, upstream/downstream guides must be drawn up for each category of work for each facility involved (*P-SEC-G-003*).

Note: When the upstream/downstream guide requires the flow of one or more generating unit(s) to be controlled in addition to the generating unit required under the Work Authorization, the WIC must apply the Accord regime as per Section 4.2.1, IV on the adjacent generating unit(s) concerned.

The mechanical isolation points are selected using the specific Lockout Sheet according to one of the following cases:

- a) When the work to be performed requires the presence of personnel **upstream** of the generating station, the mechanical isolation used to create the protected zone is achieved by:
- Closing the gate(s) upstream of the generating unit(s) concerned
- or
- Closing the ring, spherical, butterfly or clamshell head gate
- or
- Closing the wicket gates at 0% with the oil pressure² eliminated at the servomotors
 - Locking out the servomotors¹

¹ Bolt capacity must have been certified through a generating station assessment; in such a case, Case A1 cannot be applied.

² Includes electrical energy in the case of an electrically-powered servomotor.

b) When the work to be performed requires the presence of personnel **downstream** of the generating station, the mechanical isolation used to create the protected zone is achieved by:

- Closing the gate(s) downstream of the generating unit(s) concerned

Note: The tailgate may be used if its design allows for it.

or

- Closing the ring, spherical, butterfly or clamshell head gate

or

- Closing the wicket gates with oil pressure² eliminated at the servomotors
- Locking out the servomotors¹

When work is performed downstream of the generating station and the generating unit(s) concerned by the work **already** involve a Work Authorization, with mechanical isolation points established according to Case A, B or C in accordance with Section 4.1.2 I, the mechanical isolation point(s) related to the protected zone for the downstream work may involve:

- Closing the wicket gates with oil pressure² eliminated at the servomotors
- Locking out the servomotors¹
- Opening the wicket gates
- Locking out the servomotors
- Closing a gate upstream of the wicket gates

¹ Bolt capacity must have been certified through a generating station assessment; in such a case, Case A1 cannot be applied.

² Includes electrical energy in the case of an electrically-powered servomotor.

Note: Under no circumstances may the mechanical isolation point be modified in accordance with Section 9.1 on the generating units concerned for the duration of the downstream work.

III Electrical isolation points

The electrical isolation points for the protected zone are achieved by:

- Opening the disconnect switches
- Removing the plug-in circuit breakers
- Removing a physical component
- Opening the molded-case circuit breaker of less than 750 V

*Note: For **upstream** work, if the mechanical isolation point is a gate upstream of the wicket gates, no electrical isolation points for the protected zone are required. For **downstream** work, if the tailgate is one of the mechanical isolation points, no electrical isolation points for the protected zone are required.*

IV Isolation points for work at hydraulic control structures (upstream/downstream)

For work upstream or downstream of structures, mechanical isolation point or points are created by closing the required gates, stoplogs or cofferdams.

4.1.3 Outage requests

When scheduled work has to be done under a Work Authorization, an outage request must be submitted to the operator in accordance with the operating rules. The outage alone is not sufficient to authorize the work (GEN-D-007).

Relevant information regarding the protected zone as well as all other information needed to plan and carry out the work must be provided to the WIC before work begins.

4.1.4 Establishing the protected zone

The operator must establish or have someone establish the isolation point(s) to create the protected zone. The operator must disable, or have someone disable, the energy-isolating devices of the equipment serving as electrical or mechanical isolation points. The operator makes sure, or has someone make sure, that the isolation has been verified (*D.25-20*).

Note: See the Lockout Sheet(s) for detailed information on how the protected zone is established according to the specific request.

When creating the protected zone, isolation points of less than 750 V after the secondary of an auxiliary service transformer must be considered as an isolation point for the protected zone when there is a possibility of electrical backfeed.

For plug-in circuit breakers, the air space constitutes the electrical isolation point for the protected zone. The electrical isolation point for the protected zone is then identified by the circuit breaker cell involved (e.g., cell 12-4).

The operator checks or has someone check for zero voltage using an approved voltage detector or according to the applicable guidelines for SF₆-insulated devices. For other energy sources, a zero-energy check is performed in accordance with the applicable guideline (*TET-APE-N-7001*, *GEN-D-941*, *GEN-D-946*).

Protected zones must never overlap. However, establishing a new protected zone is not considered an overlap as long as the Work Authorization has not been issued. Separate protected zones may have common isolation points.

However, for protected zones created for work downstream of a generating station, if one or more generating units already under a Work Authorization are involved, the isolation points for the protected zone may be different.

When a WIC requests a Work Authorization from the operator for a device, the operator checks whether a safety regime has already been issued on control and/or protection circuits related to the device covered by the request.

When a safety regime has been issued on control and/or protection circuits covered by the request, the operator and the requesting WIC must apply the communication procedure described in Appendix III.

The WIC and the operator must agree on the size of the protected zone.

4.1.5 Lockout of protected zone

Each worker must install a padlock as a protective measure to prevent the device the worker is working on from being accidentally started up or re-energized.

The isolation provided by energy-isolating devices must be visually or positively verifiable in accordance with the applicable guideline (*P-SEC-N-027*).

Note: The lockout must be performed in accordance with the instructions on the Lockout Sheet. The fact that there is no Lockout Sheet does not prevent the lockout from being performed; however, it must be done in accordance with the guideline (HQ-SST-M-1002).

Priority lockout mode

Using the Lockout Sheets, the WIC and at least one team member must lock out the energy-isolating devices serving as isolation points for the protected zone (*HQ-SST-M-1002*).

The entire team should participate with the WIC in the lockout process in order to become familiar with the energy-isolating devices (*HQ-SST-M-1002*, *P-SEC-M-003*).

For these lockouts, after verifying the isolation, the WIC uses one or more lockout padlocks. Each padlock must be installed using a lockout hasp. When the energy-isolating device serving as an isolation point for the protected zone has already been locked out, the isolation is considered to have been done.

The WIC places the key(s) for the lockout padlocks being used in the lockout box, and each team member, including the WIC, locks the box with an individual lock. This is done after locking out the energy-isolating devices for any energy source present in the work zone that may constitute a hazard for the entire team.

4.1.6 Issuing the Work Authorization

The operator provides the Work Authorization to the WIC by issuing a Work Authorization number (Guide formulaire AdT-RDT, GEN-R-981).

The operator and the WIC agree not to modify the protected zone unless there is a change in the state of a mechanical isolation point as indicated in Section 9.1.

No work is permitted on an energy-isolating device serving as an electrical isolation point for the protected zone. For disconnect switches, no work is allowed on the jaw or pivot sides when one side is energized, even if the approach distances are observed. It is also forbidden to remove or connect jumpers to disconnect switches.

However, for an energy-isolating device serving as a mechanical isolation point for a protected zone, some work can be performed under the following conditions:

- The work must not affect the mechanical capacity of the energy-isolating device performing the isolation. The safety measures for such work must be established and implemented after agreement with the relevant health and safety committees.

- No work may be done that could change the “open” or “closed” state of an energy-isolating device serving as a mechanical isolation point for the protected zone.

4.2 Accord regime

4.2.1 Application

Under the Accord regime, Hydro-Québec and contractor personnel can perform the following:

- Energized or de-energized work on automatic controls and telecommunications systems
- De-energized work on apparatuses operating at less than 750 Volts or powered by another form of auxiliary power
- De-energized work on apparatuses operating at over 750 Volts
- Work requiring the operation of a generating unit or gated hydraulic control structure
- Work not requiring a generating unit
- Operating checks and tests that may require auxiliary power, with or without the presence of main power
- Energized work on batteries

on facilities under the responsibility of an operator (*GEN-N-881*).

I Energized or de-energized work on automatic control and telecommunications systems

The Accord regime applies to de-energized work that must be done on automatic control and telecommunications systems.

The Accord regime applies to energized work that must be done on automatic control and telecommunications systems in accordance with applicable guidelines (*P-SEC-M-008, P-SEC-M-011, TEL-SEC-P-34-00-006*).

The Accord regime also applies to work on the telecommunications network that affects the Hold Order regime (*TEL-GES-P-31-05-001-O*).

If the de-energizing of automatic control and telecommunications systems prevents normal operation of the device, an outage request must be made; otherwise, the device may remain in operation.

II De-energized work on apparatuses operating at less than 750 V or powered by another type of auxiliary power

The Accord regime applies to de-energized work on apparatuses operating at less than 750 V or powered by another type of energy, including work on or inside the gates of gated hydraulic control structures.

If de-energizing such apparatuses prevents the normal operation of the device it is supplying with auxiliary power, an outage request must be submitted, otherwise, the device may remain in operation.

III De-energized work on apparatuses operating at more than 750 V

The Accord regime allows de-energized work to be performed on an apparatus that may be isolated from the power system.

Use of the Accord regime must be justified according to the work to be done and when the type of work allows approach distances to be observed (*AP-GS-N002*).

In each case, the work must be done in accordance with a guideline developed for the specific facility using a standard template (*P-SEC-G-009*).

IV Work requiring the operation of a generating unit or gated hydraulic control structure

The Accord regime applies:

- When honing slip rings with the disconnect switch open on the low-voltage side while the generating unit is powered by hydraulic energy and isolated from the power system.
- When controlling the flow through one or more gates of a gated hydraulic control structure during work performed upstream or downstream of that structure.
- When controlling increased flow through one or more generating units while work is performed upstream or downstream of the generating station.
- When tightening the cable gland, provided that the turbine shaft is secured so that there is no possible contact with the rotating or moving parts.

Use of the Accord regime must be justified according to the work to be done as well as the operating rules and current restrictions on the generating unit.

In each case, the work must be done in accordance with a guideline developed for the specific facility using a standard template (*P-SEC-G-009*).

V Work not requiring the operation of the generating unit

The Accord regime applies to the work listed below to be performed while the generating unit is shut down:

- Adjusting servomotor cams
- Adjusting wicket gate position sensors

Note: In both of the above cases, a gate upstream of the wicket gates must be closed and locked out.

- Adjusting intake gate positioning mechanisms

- Inspecting and greasing intake gate cables when work is performed above water level

Note: In both of the above cases, a gate upstream of the wicket gates or the wicket gates themselves must be closed and locked out.

In each case, the work must be done in accordance with a guideline developed for the specific facility using a standard template (*P-SEC-G-009*).

VI Operating checks and tests that require auxiliary power, with or without the presence of main power

The Accord regime applies in the following cases:

- a) During operating checks and tests on automatic controls and telecommunications systems, auxiliary power may or may not be present, while main power may or may not be required
- b) During operating checks and tests for starting up a generating unit, auxiliary and hydraulic power are both present, while the generating unit may be isolated or connected to the power system

VII Energized work on batteries

The Accord regime applies to work performed on batteries (*P-SEC-M-008*).

The Accord regime applies to energized work using a DC power supply in distribution panels when that power supply cannot be eliminated (*TEL-SEC-P-34-00-006*).

The work to be performed must be done in accordance with the applicable guidelines (*P-AUT-M-002*, *P-AUT-M-003*, *TEL-EQR-P-24-05-002*, *TEL-EQR-P-24-05-006*, *TEL-EQR-P-24-05-007*).

4.2.2 Advance request

The WIC must request the required operating conditions ahead of time.

When a WIC requests an Accord regime from the operator for one or more control and/or protection circuits, the operator must check whether a safety regime has been issued for one or more devices related to the circuit(s).

When a safety regime is issued for the device covered by the request, the operator and the requesting WIC must apply the communication procedure described in Appendix III.

If the work requires an outage request, the request must comply with the operating rules (*GEN-D-007*).

If the objective of the outage is also to ensure worker safety, the WIC must apply the Work Authorization regime. This includes work on the secondary side of a current transformer.

4.2.3 Issuing the Accord regime

The Accord regime may be issued for the:

- Electronic part (control, protection and regulation) of a generating unit excitation system
- Measurement, control and protection circuits

when they are located outside the device, even if a regime has been issued for that device.

The Accord regime may be issued for telecommunications network components.

The operator issues the Accord regime to the WIC by providing the Accord regime number.

4.3 Self-protection regime

4.3.1 Application

The Self-protection regime applies to de-energized and energized work on batteries performed by Hydro-Québec and contractor personnel on facilities, parts of facilities or equipment outside the responsibility of an operator (*GEN-N-881*):

- Construction of a facility or part of a facility, or the installation of apparatuses not yet connected to the power system
- Dismantling of a facility or part of a facility or apparatus that has been withdrawn from the system and will not be connected back to it
- Maintenance by Hydro-Québec personnel of mechanical or electrical equipment of 750 V or less

Note: The Self-protection regime does not apply to contractors performing maintenance on mechanical or electrical equipment operating at 750 V or less.

4.3.2 Terms of application

For this regime, no control number is issued to personnel performing the work.

5 Establishing safety measures for the work zone

For the Work Authorization and Accord regimes, the planning of the safety measures required to establish the work zone begins once the WIC has the safety regime number that was issued by the operator.

If the work involves several trades, a team leader must be appointed for each one to oversee the performance of the work and apply the safety measures specific to their team.

However, at the WIC's request, a team leader from the same trade as the WIC may be appointed, depending on the type of work and the work environment.

I Work Authorization

During work on a generating unit, only one work zone and one WIC are allowed, except when safety measures for construction sites are being applied (*EQ-CO-SC-PR04/P-SEC-M-021*).

There may be several work zones within a protected zone, but no work zones may overlap.

If the work zone spans several floors, work may be done simultaneously on each floor.

Note: See Appendix IV for components of a generating unit work zone.

5.1 Planning the safety measures

The WIC and the team members plan the required measures for establishing the work zone.

For instance, they must:

- A) define the work zone based on the work to be performed
- B) identify the safety measures to apply
 - 1) Controlling re-energization caused by induced energy, lightning or accidental re-energization.

At no time should the protection provided by the grounding devices be affected by the opening of an electrical circuit when work is being performed.

Identify, according to applicable guidelines, the location(s) chosen for installing the grounding devices that provide protection against the risk of re-energization by induced energy, lightning or accidental re-energization depending on the type of work being done and the short-circuit current (*P-SEC-N-017, P-SEC-M-010, AP-GS-M-021, TEC-GES-N-1023*).

When personnel is required to work on a device operating at over 750 V that has been de-energized and the type of work allows approach distances to be observed, grounds do not need to be installed on the de-energized device, except for work on the secondary side of current transformers (*AP-GS-N002*).

2) Identifying auxiliary and other energy sources

The WIC and the team members must make sure that potentially hazardous energy sources of all types have been eliminated. Some types of work require an energy control method; in such a case, refer to the applicable guidelines.

If such energy sources constitute a hazard for the entire team, they must be eliminated at the start of the work.

If such energy sources constitute a hazard for only part of the team, they must be eliminated during the work.

C) enter the safety measures identified in B) on the Safety Measures Sheet

5.2 Applying the safety measures

The WIC applies, or has someone apply, the safety measures determined by the team.

The team leader applies, or has someone apply, the safety measures specific to their team.

A) Controlling re-energization caused by induced energy, lightning or accidental re-energization.

- In the case of work involving the main power, designate a worker in charge of verifying zero voltage using an approved voltage detector or according to the applicable guideline for SF6-insulated devices and DC devices (*TET-APE-N-7001*).
- Assign a worker to install, at the chosen location and in accordance with applicable guidelines, grounding devices, identified by a lockout tag bearing the sequential number of the Work Authorization Form, that provide protection against the risk of re-energization by induced energy, lightning or accidental re-energization (*P-SEC-N-004*, *P-SEC-N-017*, *P-SEC-M-010*, *TEC-GES-N-1023*).

Note: Grounds must be installed immediately after the zero-energy check.

- Assign a worker responsible for using devices for bypassing energy other than electrical energy in accordance with applicable guidelines.

B) Eliminating auxiliary and other energy sources (see Table 2, "Documenting protection switches").

When the energy sources present in the work zone may present a hazard for the entire team, the worker in charge and at least one team member, using the Lockout Sheets and after checking the isolation, lock out the energy-isolating devices with a lockout padlock and hasp.

I Under the Accord or Self-protection regimes

The WIC and the team members can also use their individual padlocks and a hasp to lock out the energy-isolating devices that present a hazard for the entire team.

II Under the Self-protection regime

The WIC places a Self-protection tag identified with their name on each energy-isolating device to be locked out.

The isolation of the energy-isolating devices serving as safety measures must be verifiable visually or positively according to the applicable guideline (*P-SEC-G-027*).

When a lockout box is used, the WIC places the key for the lockout padlock in the lockout box and each member of the team locks the box with their individual padlock.

All team members should take part in the lockout process in order to become familiar with the energy-isolating devices (*HQ-SST-M-1002, P-SEC-M-003*).

For energy sources that present a hazard for only part of the team, each worker locks out, using the Lockout Sheets, the energy-isolating devices with an individual padlock and hasp. The WIC or the team leader must also attach their individual padlocks. If more than one energy-isolating device has to be locked out, a lockout box can be used. These lockout mechanisms are put in place before work begins and may be removed when no longer required.

The lockout device, when there is one, must be installed before starting the work.

5.3 Delimiting the work zone

The WIC and team members must delimit the work zone.

Markings must be placed while observing approach distances based on the work to be performed and its duration. Markings must be placed so that they can be seen by workers to keep them from crossing the work zone boundaries (*HQ-SST-N-9001, AP-GS-N002*).

Markings may be modified once the work in the section to be removed from the work zone has been completed.

In general, depending on the type of work involved, this zone does not include the control and protection panels, even if there are work zone safety measures there.

The work zone must be delimited with one or more clearly visible entrances.

The materials used for delimiting the work zone must be standard material suited for that purpose.

However, depending on the type of work under the Accord and Self-protection regimes, the area is delimited by physical means.

6 Instructions to personnel

The WIC informs team members of the area of the protected zone and of the lockout, if applicable, of the work zone, along with the safety measures that have been installed. The WIC provides the instructions to personnel according to the terms of applications of the Safety Measures Sheet.

The team members sign the Safety Measures Sheet to certify that they understand and agree with the information and the instructions that were given. The WIC signs the Safety Measures Sheet only once all the team members have signed it and he or she has authorized the start of the work.

If any team leaders are present, each one fills out a Safety Measures Sheet and enters the safety regime number if applicable (Guide FMS PO/CE).

Before entering a work zone, each worker must have been given the instructions to personnel, signed the Safety Measures Sheet and attached their individual padlock. Any worker unfamiliar with the Code must be accompanied by an authorized worker.

7 Presence of worker in charge and team leader

The WIC must be in the work zone when work is being done provide adequate supervision.

The team leader must be in the work zone when work is being performed by their team to provide adequate supervision.

The WIC must not allow work to be performed in more than one work zone at a time.

1 Work Authorization

However, under a Work Authorization, the WIC may briefly leave the work zone after notifying workers if doing so is related to the purpose of the Work Authorization and does not affect worker safety.

Note: The provisions of the last paragraph do not apply to diving work.

8 Change and rotation of WICs

8.1 Change of WIC

A) Direct change of WIC

When a direct change of WIC is planned, the following procedure applies:

- If a safety regime has been issued, the operator is notified of the change. The operator confirms the safety regime number. Under a Work Authorization, the operator confirms the isolation points for the protected zone to the new WIC.
- The new WIC obtains from their predecessor the Work Authorization Form, where applicable, the Safety Measures Form, the associated Lockout Sheet(s), and fills out a new Safety Measures Sheet with the team members. In signing, the new WIC confirms having been informed by their predecessor of the safety measures that have been taken, and, after verification, if required, agreeing with them.
- The new WIC must also, where applicable, check the lockout before accepting it (except for the isolation verification steps, which are considered to have been done) and communicate with the WICs concerned when the communication procedure is in use (see Appendix III).
- The new WIC installs their individual padlock and their predecessor removes their padlock.

B) Indirect change in WIC

When an indirect change in WIC is planned, meaning that the WICs do not cross paths physically, the following procedure applies:

The WIC leaving the work zone must:

- Enter the transfer seal number in the appropriate box on the Safety Measures Sheet
- If a lockout box is being used:
 - Place the transfer seal on the lockout box
 - Have the individual padlocks removed from the lockout box and remove their individual padlock
- When no lockout box is used, a transfer envelope must be used:
 - Place the Safety Measures Sheets and, where applicable, the associated Lockout Sheets and Work Authorization form inside the transfer envelope (the Safety Measures Sheet must be positioned so that the seal number, safety regime number, identification and work location can be seen)
 - Place the transfer seal on the envelope
- Place the lockout box or transfer envelope at a predetermined location, as well as the Safety Measures Sheet, the related Lockout Sheets and the Work Authorization Form, if required
- Inform the operator of the measures that have been taken if the operator has issued a safety regime

Note: No work may be performed when there is a transfer seal is on a lockout box or transfer envelope.

The new WIC must:

- Retrieve the lockout box or transfer envelope at the predetermined location, as well as the Safety Measures Sheet, the related Lockout Sheets and the Work Authorization Form, if required
- Make sure the transfer seal number matches the number on the Safety Measures Sheet

Note: If the seal number does not match the one on the Safety Measures Sheet or if the transfer seal has been tampered with, lockout continuity cannot be ensured.

- Place their individual padlock on the lockout box, if required
- Remove the transfer seal from the lockout box or transfer envelope
- Notify the operator of the change and confirm the safety regime number if the operator has issued a safety regime (under a Work Authorization, the operator confirms the isolation points for the protected zone to the new WIC)
- Complete and sign the Work Authorization Form, if applicable
- Check the lockout before accepting it (except for the isolation verification steps, which are considered to have been completed)
- Fill out a new Safety Measures Sheet. In signing, the WIC certifies that they have verified the safety measures taken by the previous WIC and are in agreement with them
- Contact the WICs concerned when the communication procedure is in use (see Appendix III)

C) Unforeseen absence

In case of an unforeseen absence on the part of the WIC, the immediate superior designates a new WIC and notifies the operator. The absent WIC's padlock remains in place and the immediate superior takes the necessary action with the employee as per Appendix 1, if required.

The immediate superior and a team member inform the new WIC of the safety measures taken by the latter's predecessor, and the remainder of the procedure regarding a direct change in WIC applies.

8.2 WIC rotation under a Work Authorization

For scheduled WIC rotations, the name of each WIC must appear on the Work Authorization Form.

The WIC and at least one team member who are taking the first rotation perform the lockout using the Lockout Sheets, in accordance with the Code. Upon arriving, the WICs and the team members place their individual padlocks on the lockout box. For the first rotation, each WIC checks the lockout using the Lockout Sheets with at least one team member (except for the isolation verification steps, which are considered to have been done).

All the team members should take part in the lockout process in order to become familiar with the energy-isolating devices (*HQ-SST-M-1002, P-SEC-M-003*).

At the end of each rotation, the WIC and a team member leave their individual padlocks on the lockout box, except for their last rotation for the work in question.

At each rotation, the WIC fills out a Safety Measures Sheet according to the procedures in the applicable guideline, and makes sure that the safety measures are being applied, reminds workers of the instructions, and then authorizes access to the work zone.

9 Work interruptions

When work is stopped by the WIC, the latter must make sure that all team members have left the work zone. The WIC prohibits anyone from returning to the work zone and schedules the time and place for everyone to meet before work is resumed.

Upon returning, the WIC makes sure that safety measures are being applied, reminds workers of the instructions, enters information on the Safety Measures Sheet, and then authorizes access to the work zone.

When a lockout box is used, it must be unlocked at the end of the workday by all the team members, except for the WIC and one team member. When they return, the Safety Measures Sheet must be completed as per the applicable procedures.

9.1 Modification of the state of the wicket gate isolation points, variable-blade turbines and tailgate

Under a Work Authorization, the state of the isolation points may need to be modified for work on mechanical apparatus parts that requires the removal of the lockout of an energy-isolating device serving as a mechanical isolation point for the protected zone. Since the change may reduce the level of protection provided by the protected zone, the following rules must be observed:

- a) Under no circumstances may the mechanical isolation point be modified on the generating units involved for the duration of the downstream work when two protected zones have different isolation points.
- b) Only one change at a time may be made to the protected zone.
- c) The WIC gathers together all team members to modify the lockout of the energy-isolating device serving as the mechanical isolation point. The WIC then places the key back in the lockout box, and each team member locks the box again.
- d) Such modifications consist in removing the lockout on the following energy-isolating devices acting as isolation points:

- 1) Wicket gates (servomotor, oil intake valve(s),² drain valve(s))

When the modification to the wicket gate isolation point is no longer required, the latter must be returned to its initial state by notifying the operator of a new modification to the isolation point.

- 2) Tailgate

The position of the tailgate can be modified, which allows the Work Authorization to be returned without bringing the tailgate back to its original position.

- 3) Hydraulic circuit or oil intake valve(s) and drain valve(s) of the speed governor and variable-blade turbine blades

When the modification of the isolation point of the variable-blade turbine hydraulic circuit is no longer required, the latter must be returned to its initial state by notifying the operator of a new modification to the isolation point.

- e) A modification may be made to an energy-isolating device serving as a mechanical isolation point during the work:

For the modification involving the wicket gates:

For work requiring that the wicket gate isolation point be unlocked, special safety measures³ must be drawn up for the facility involved to cover the risks identified based on the work to be performed and the means to control them.

² Includes electrical energy in the case of an electrically-powered servomotor.

³ The special safety measures must be applied after agreement with the local health and safety committee (CLSS). Such an agreement must be confirmed by the regional health and safety committee (CRSS).

These measures must cover the risks associated with:

- re-opening the wicket gates, when these must be kept closed, to prevent any inadvertent movement that may be caused by the discharge of any accumulated water
- taking measurements of wicket gate contact points when oil pressure is present
- tasks requiring work in the turbine shaft

Note: Tasks that require that Case B mechanical isolation points be used will need to be identified.

- For work requiring such a modification, access to the scroll case must be closed off to workers and access to the turbine shaft blocked off to workers who are not required during the time the isolation point is unlocked

Note: When the wicket gate contact points are being measured, access to the scroll case is allowed and the oil intake valve(s) and drains do not need to be locked out again.

- The other work in the turbine shaft and scroll case may resume when the “wicket gate” isolation point is locked out again at 0% or 100% (all other intermediate positions require the use of the atmospheric hydro-pneumatic tank or intermediate lockout device)
- Work on rotating parts may only be done if the WIC makes sure that access to the scroll case remains open

Note: When the work is carried out as Case B or C, no work on rotating parts may be performed while the modification is being done.

For changes involving operation of the blades of a variable-blade turbine:

- access to the scroll case must be closed off to workers for the entire time the lockout on the isolation point is being removed
 - access to the draft tube must be restricted to personnel involved in the work
 - workers must not place themselves in the path of the blades when the hydraulic circuit is under pressure
 - markings must be placed so that they can be seen by workers to keep them from crossing work zone boundaries (*HQ-SST-N-9001*)
- f) If the modification was not anticipated when instructions to personnel were given, the WIC must fill out a new Safety Measures Sheet.
- g) All removal of lockouts must be approved by the operator and entered on the Work Authorization Form.

10 Operating checks and/or tests

10.1 Operating checks involving auxiliary power

When work is performed under a Work Authorization, Accord or Self-protection regime and operating checks and tests are required involving auxiliary power on control, protection or teleprotection circuits, for example checking alarm signal reception or control signal transmission, and several work zones under several safety regimes are involved,

The WICs must:

- establish the safety measures to be applied based on the Lockout Sheet(s) (when required)

- enter these safety measures in the “Comments” section on the Safety Measures Sheet or on the Lockout Sheets
- brief the members of their team
- apply the safety measures that have been established

If auxiliary power is required for such checks, the WIC must inform the team members and then proceeds as follows:

- If auxiliary power is required at the start of the work, the energy-isolating devices are not locked out.
- If auxiliary power is required after the work has been done, the lockout is removed using the Lockout Sheets (when required) as per one of the following procedures:
 - a) When the lockout was done by the WIC, they gather the entire team to remove the lockout on the energy-isolating devices. The WIC then places the key back in the lockout box, and each team member locks the box again.
 - b) When the lockout is performed by a team leader and/or part of the team, they must notify the WIC.

Once the checks have been completed, the lockout is done as specified in Section 5.

10.2 Tests involving autonomous power sources

When work is performed under a Work Authorization, Accord or Self-protection regime and tests must be done that involve autonomous power sources and several work zones, the work must be performed under a single regime and in a single work zone.

When tests need to be done using autonomous power sources while work is under way, the WIC:

- makes sure the power source is not hazardous for the workers; otherwise, the personnel not required for the tests must be evacuated

For autonomous sources of electrical energy:

- the WIC makes sure no energy can be released from their work zone by electrically isolating it from all other work zones within the protected zone
- in cases where autonomous power may be released from the work zone, the WIC must confirm with the operator that no other Work Authorization or Accord regime is in effect in areas that may receive energy from the autonomous power source

10.3 Operating checks involving main power

The WIC must hand in the Work Authorization before performing operating checks involving main power.

When checks need to be done by connecting the device to the power system or that require a generating unit to be started up, the WIC must apply the Accord regime.

The safety measures to be taken are set out in the following documents:

- Essais en réseau ou mise en exploitation des installations [Operational testing or commissioning of facilities] (*TET-AUT-P-0.0.1.3*)
- Application des mesures de sécurité et des règles d'exploitation dans un contexte de mise en route [Application of safety measures and operating rules at startup] (*PT-3002-02*)

11 Removal of safety measures in a work zone

Once the work has been completed, the WIC makes sure that all safety measures they and their team have put in place in the zone are removed as follows:

- Have non-essential workers leave and prohibit them from returning
- Remove, or have someone remove, the work zone markings
- Remove, or have someone remove, the grounds and restore bypass devices to their initial state
- Remove the individual locks together with the team members
- Remove the lockouts performed for the team in the work zone according to the Lockout Sheet(s)
- Notify the team members that the work zone has been closed and prohibit anyone from returning to or accessing the area

12 End of work

12.1 Removal of lockout devices in the protected zone

The WIC must make sure that all the lockout materials installed by themselves or their team has been removed, in accordance with the Lockout Sheet(s).

12.2 End-of-work notice

When a safety regime is issued by the operator, the WIC provides them with the end-of-work notice by returning the regime number and indicating the state in which the facility is being returned.

1 Work Authorization

When a modification of the protected zone involves an energy-isolating device serving as an electrical isolation point, the WIC leaves the work uncompleted in the work zone, without removing the grounds, bypass devices and lockout devices required to obtain a new Work Authorization.

When a modification to the protected zone involves energy-isolating devices serving as mechanical isolation points located upstream of the wicket gates, the rules are as follows:

- Modifications to the protected zone to reduce its size are permitted. If a ring gate becomes the new energy-isolating device serving as a mechanical isolation point for the protected zone, the operator must fill the penstock and scroll case with water before issuing a new Work Authorization.
- Modifications to the protected zone intended to expand its size are allowed subject to an agreement with the local health and safety committee (CLSS) concerned regarding the safety measures to implement to create the new protected zone (risks related to the presence or accumulation of water). Such an agreement must be confirmed by the regional health and safety committee (CRSS).

When a modification to the protected zone involves an energy-isolating device that is part of a mechanical isolation point for the protected zone that includes either:

- servomotors or
- oil intake valve(s)² and drain valve(s)

the energy-isolating device(s) are replaced by the following device(s) for establishing the protected zone:

- air-oil pressure tank open to the air with dissipated mechanical energy

or

- physical component removed with dissipated mechanical energy

In all cases, the WIC must leave the work uncompleted in the work zone, without removing the grounds, bypass devices or lockout devices needed to obtain a new Work Authorization.

In all cases, the same WIC must obtain a new Work Authorization as soon as the new protected zone has been established to complete the work.

13 Specific types of work

Application of the Work Safety Code is described in the approved guidelines for the specific types of work listed below:

- Application du Code de sécurité des travaux dans les installations blindées isolées au gaz SF₆ (*TET-APE-N-7001, GEN-D-946*) [Application of the Work Safety Code in SF₆-insulated shielded facilities]

² Includes electrical energy in the case of an electrically-powered servomotor.

- Application des mesures de sécurité et des règles d'exploitation dans un contexte de mise en route (*PT-3002-02*) [Application of safety measures and operating rules at startup]
- Application des mesures de sécurité de la procédure chantier (*EQ-CO-SC-PR04/P-SEC-M-021*) [Application of construction site safety measures]
- Élaboration des guides pour les travaux en amont ou en aval d'une centrale ou d'un ouvrage de contrôle hydraulique muni de vannes (*P-SEC-G-003*) [Development of guides for work upstream or downstream of a generating station or gated spillway]

Appendix I

Padlock Control

A) Principles

There is only one key for lockout padlocks and individual padlocks.

No copies may be made of such keys.

The name of the worker who places their individual padlock must be clearly indicated on the padlock if no record is kept.

If the key or the padlock is defective or if the key was lost, only the employee involved who is present at the work site can cut their own padlock.

At all times, before authorizing that a padlock be cut, the immediate superior must make sure that doing so does not jeopardize anyone's health, safety or physical well-being.

B) Procedure to authorize the cutting of an individual padlock

If an individual lock has remained attached because it was forgotten or due to an unforeseen absence, the WIC must contact their immediate superior to notify them of the situation.

Before cutting an employee's padlock, the immediate superior should always consider waiting for the employee to return the same day or on the following days. If the operator has no other choice, they may cut the padlock only after strictly following the steps outlined below:

- 1) Make sure that the employee who owns the padlock to be removed is no longer at the work site.
- 2) Use all reasonable means to reach the employee directly.
- 3) If the employee is no longer at the work site but can be reached, the immediate superior must inform them of the situation and ask them to come back to the work site to remove their padlock, if they are reasonably able to do so.
- 4) If the employee is no longer at the work site and cannot be reached, or is not reasonably able to return to the work site, the immediate superior must complete the designated form documenting all of the following actions that have been taken:
 - a) The immediate superior contacts their superior or substitute to obtain the latter's consent to authorize the forgotten padlock to be cut.
 - b) The immediate superior confirms with the WIC that the employee has left the work zone and determines whether it is safe to cut the lock.
 - c) The immediate superior, accompanied by the WIC, cuts the individual padlock that was left in place. If the immediate superior is not reasonably able to come to the site, upon receiving their immediate superior's approval, they authorize the WIC to cut the padlock while accompanied by a team member.
 - d) The immediate superior must meet with the owner of the padlock when the latter returns to work to notify them that their padlock was cut and finalizes the form by recording this notice; a copy is sent to the employee and to the health and safety committee involved.

C) Procedure to authorize the cutting of a lockout padlock

If a lockout padlock has been forgotten, after confirming that the safety regime was handed in, the immediate superior removes the padlock, or has someone remove it, using the key.

When a lockout padlock must be cut following a defect or if the key was lost, the WIC notifies the members of their team and contacts their immediate superior to inform them of the situation. The immediate superior may authorize that a lockout padlock be cut, but they must complete the required form by documenting all of the following actions that were taken:

- 1) When required, make sure that the safety regime has been given to the operator.
- 2) Contact the immediate superior or replacement to obtain the latter's consent to authorize that the padlock may be cut.
- 3) The immediate superior, accompanied by the WIC, cuts the padlock that was left in place, but if the immediate superior is not reasonably able to come to the site, they may authorize the WIC to cut the padlock.
- 4) Fill out the form and send a copy to the relevant health and safety committee.

D) Padlock cutting tracking form

Each time a padlock is cut, it must be entered on the appropriate form by the immediate superior and kept for one (1) year.

Appendix II

Installation of Lockable Energy-isolating Devices

Following discussions between Hydro-Québec and the trade, technical and clerical employee unions while establishing the lockout method, Hydro-Québec agreed to set up measures aimed at eliminating the number of non-lockable energy-isolating devices by applying the following measures:

A) New facilities, including additions to existing facilities

All new energy-isolating devices must be lockable.

B) Major changes to existing facilities

When projects involve major modifications to part of an existing facility, the new energy-isolating devices must be lockable

C) Non-lockable energy-isolating devices

In all cases, the following measures must be applied when a non-lockable energy-isolating device is found:

- Establish an action plan to make it lockable, which will involve a worker responsible for the action along with a timeline. The action plan is submitted to the relevant health and safety committee
- The materials and drawings or as-built diagrams must be available
- The energy-isolating device must be made lockable according to the action plan

Appendix III

Communication Procedure

If a safety regime has been issued for the device covered by an outage or advance request, the operator and the requesting WIC apply the communication procedure.

- 1) Before issuing a safety regime, the operator informs the requesting WIC that a safety regime has been issued for the device or on the control and/or protection circuits covered by their request.
- 2) The requesting WIC contacts the WIC holding the safety regime, reaches an agreement with the latter on the safety measures to be applied (e.g., switch, disconnect switch cabinet, fuse) and obtains the number of the safety regime from the WIC involved.
- 3) The requesting WIC contacts the operator and confirms the safety regime number of the WIC concerned by their safety regime request.
- 4) After checking the safety regime number sent by the requesting WIC, the operator issues the safety regime.
- 5) At the end of the work, the WICs concerned by the agreed-on safety measures must contact each other to confirm the return of their safety regime.

Note: If modifications need to be made to the agreed-on safety measures or if there is a change in WIC, the WICs must contact one another.

If several devices or control and/or protection circuits are concerned by the safety regime request, the communication procedure must be applied with each WIC concerned.

This procedure does not apply to the following devices:

- Transformer without a tap changer or with a manual tap changer
- Current transformer
- Reactor
- Circuit breaker (equipped with a disconnecting cabinet or switches)

Appendix IV

Work Zone Components

The following components are part of a generating unit work zone:

- Intake gate and penstock, if there is no head gate
- Headgate (spherical valve, clamshell gate, butterfly valve or ring gate)
- Draft tube
- Tailrace canal
- Tailgate (depending on tailwater level)
- Scroll case
- Speed governor
- Pumping unit (air-oil pressure tank, collector, including pump and small turbine)
- Turbine
- Generator
- Generating unit cooling system
- Neutral ground cabinet
- Generating unit voltage and current transformer
- High-power portion of static and/or dynamic excitation
- Fire fighting system specific to the generating unit, including fire alarm panel and flood valve cabinet

The following components are generally not included in a generating unit work zone:

- Control and metering circuits
- Protection circuits
- Electronic portion of the excitation system (e.g., control, protection and regulation)

Table 1 – Selection of mechanical isolation points

	Case A No contact with rotating or moving parts		Case B Contact with rotating or moving parts	Case C Access to scroll case
	1st poss. P.Z.	2nd poss. P.Z.		
	Wicket gates closed			
	Wicket gates open			
	Servomotors locked			
	Oil pressure eliminated at servomotors			
	Gate upstream of wicket gates closed			

↗	(Gate upstream of scroll case closed (as well as its bypass valve, if it has one))						🔒
↗	Tailgate according to the level or change in level						🔒
↗	Depressurization of variable-blade turbine hydraulic circuit						🔒

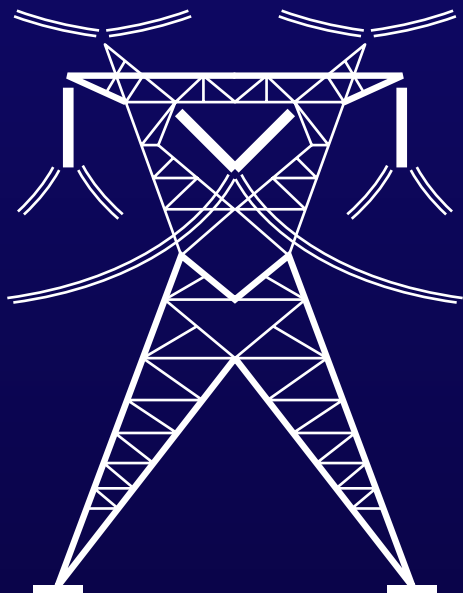
Note: For Case B or C, when work is done on one of the components serving as a mechanical isolation point consisting of servomotors, oil intake valve(s)² and drain valve(s) to establish the protected zone, this component is replaced with the air-oil pressure tank open to the air and with dissipated mechanical energy or the removal of a physical component with dissipated mechanical energy.

For upstream/downstream work, the isolation points for the protected zone are defined in the upstream/downstream guides for each type of work for each given facility.

² Includes electrical energy in the case of an electrically-powered servomotor.

Table 2 – Documenting protection switches

	System Safety	Work Zone Safety
Responsibility	The operator must establish, or have someone establish, the measures related to power system safety.	The WIC establishes, or has someone establish, the safety measures for the work zone.
Identification of open switches	The switchperson attaches the tag specified in the operating guideline (<i>GEN-D-520</i>).	The WIC performs the lockout (see Section 5).
Documenting the switches	The switches used for power system protection are documented according to the applicable guideline.	The switches that serve as safety measures for the work zone are entered by the WIC on the Safety Measures Sheet or the Lockout Sheet.
Regime	No safety regime	The regime held by the WIC



Transmission Lines

Transmission Lines



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General

1 Introduction

1.1 Purpose

The Work Safety Code sets out the measures to be applied so that workers can perform work safely. Safety measures pertain to the hazards related to energy sources in Hydro-Québec's generating, transmission, distribution, and telecommunications facilities.

1.2 Scope

The Work Safety Code applies to work performed by Hydro-Québec and contractor personnel on or near Hydro-Québec's energized or de-energized facilities.

In an emergency, if someone's safety is in jeopardy, full application of the Work Safety Code is not required. Once the emergency is under control, the Code applies again in full.

The Work Safety Code applies to work in areas designated as "construction sites" for facilities or parts of facilities that have already been commissioned.

The Work Safety Code does not apply to:

- Facilities or parts of facilities designated as "construction sites" that have never been commissioned
- A generating station designated as a "construction site," is not connected to the grid and is no longer under the responsibility of an operator

In such cases, the *Québec Safety Code for the Construction Industry* applies up to the commissioning stage.

Note: The transfer of responsibility applies to work involving modifications, dismantling, and reconstruction, but not for maintenance work where the Work Safety Code applies.

1.3 Sector standards

The Work Safety Code applies when work is being done on certain specific facilities with special characteristics.

The principles of the Work Safety Code apply and are described in the applicable guidelines (*A73-03, A73-04, D.24-26*).

2 Training and qualification

The rules pertaining to the training and qualification of Hydro-Québec and contractor personnel are defined in the guideline entitled *Work Safety Code Training and Qualification (HQ-SST-N-1003)*.

3 Inquiries

Any inquiries related to the understanding of this Work Safety Code must be submitted using the procedure set out in the guideline entitled *Mécanisme de compréhension du Code de sécurité des travaux (SST-N-100)* [inquiries relating to the Work Safety Code].

4 Monitoring enforcement of the Work Safety Code

Hydro-Québec Distribution must implement an audit program to enforce compliance with the Work Safety Code and related guidelines to confirm that parties are aware of and use the prescribed guidelines.

The audit program must include the following:

- Roles and responsibilities in coordinating, planning, conducting audits and implementing corrective action
- Criteria relating to auditor qualifications and selection
- Audit scope
- Annual audit frequency
- Methods to be used and analysis of findings
- Production of reports

The audit plan must be submitted to the Work Safety Code Committee.

Audit findings and conclusions along with all action plans must be documented and communicated to the workers involved, the parties responsible for the corrective actions, and submitted annually to the Work Safety Code Committee.

Transmission Lines

1 Application to lines

This section defines how the Work Safety Code applies to work performed on overhead and underground transmission lines. These lines start at the connections of a terminal box or at the tension insulators of a substation and end at a customer's connection point or another substation, including the switches located on the line.

1.1 Selection of safety regime

Under the provisions of this Code and depending on the type of work, the safety regime must be selected according to the rules set out in the guideline entitled *Processus et critères décisionnels pour déterminer l'exécution des travaux sous et/ou hors tension sur les lignes aériennes de transport (TET-LIA-P-GEN0010)* et selon le processus pour l'obtention d'un retrait de ligne [Decision-making process to determine energized and/or de-energized work on overhead transmission lines (*TET-LIA-P-GEN0010*) and according to the process for obtaining the outage of a line].

1.2 Communications with operators

When there is a Hold Order, the operator and WIC must be able to communicate with one another. In areas where direct communication is difficult, a telephone, cell phone, relay or any other means of communication can be used. If no communication is possible, the Work Authorization applies.

2 Definitions

Device

Any component of a facility (e.g., disconnect switch, transformer).

Apparatus

Group of devices in a facility (e.g., switching, transforming apparatus).

Telecommunications network component

Any component of the telecommunications network.

Energy-isolating devices

Energy-isolating device that physically prevents electrical or mechanical energy from being transmitted or released.

Note: Pushbutton switches and similar controls are not energy-isolating devices.

Autonomous power

Power from an autonomous source that does not contribute to the operation of a device, apparatus or facility, for the purpose of conducting a test.

Auxiliary power

Mechanical, hydraulic, pneumatic, electrical power (750 V and less), whether radiant or optical, that contributes to the operation of a telecommunications network device or component.

Induced power

Electric power generated inductively or capacitively.

Main power

Electrical power at a voltage of more than 750 V present or flowing through a facility or in a device.

Switchperson

An authorized worker who carries out or supervises switching operations under the orders of an operator.

Operator

An authorized worker from Hydro-Québec designated by an administrative unit as being in charge of operating specific facilities.

Security guard

An authorized worker from Hydro-Québec who is in charge of applying the safety measures set out in this Code. This worker may suspend work if there is a hazard that may put workers' safety at risk, and then notifies their supervisor.

Note: For the sake of readability, this term will not be repeated in the document. A security guard has the same duties as a worker in charge (WIC), with the exception of work coordination.

Facility

A group of apparatuses and conductors or telecommunications network components, such as overhead or underground lines or telecommunications links, taken as a whole or in part.

Authorized worker

A worker who meets the qualification criteria specified in the Work Safety Code (*HQ-SST-N-1003*).

Initiated worker

A worker who has taken the introductory course on the Work Safety Code ("Initiation au Code de sécurité des travaux").

Electrical isolation point

An energy-isolating device that enables separation in an electrical circuit that can be verified visually or positively according to the applicable guideline (*TET-SEC-N-0037*).

Team leader (responsible)

Authorized worker who oversees the work and is responsible for applying the safety measures applicable to their team in the work zone.

Note: Depending on the type of job, qualification under the Work Safety Code is not required for Hydro-Québec personnel or contractors required to act as team leaders. The types of jobs concerned by the qualification can be found in the Work Safety Code training and qualification guideline (HQ-SST-N-1003).

Worker in charge (WIC)

Hydro-Québec or contractor authorized worker who is in charge of applying the safety measures of the Code. When there is more than one team, the WIC is responsible for coordinating the work in the work zone.

Inspector

An authorized worker who certifies to the operator the lockout status of the isolation points for the protected zone and who confirms to the WIC the safety measures put in place for them and the members of their team.

Work zone

Area established by the WIC and the team members at the site where the work is to be carried out.

Protected zone

Area established by the operator by means of isolation points corresponding to a WIC's needs and within which measures taken by the operator enable the WIC to establish a work zone.

3 Equipment

Lockout box

Lockable box used by the WIC and team members designed to allow workers to check whether there are any lockout padlock keys.

Numbered lockout box

Numbered lockable box used by switchpersons and inspectors designed to allow them to check for the presence of key(s) for the padlocks used to lock out the

isolation points for the protected zone. It contains the lockout tags bearing the same number as the lockout box, hasps and padlocks.

Inspector's padlock

Padlock with an alphanumeric identifier and a single key, used by inspectors to lock out the numbered lockout box.

Lockout padlock

A series of padlocks opened using the same key, bearing the same alphanumeric serial number and used for lockout purposes.

Operations padlock

Set or series of single-key padlocks for use by operations personnel, namely the switchperson to lock out the numbered lockout box.

Individual padlock

Lock or series of single-key locks marked with the person's name for the duration of the work and for which only that worker has the key.

Transfer envelope

An envelope used by the WIC to carry out an indirect change in WIC when no lockout box is used. The envelope contains at least the Safety Measures Sheet. It is designed so that the seal number, safety regime number, identification and location of the work can be seen.

Switchperson-Inspector Lockout Form

Form on which the inspector enters information relating to the verification.

Lockout Sheet

Form containing all the information related to the lockout and verification of the isolation of the energy-isolating devices (*HQ-SST-M-1002*).

Note: During the deployment period, the absence of any Lockout Sheets does not prevent work from being performed.

Safety Measures Sheet (SMS)

Form containing all the information related to the safety measures put into place for the safety regime being used.

Work Authorization Form

Form used to enter all the information related to a protected zone. The operator delivers a protected zone to the WIC under conditions agreed upon with the latter.

Accord tag

Blue and white tag marked "ACCORD" used when work is to be done under the Accord regime.

Self-protection tag

Yellow and white tag that reads "NE PAS MANŒUVRER – AUTOPROTECTION" [No switching – Self-protection] displayed when work is to be done under the Self-protection regime.

Lockout tag

Red and white tag that reads "APPAREIL CONDAMNÉ – DÉFENSE DE MANŒVRER" [Device locked out – No switching] used when work is to be done under the Work Authorization regime.

Hold Order tag

Green and white tag that reads "RETENUE" [Hold Order], used for work done under the Hold Order regime.

Note: On the operators' monitors, the Accord, Work Authorization and Hold Order tags are represented by icons.

Lockout hasp

Device that allows several locks to be installed.

Transfer seal

Single-use device with unique numbering installed on a lockout box or transfer envelope to ensure lockout continuity. Used only when there is an indirect change in WIC.

4 Safety regimes

The types of safety regimes include:

- Work Authorization
- Accord
- Self-protection
- Hold Order

When work is performed by Hydro-Québec personnel under a Work Safety Code regime, the latter is held by Hydro-Québec authorized personnel. However, support or expertise provided by Hydro-Québec personnel is permitted in a work zone for which the Work Safety Code regime is held by contractor personnel, provided the work is performed by the contractor.

4.1 Work Authorization regime

4.1.1 Application

The Work Authorization regime applies to de-energized work performed to ensure the safety of Hydro-Québec and contractor personnel on or near Hydro-Québec's facilities operated at 750 V or more under an operator's responsibility.

4.1.2 Electrical isolation points for the protected zone

The electrical isolation points for the protected zone are achieved by:

- Opening the switches
- Removing or controlling a physical component

4.1.3 Outage request

When scheduled work has to be done under a Work Authorization, an outage request must be submitted to the operator in accordance with the operating rules. The outage alone is not sufficient to authorize the work (*GEN-D-007*).

Relevant information regarding the protected zone as well as all other information needed to plan and carry out the work must be provided to the WIC before work begins.

4.1.4 Establishing the protected zone

The operator must establish or have established the isolation points ensuring the protected zone. The operator disables, or has someone disable, the energy-isolating devices(s) acting as electrical isolation points. The operator confirms, or has someone confirm, that the isolation was verified (*TET-SEC-N-0037*).

The operator verifies, or has someone verify, zero voltage using an approved detector. If a detector cannot be used, refer to the applicable guidelines (*AP-LS-M 201, TET-APE-N-7001, TET-SEC-P-0026, GEN-D-941, GEN-D-946*).

Protected zones must never overlap. However, establishing a new protected zone is not considered an overlap as long as the Work Authorization has not been issued. Separate protected zones may have common isolation points.

The WIC and the operator must agree on the size of the protected zone.

4.1.5 Lockout of protected zone

Each worker protects themselves by installing a padlock to prevent accidental re-energization in the facility or portion of the facility in which the worker is working.

When a physical component that has been removed or controlled is used to create an isolation point for the protected zone, the lockout must be done in accordance with the applicable guideline (*TET-SEC-P-0010*).

The isolation of the energy-isolating devices acting as electrical or mechanical isolation points for the protected zone must be verifiable visually or positively in accordance with the applicable guideline (*TET-SEC-N-0037*).

The lockout mode to be used for each facility is established according to the criteria specified in Table 1. However, at the work site, the lockout is always done in Priority mode.

The lockout can be done once the protected zone has been established, or at the same time when performing switching operations to create the protected zone.

Note: The lockout must be performed in accordance with the instructions on the Lockout Sheet. The fact that there is no Lockout Sheet does not prevent the lockout from being performed; but it must be done in accordance with the guideline (HQ-SST-M-1002).

Lockout modes

There are two possible lockout modes: Priority mode or Switchperson-Inspector mode. Lines must be classified according to the applicable mode (see Table 1). **However, at the work site, the lockout is always done in Priority mode.**

In the event of a customer service interruption, Table 1 does not apply, in which case the operator selects, in agreement with the WIC, the lockout mode that minimizes the outage time. In the case of outages where the WIC is not yet known, the operator alone selects the lockout mode that minimizes the duration of the outage.

Note 1: However, if a physical component is used to make an isolation point, Table 1 applies without taking into account the line classification.

I Priority lockout mode

The WIC and at least one team member lock out the energy-isolating devices acting as isolation points for the protected zone, as defined in the Lockout Sheets (*HQ-SST-M-1002*).

The entire team should participate with the WIC in the lockout process in order to become familiar with the energy-isolating devices.

For these lockouts, after verifying the isolation, the WIC uses one or a number of lockout padlocks. Each padlock must be installed using a lockout hasp. When the energy-isolating device serving as an isolation point for the protected zone has already been locked out, the isolation is considered to be verified.

The WIC places the key(s) for the lockout padlocks being used in the lockout box, and each team member, including the WIC, locks the box with an individual lock. This is done after locking out the energy-isolating devices for any energy source present in the work zone that may constitute a hazard for the entire team.

For lockouts in Priority mode under the "Transmission Lines" chapter for line workers who must perform lockouts on the Distribution system. The transmission WIC and at least one member of their team must be accompanied by an authorized worker assisted by at least one member of their team from Distribution to lock out the isolation points of the protected zone.

II Switchperson-Inspector lockout mode (see Table 3)

The lockout by the switchperson and the inspection and lockout by the inspector must not be performed at the same time.

Two different authorized workers take part in locking out the protected zone as follows:

a) Switchperson

At the operator's request, the switchperson locks out the energy-isolating devices using the Lockout Sheet(s) in the requested state.

To do so, after verifying the isolation, they:

- Use a series of lockout padlocks and tags from a numbered lockout box
- Place the lockout padlocks, tags and hasps on the energy-isolating devices and enter the number of the lockout box where they came from on the tags, place the lockout padlock key in the numbered lockout box and attach an operating padlock at the location marked "EXÉCUTANT" (switchperson)
- Inform the operator of the actions taken at the latter's request along with the serial number of the lockout padlocks that were used, but do not give the operator the number of the lockout box being used
- Enter the information on the Lockout Sheet

b) Inspector

The operator sends an inspector to check the state of the isolation points and the lockout of the energy-isolating devices, and to lock out the numbered lockout box

The inspector:

- Notes the state of the isolation points and the identification of the energy-isolating devices, the serial number of the lockout padlocks, and the number of the lockout box entered on the tags
- Places an inspector padlock on the numbered lockout box for each Work Authorization to be issued

- Enters all the necessary information on the Switchperson-Inspector Lockout Form
- Informs the operator, using the Lockout Sheet, of the state and lockout of the energy-isolating devices
- Transmits the information to the WIC; if this has not been done during the inspector's work shift, the inspector asks the operator to disable the inspector's padlock and provides its number. (The operator has the padlock removed within 24 hours.)
- Places, before taking the regime, the Fiche de condamnation matérielle mode Exécutant et Vérificateur (Switchperson-Inspector Lockout Form) at a predetermined location with the single key for the padlock they attached for each Work Authorization on the numbered lockout box

c) The WIC:

- Calls the operator, identifies and agrees with the operator on the isolation points for the protected zone
- Obtains the serial number of the lockout padlocks the switchperson has placed on the energy-isolating devices serving as isolation points, as well as the latter's name, and obtains the name of the inspector and how to contact them
- Contacts the inspector(s) and obtains the serial number of the lockout padlocks, the number of the box and the number of the inspector padlock assigned to them, as well as the state and identification of the locked-out energy-isolating devices
- Makes sure that the information given to them by the inspector(s) matches the information obtained from the operator and sends the

sequential number of the Work Authorization Form to the inspector(s)

- Calls back the operator and obtains the Work Authorization number

d) Multiple Work Authorizations

If multiple Work Authorizations are required at the same time in the same protected zone, the inspector only performs one verification but attaches one of the inspector's padlocks for each required Work Authorization.

If other Work Authorizations are required in the same protected zone, the operator once again sends out an inspector and the verification procedure is repeated. In this situation, the inspector may also be the switchperson, provided each function is carried out on different dates with at least 8 hours of rest in-between. The WIC is notified of this situation by the operator. In addition, the Inspector places one of the inspector's padlocks on the numbered lockout box for each new Work Authorization that is required.

The inspector confirms to the operator and the WIC the actions and required information for each one.

4.1.6 Issuing the Work Authorization

The operator provides the Work Authorization to the WIC by issuing a Work Authorization number (*Guide formule AdT-RDT, GEN-R-981*).

The operator and the WIC agree to not alter the protected zone.

No work is permitted on an energy-isolating device serving as an electrical isolation point for the protected zone. Regarding switches, no work is allowed on the jaw or pivot sides when one side is energized, even if the approach distances are observed. It is also forbidden

to remove or connect jumpers to disconnect switches. However, a jumper may be disconnected at the opposite end of the disconnect switch serving as an isolation point (*TET-SEC-P-0010*).

4.2 Accord regime

4.2.1 Application

The Accord regime applies to underground transmission line facilities and allows Hydro-Québec and contractor personnel to perform:

- **de-energized work on apparatuses operating at less than 750 V or supplied by another type of energy**
- **de-energized work on apparatuses operating at more than 750 V**
- **operating checks and tests**

on facilities under the operator's responsibility.

I De-energized work on apparatuses operating at less than 750 V or powered by another type of energy

The Accord regime applies to de-energized work on apparatuses operating at less than 750 V or powered by another type of energy.

If de-energizing such apparatuses prevents normal operation of the device it is supplying with auxiliary power, an outage request must be made; otherwise, the device may remain in operation.

II De-energized work on apparatuses operating at more than 750 V

The Accord regime allows de-energized work to be performed on apparatuses that may be isolated from the power system.

Use of the Accord regime must be justified according to the work to be done and when the type of work allows approach distances to be observed (*AP-GS-N002*).

Examples:

- **Changing oil reading and protection systems**
- **Calibrating oil reading and protection systems**
- **Adding oil**

In each case, the work must follow a guideline developed using a standard template (*TEI-SEC-P-0003*).

III Operating checks and tests

The Accord regime applies during operating checks that may require auxiliary power with or without the presence of main power.

4.2.2 Advance request

The WIC must request the required operating conditions ahead of time.

If the work requires an outage request, the request must comply with the operating rules. If the objective of the outage is also to ensure worker safety, the WIC must apply the Work Authorization regime (*GEN-D-007*).

4.2.3 Issuing the Accord regime

Underground system:

The operator issues the Accord regime to the WIC by providing the Accord regime number.

4.3 Self-protection regime

4.3.1 Application

The Self-protection regime applies to de-energized work performed by Hydro-Québec and contractor personnel on facilities not under operator responsibility, namely:

- construction of a facility or part of a facility not yet connected to the power system
- dismantling of a facility or part of a facility that was removed from the system and will not be connected back to it
- maintenance on facilities not under operator responsibility (e.g., structure, overhead ground wire)
- maintenance by Hydro-Québec personnel of telecommunications components in accordance with applicable guidelines

4.3.2 Terms of application

For this regime, no control number is issued to personnel performing the work.

4.4 Hold Order regime

4.4.1 Application

The Hold Order regime applies to energized work performed on or near facilities operated at 750 V or more.

4.4.2 Terms of application

The Hold Order regime is a guarantee given by an operator to a WIC that:

- the AC line supply apparatus or AC device under the Hold Order will not be reclosed without the WIC's consent should the device trip or open

- all protections and teleprotection links required to issue the Hold Order are connected
- circuit breaker maintenance is performed in accordance with the applicable guideline (*TET-APE-N-0001*)
- protection system maintenance is performed according to the applicable guideline for issuing the Hold Order
- no work will be done on the protections

On the HVDC system:

- the device or HVDC line under the Hold Order regime will not be re-energized without the WIC's consent should an event on the line or device result in de-energization
- protection system maintenance is performed according to the applicable guideline for issuing the Hold Order
- all protections and teleprotection links required to issue the Hold Order are connected
- no work will be done on protections and teleprotection links that could potentially affect the Hold Order

Note: Given that the protection components do not guarantee worker safety to the same extent as on the AC system, no Hold Order may be issued in the following two cases:

- On a line used as a metallic return
- On an electrode line

A Hold Order may be recalled at any time at the operator's request.

4.4.3 Advance request

When work has to be done under the Hold Order regime, an advance request must be submitted to the operator, in accordance with the operating rules (*GEN-D-007*).

4.4.4 Establishing the Hold Order

I For non-remotely-controlled circuit breakers

The operator:

- connects, or has someone connect, the fast neutral ground, if the device is equipped with it
- disconnects, or has someone disconnect, the reclosers, if the device has any
- makes sure there is auxiliary power for circuit breakers/reclosers
- removes, or has someone remove, the reclosing fuse for the reclosing breakers, if the devices are equipped with it
- identifies, or has someone identify, the control and reclosing devices using Hold Order tags

II For remotely-controlled circuit breakers:

The operator:

- connects, or has someone connect, the fast neutral ground, if the device is equipped with it
- disconnects, or has someone disconnect, the reclosing devices
- identifies, or has someone identify, the control and reclosing devices using Hold Order tags

III On the HVDC system

According to the applicable guidelines, the operator:

- makes sure that all DC line protections are connected to each converter connected to the line
- makes sure that all telecommunication links affecting the Hold Order regime are connected

- disconnects, or has someone disconnect, the restart automatic control for each converter connected to the line
- identifies, or has someone identify, the start and restart devices using Hold Order tags for each converter connected to the line
- disconnects, or has someone disconnect, the metallic return transfer control, if required
- identifies, or has someone identify, the metallic return transfer control using a Hold Order tag, if required

4.4.5 Issuing the Hold Order

The operator issues the Hold Order to the WIC by giving them a Hold Order number.

5 Establishing safety measures for the work zone

For the Work Authorization, Accord and Hold Order regimes, the planning of the safety measures to be taken for establishing the work area begins once the WIC has the number of the safety regime issued by the operator.

1 Work Authorization and Hold Order

If the work involves several trades, a team leader must be appointed for each trade to oversee the work and apply the safety measures specific to their team.

However, for underground lines, under a Work Authorization, at the WIC's request, one or more team leaders from the same trade as the WIC may be appointed, if the same type of work is to be done.

II Work Authorization

There may be several work zones within a protected zone, but no work zones may overlap.

5.1 Planning safety measures

The WIC and the team members plan the required measures for establishing the work zone. For instance, they must:

- A) Define the work zone based on the work to be performed

Note: The work zone when installing conductors may include more than one structure.

- B) Identify the safety measures to apply:

- 1) Control re-energization caused by induced energy, lightning or accidental re-energization

At no time should the protection provided by the grounding devices be affected by the opening of an electrical circuit when work is being performed.

Identify, according to applicable guidelines, the location(s) chosen for installing the grounding devices that provide protection against the risk of re-energization by induced energy, lightning or accidental re-energization according to the type of work being done and the short-circuit current.

- 2) Identify auxiliary and other energy sources:

The WIC and the team members must make sure that potentially hazardous energy sources of all types have been eliminated. Some types of work require the application of an energy control method; in such a case, refer to the applicable guidelines.

If such energy sources constitute a hazard for the entire team, they must be eliminated at the start of the work.

If such energy sources constitute a hazard for only part of the team, they must be eliminated during the work.

- C) Enter the safety measures identified in B) on the Safety Measures Sheet.

5.2 Applying the safety measures

The WIC applies, or has someone apply, the safety measures determined by the team.

The Team leader applies, or has someone apply, the safety measures specific to their team.

- A) Control re-energization caused by induced energy, lightning or accidental re-energization

Designate, in the case of work involving the main electrical energy, a person in charge of verifying zero voltage through an approved detector or according to the applicable guideline for SF₆-insulated devices and DC devices (*TET-APE-N-7001, TET-LIA-P-OUT0002, TET-SEC-P-0022, TET-SEC-P-0026*).

Assign a person in charge of installing, at the chosen location and in accordance with the applicable guidelines, grounding devices that provide protection against re-energization caused by induced energy, lightning or accidental re-energization (*TET-LIA-P-GEN0050, AP-LS-N030, TET-SEC-N-0017, TET-SEC-N-0002, TEC-GES-N-1023*).

Note: The grounds must be installed immediately after the zero-energy check.

When grounds are common to several WICs or are installed outside the work zone, a lockout tag bearing the sequential number of the Work Authorization

Form must be installed for each Work Authorization that is issued. Information concerning the grounds is provided through the Safety Measures Sheet.

B) Eliminate energy sources **(see Table 2)**

When the energy sources present in the work zone may present a hazard for the entire team, the WIC and at least one team member, using the Lockout Sheets and after checking the isolation, lock out the energy-isolating devices with a lockout padlock and hasp.

I Under Accord or Self-protection

The WIC and the team members can also use their individual padlocks and a hasp to lock out the energy-isolating devices that present a hazard for the entire team.

II Under Self-protection

The WIC places a Self-protection tag identified in their name on each energy-isolating device.

When a lockout box is used, the WIC places the key for the lockout padlock in the lockout box and each member of the team locks the box with their individual padlock.

The isolation provided by energy-isolating devices must be visually or positively verifiable in accordance with the applicable guideline (*TET-SEC-N-0037*).

All team members should take part in the lockout process in order to become familiar with the energy-isolating devices (*HQ-SST-M-1002*).

For energy sources that present a hazard for only part of the team, each worker locks out, using the Lockout Sheet(s), the energy-isolating devices with an individual padlock and hasp. The WIC or team leader also places their own individual padlock. These lockout

mechanisms are put in place before work begins and may be removed when no longer required.

The lockout device, when there is one, must be installed before starting the work.

5.2.1 Opening or closing a physical component under the Hold Order regime

To perform such work, the switch that de-energizes the line section concerned by the opening or closing of the physical component must be locked open, before the component is opened, by the WIC and at least one team member.

In this situation, it is possible to install a portable grounding device on a de-energized portion of the facility. Grounding devices are installed according to the applicable guidelines and type of work to be done as well as the short-circuit current (*TET-SEC-N-0017, TET-LIA-P-GEN0050*).

5.3 Delimiting the work zone

When a work zone is established by transmission line personnel on an overhead or underground transmission line facility located inside a substation, that work zone must be delimited with markers. Markings must be placed to comply with approach distances and so that they can be seen by workers to keep them from crossing the work zone boundaries (*AP-GS-N-0002, HQ-SST-N-9001*).

However, depending on the type of work under the Accord, Self-protection and Hold Order regimes, a physical delimitation is done.

6 Instructions to personnel

The WIC informs the team members of the area of the protected zone and of the lockout, if applicable, of the area of the work zone, along with the safety measures that have been installed. The WIC provides the instructions to personnel according to the Safety Measures Sheet terms of applications.

The team members sign the Safety Measures Sheet to certify that they understand and agree with the information and the instructions that were given. The WIC signs the Safety Measures Sheet only once all the team members have signed it and he or she has authorized the start of the work.

If any team leaders are present, each one fills out a Safety Measures Sheet and enter the safety regime number, if applicable (Guide FMS Lignes).

Work Authorization

For overhead transmission line workers, this step may be done before applying Section 5.2.

Before entering a work zone, each worker must have been given the instructions to personnel, signed the Safety Measures Sheet and attached an individual padlock. Any worker unfamiliar with the Code must be accompanied by an authorized worker.

7 Presence of WIC and team leader

The WIC must be present in the work zone when work is being done in order to provide adequate supervision.

The WIC must not allow work to be performed in more than one work zone at a time.

The team leader must be present in the work zone when work is being performed by their team in order to provide adequate supervision.

Work Authorization

However, when working in the underground system, they may briefly leave the work zone after notifying workers if doing so is related to the purpose of the Work Authorization and does not affect worker safety.

8 Change and rotation of WIC

8.1 Change of worker in charge (WIC)

A) Direct change in WIC

When a direct change in WIC is planned, the following procedure applies:

- If a safety regime has been issued, the operator is notified of the change. The operator confirms the safety regime number. Under a Work Authorization, the operator confirms the isolation points for the protected zone to the new WIC.
- The new WIC retrieves the Lockout Sheet(s) and the Safety Measures Form(s) from their predecessor and fills out a new Safety Measures Sheet with the team members. In signing, the new WIC confirms having been informed by their predecessor of the safety measures that were taken, after verification if required, and of agreeing with them.
- In addition, the WIC must, when applicable:
 - accept the lockout performed in Switchperson-Inspector mode

- check the lockout that was done according to Priority mode before accepting it (except for the isolation verification steps, which are considered as having been completed)
- The new WIC installs their individual padlock and their predecessor removes their padlock.

B) Indirect change in WIC

When an indirect change in WIC is planned, meaning that the WICs do not cross paths physically, the following procedure applies:

The WIC leaving the work zone must:

- Enter the transfer seal number in the appropriate box on the Safety Measures Sheet
- If a lockout box is being used:
 - Place the transfer seal on the lockout box
 - Have the individual padlocks removed from the lockout box and remove their individual padlock
- When no lockout box is used, a transfer envelope must be used:
 - Place the Safety Measures Sheet(s) and, where applicable, the associated Lockout Sheet(s) and Work Authorization Form, if required, inside the transfer envelope (while positioning the Safety Measures Sheet so that the seal number, safety regime number, identification and work location can be seen)
 - Place the transfer seal on the envelope
- Place the lockout box or transfer envelope at a pre-determined location, as well as the Safety Measures Sheet(s), the associated Lockout Sheet(s) and the Work Authorization Form, if required

- (If a safety regime has been issued by the operator, the WIC informs the latter of the measures that were taken.)

Note: No work may be performed when a transfer seal is placed on a lockout box or transfer envelope.

The new WIC must:

- Retrieve the lockout box or transfer envelope at the predetermined location, as well as the Safety Measures Sheet(s), the related Lockout Sheet(s) and the Work Authorization Form, if required
- Make sure the transfer seal number matches the number on the Safety Measures Sheet

Note: If the seal number does not match the one on the Safety Measures Sheet or if the transfer seal has been tampered with, lockout continuity cannot be ensured.

- Place their individual padlock on the lockout box, if required
- Remove the transfer seal from the lockout box or transfer envelope
- If a safety regime has been issued by the operator, notify the latter of the change and confirm the safety regime number (under a Work Authorization, the operator confirms the isolation points for the protected zone to the new WIC)
- Complete and sign the Work Authorization Form, if applicable
- Check the lockout that was done in Priority mode before accepting it (except for the isolation verification steps, which are considered as having been completed), or accept the lockout performed in Switchperson-Inspector mode

- Fill out a new Safety Measures Sheet. In signing, the new WIC certifies having verified the safety measures taken by their predecessor and of agreeing with them

C) Unforeseen absence

In case of an unforeseen absence on the part of the WIC, the immediate superior designates a new WIC and notifies the operator. The absent WIC's individual padlock remains in place and the immediate superior takes the necessary action with the employee as per Appendix 1, if required.

The immediate superior and a team member inform the new WIC of the safety measures taken by the latter's predecessor, and the remainder of the procedure regarding a direct change in WIC applies.

8.2 WIC rotation (underground lines) under the Work Authorization and Accord regime

For scheduled WIC rotations, the name of each WIC must appear on the Work Authorization Form, when applicable.

The WIC and at least one team member who are taking the first rotation perform the lockout using the Lockout Sheet(s), in accordance with the Code. Upon arriving, the WICs and the team members place their individual padlocks on the lockout box. For the first rotation, each WIC checks the lockout using the Lockout Sheet(s) with at least one team member (except for the isolation verification steps, which are considered as having been completed).

All the team members should take part in the lockout process in order to become familiar with the energy-isolating devices (*HQ-SST-M-1002*).

At the end of each rotation, the WIC and a team member leave their individual padlocks on the lockout box, except for their last rotation for the work in question.

At each rotation, the WIC fills out a Safety Measures Sheet according to the procedures and makes sure that the safety measures are being applied, reminds workers of the instructions, and then authorizes access to the work zone.

9 Work interruptions

When work is stopped by the WIC, the latter must make sure that all team members have left the work zone. The WIC prohibits anyone from returning to the work zone and schedules the time and place for everyone to meet before work is resumed.

Upon returning, the WIC makes sure that safety measures are being applied, reminds workers of the instructions, enters the information on the Safety Measures Sheet, and then authorizes access to the work zone.

When a lockout box is used, it must be unlocked at the end of the workday by all the team members, except for the WIC and one team member. Upon returning, a Safety Measures Sheet must be completed in accordance with the applicable procedures.

10 Operating checks and/or tests

10.1 Operating checks involving auxiliary power

When work is being performed under the Work Authorization or Accord regime and checks are required, the WIC informs the team members and then proceeds as follows:

- If auxiliary power is required at the start of the work, the energy-isolating devices are not locked out.
- If the above energy is required after work has been done, removal of the lockout is done using the Lockout Sheet(s) according to one of the following procedures:
 - a) When the lockout was done by the WIC, they gather the entire team to remove the lockout on the energy-isolating devices. The WIC then places the key back in the lockout box, and each team member locks the box again.
 - b) When the lockout is performed by a Team Leader and/or part of the team, they must notify the WIC.

Once the checks have been completed, the lockout is done as specified in Section 5.

10.2 Tests involving autonomous power sources

When work is performed under a Work Authorization, Accord or Self-protection regime and tests must be done using autonomous power sources, the WIC:

- Makes sure that the power source does not present a hazard for the personnel; otherwise access to the work zone must be restricted to persons whose presence is required to perform the work

- Confirms with the operator that no other Work Authorization or Accord regime was issued and that no other such regime will be issued in the protected zone

10.2.1 Tests during new construction

Before performing tests on underground lines with an autonomous power source under the Self-protection regime, the WIC must:

- **Provide the operator with a detailed plan and status report for the work**
- **Specify the location and scope of the tests**
- **Make sure that no one is present in the locations where power may be released from the autonomous source**
- **Make sure that the power source does not present a hazard for personnel; otherwise access to the work zone must be restricted to persons whose presence is required to perform the tests**

10.3 Operating checks involving main power

When checks require connecting the device to the power system, the WIC must apply the Accord regime.

The safety measures to be taken are set out in the following guidelines:

- Essais en réseau ou mise en exploitation des installations (*700-00/AU-D-0.5-01*) [Operational testing or commissioning of facilities]
- Mesures de sécurité à prendre dans les installations d'Hydro-Québec durant la période de mise en route et de mise en service (*PT-3002-02*) [Safety measures in Hydro-Québec facilities during startup and commissioning]

11 Removal of safety measures in a work zone

Once the work has been completed, the WIC makes sure that all safety measures they implement with the team members are removed as follows:

- Have non-essential workers leave and prohibit them from returning
- Remove, or have someone remove, the work zone markings
- Remove, or have someone remove, the grounds and restore bypass devices to their initial state
- Remove the individual padlocks together with the team members
- Remove the lockouts performed for the team in the work zone according to the Lockout Sheet(s)
- Notify the team members that the work zone has been closed and prohibit anyone from returning to or accessing the area

Note: Under a Work Authorization, when common grounds are used, the WIC notifies the other WIC(s) their work zone has been closed and that they must remove their lockout tag from the common grounds.

12 End of work

12.1 Removal of lockout devices in the protected zone under a Work Authorization regime

Removal of lockout devices may be done as switching operations are performed.

- A) If the lockout was done in Priority mode, the WIC must make sure that all the lockout materials they or their team have installed have been removed in accordance with the Lockout Sheet(s).
- B) When the lockout is performed in Switchperson or Inspector mode, the WIC provides the operator with the number(s) of the numbered lockout boxes that were used, the number of the inspector padlock that was assigned to them, and the sequential number of the Work Authorization Form.

Since the operator is responsible for the removal of the lockout devices, this must be done using the Lockout Sheets. The operator must first obtain the end-of-work notice.

If several Work Authorizations have been issued for the same protected zone, the operator has the inspector's padlocks placed on the numbered lockout box removed as the Work Authorizations are returned to them.

Note: If the numbers provided by the WIC do not match, the switchperson must contact the WIC.

12.2 End-of-work notice

When a safety regime is issued by the operator, the WIC provides them with the end-of-work notice by returning the regime number and indicating the state in which the facility is being returned.

I Work Authorization:

If a protected zone is modified, the WIC leaves the work zone in with the work uncompleted, without removing the grounds and lockouts needed for a new Work Authorization to be issued.

In Switchperson-Inspector mode, only the inspector's padlocks need to be removed from the numbered lockout box for the protected zone energy-isolating devices that do not need to be changed.

When issuing the new Work Authorization, the operator sends an inspector to redo the steps, as specified in section 4.1.5 II b).

The same WIC obtains a new Work Authorization as soon as the new protected zone has been established to complete the work.

II Hold Order

In the event a physical component is de-energized, the end-of-work notice must be issued in accordance with applicable guidelines when protective grounds are kept on a de-energized portion of the facility.

12.3 Removal of Hold Order

The operator:

- Removes, or has someone remove, the Hold Order tags on the reclosing and control devices
- Puts back, or has someone put back, the reclosing fuse for the non-remotely-controlled reclosing breakers
- Reconnects, or has someone reconnect, the reclosing devices
- Disconnects, or has someone disconnect, the fast neutral ground

On the HVDC system according to the applicable guidelines, the operator:

- Removes, or has someone remove, the Hold Order tags that he installed or had someone install

- Connects, or has someone connect, the metallic return transfer control, if applicable
- Connects, or has someone connect, the restart automatic control for each converter connected to the line, if applicable

13 Specific types of work

13.1 Work involving overhead transmission line and distribution facilities

When work must be performed in a work zone that involves both distribution and transmission facilities, such work is performed by two WICs: one who is authorized for work on distribution facilities and the other for transmission facilities. However, the work must be done on one facility at a time and by one WIC, with the other WIC being the security guard for their facility.

Each WIC contacts their operator to obtain the regime.

However, when work is to be carried out in a structure with transmission line and distribution facilities, if the work to be performed on the distribution facilities does not require any safety measures involving a safety regime for the transmission facilities, then no security guard is required.

Note: Following regional agreements with the various health and safety committees, work may be performed by a single WIC if the latter is authorized for both distribution and transmission facilities. The WIC must contact the Distribution Control Center (DCC) and Regional Control Center (RCC) to obtain the safety regimes.

13.2 Work on a line feeder in a substation

Before starting work in a delimited work zone, there must be agreement with the WIC on the work to be done in their zone.

13.3 Emergency de-energization

Emergency de-energization is used when a worker's safety is at risk (*GEN-D-935*).

Emergency de-energization is limited to the following situations:

- Possible electrification (e.g., equipment failure)
- To prevent possible arcing during a rescue (e.g., from a fire or a conductor on a vehicle)
- Any other work or equipment covered by an agreement with the provincial health and safety committee (CPSS)

Emergency de-energization must only be used for safety purposes. The work is generally of short duration and the facilities must always be considered energized.

The procedure is as follows:

- Hydro-Québec or contractor personnel contacts the operator to request that the facility be de-energized, or remain so, and not be re-energized without their consent.
- Hydro-Québec or contractor personnel checks for zero voltage, if applicable, depending on the type of work.
- Hydro-Québec or contractor personnel must use insulating tools, if applicable and depending on the type of work, to completely eliminate any hazards for the persons involved.

Once the hazard has been eliminated, restoration work is done according to the safety rules and measures set out in the Work Safety Code.

13.4 Work by third parties

When maintenance work has to be done by a third party who is unable to comply with the minimum approach distances of a Hydro-Québec transmission line, the special procedures to follow are defined in the applicable guidelines (*TET-EMP-N-GEN-0010*).

13.5 Work on insulated overhead ground wires

Some ground wires are insulated and may carry electrical power to supply a beacon or microwave relay station, or so that they can be de-iced using DC power. The following measures must be applied to perform the work.

I Autonomous power supply by insulated ground wire

For an autonomous power supply by insulated ground wire, the principles relating to de-energized work are not applicable. Any maintenance work on an autonomous power supply by insulated ground wire must be done according to the applicable guidelines (*AP-LA-N950*).

II Medium-voltage (MV) distribution supply by insulated ground wire

An outage request must be made in accordance with operating rules.

The telecontrol center operator issues a Work Authorization to the WIC.

Note: For lockouts in Priority mode under the "Transmission Lines" chapter for line workers who must perform lockouts on the Distribution system. The WIC – Transmission and at least one member of their team must be accompanied by an authorized worker assisted

by at least one member of their team from Distribution to lock out the isolation points of the protected zone.

III Low-voltage (LV) distribution supply

The WIC applies the Self-protection regime.

IV DC power supply for de-icing

The WIC applies the Work Authorization regime (*TET-SEC-P-0022*, *TET-SEC-P-0026*).

13.6 Lockout of neighboring systems

The procedure to follow is described in the guidelines entitled *Condamnation matérielle, Réseaux voisins* [Lockout of neighboring systems] (*PT-3012-01*, *GEN-D-941-BAI*).

13.7 Safety measures in Hydro-Québec facilities during startup and commissioning

The guideline (*PT-3002-02*) defines the safety measures and the operating rules with respect to startup.

13.8 Withdrawal from service of cellular and microwave antennas

When maintenance work involves the withdrawal from service of cellular or microwave antennas on supports belonging to Hydro-Québec TransÉnergie, safety measures must be applied according to the procedure (*TET-LIA-P-SUP0001*).

Appendix I

Padlock control

A) Principles

Only one key is allowed for lockout padlocks, individual padlocks and inspector padlocks.

No copies may be made of such keys.

The name of the worker who places their individual padlock must be clearly indicated on the padlock if no record is kept.

If the key or an individual padlock is defective or if the key was lost, only the employee involved who is present at the work site can cut their own padlock.

At all times, before authorizing that a padlock be cut, the immediate superior must make sure that doing so does not jeopardize any person's health, safety or physical well-being.

B) Procedure to authorize the cutting of an individual padlock

If an individual lock remained attached because it was forgotten or due to an unforeseen absence, the WIC must contact their immediate superior to notify them of the situation.

Before cutting an employee's padlock, the immediate superior should always consider waiting for the employee to return the same day or on the following days. If they have no other choice, they may cut the padlock only after strictly following the steps outlined below:

- 1) Make sure that the employee who owns the padlock to be removed is no longer at the work site.
- 2) Use all reasonable means to reach the employee directly.
- 3) If the employee is no longer at the work site but can be reached, the immediate superior must inform them of the situation and ask them to come back to the work site to remove their padlock, if they are reasonably able to do so.
- 4) If the employee is no longer at the work site and cannot be reached, or is not reasonably able to return to the work site, the immediate superior must complete the designated form documenting all of the following actions that have been taken:
 - a) The immediate superior contacts their superior or substitute to obtain the latter's consent to authorize the forgotten padlock to be cut.
 - b) The immediate superior confirms with the WIC that the employee has left the work zone and determines whether it is safe to cut the lock.
 - c) The immediate superior, accompanied by the WIC, cuts the individual padlock that was left in place. If the immediate superior is not reasonably able to come to site, upon receiving their immediate superior's approval, they authorize the WIC to cut the padlock while accompanied by a team member.
 - d) The immediate superior must meet with the owner of the padlock when the latter returns to work to notify them that their padlock was cut. They complete the form by documenting the notice and a copy is sent to the employee and to the health and safety committee concerned.

C) Procedure to authorize the cutting of a lockout padlock or inspector's padlock

If a lockout padlock or inspector's padlock is forgotten, after confirming that the safety regime was handed in, the immediate superior uses the key to remove the padlock or have someone remove it.

When a lockout or inspector's padlock must be cut following a defect or if the key was lost, the WIC notifies the members of their team and contacts their immediate superior to inform them of the situation. The immediate superior may authorize that a lockout or inspector padlock be cut, but must complete the required form by documenting all the following actions that were taken:

- 1) When required, makes sure that the safety regime has been given to the operator.
- 2) Contacts their immediate superior or their replacement to obtain the latter's consent to authorize the padlock to be cut.
- 3) The immediate superior, accompanied by the WIC or an operator, cuts the padlock that was left in place, but if the immediate superior is not reasonably capable of going on site, they authorize the WIC to cut the padlock.
- 4) Fills out the form and sends a copy to the health and safety committee concerned.

D) Tracking of padlock cutting form

Each time a padlock is cut, it must be entered on the appropriate form by the immediate superior and kept for one (1) year.

Appendix II

Installation of lockable energy-isolating devices

Lockable energy-isolating device

Following discussions between Hydro-Québec and the trade, technical and clerical employee unions while establishing the lockout method, Hydro-Québec agreed to set up measures aimed at eliminating the number of non-lockable energy-isolating devices by applying the following measures:

A) New facilities, including additions to existing facilities

All new energy-isolating devices must be lockable.

B) Major changes to existing facilities

When projects involve major modifications to part of an existing facility, the new energy-isolating devices must be lockable.

C) Non-lockable energy-isolating devices

In all cases where an energy-isolating device is encountered that is non-lockable, the following measures must be applied:

- An action plan is established to make the device lockable, which will involve a worker responsible for the action along with a timeline. The action plan is submitted to the health and safety committee concerned.
- The materials and drawings or as-built diagrams must be available.

- The energy-isolating device must be made lockable according to the action plan

D) Other means of locking out

Other methods may be developed to make devices lockable and to use them following an agreement between the parties.

Table 1 – Lockout of protected zone

Priority Mode	Delegated Worker Mode	Switchperson-Inspector Mode
If the lockout lasts less than 60 minutes.	N/A	If the lockout in Priority mode lasts more than 60 minutes.

However, at the work site, the lockout is always done in Priority mode.

Transmission lines must be classified based on Table 1. The classification must be monitored by the regional health and safety committee (CRSS). In addition, special cases must be agreed upon by the CRSS.

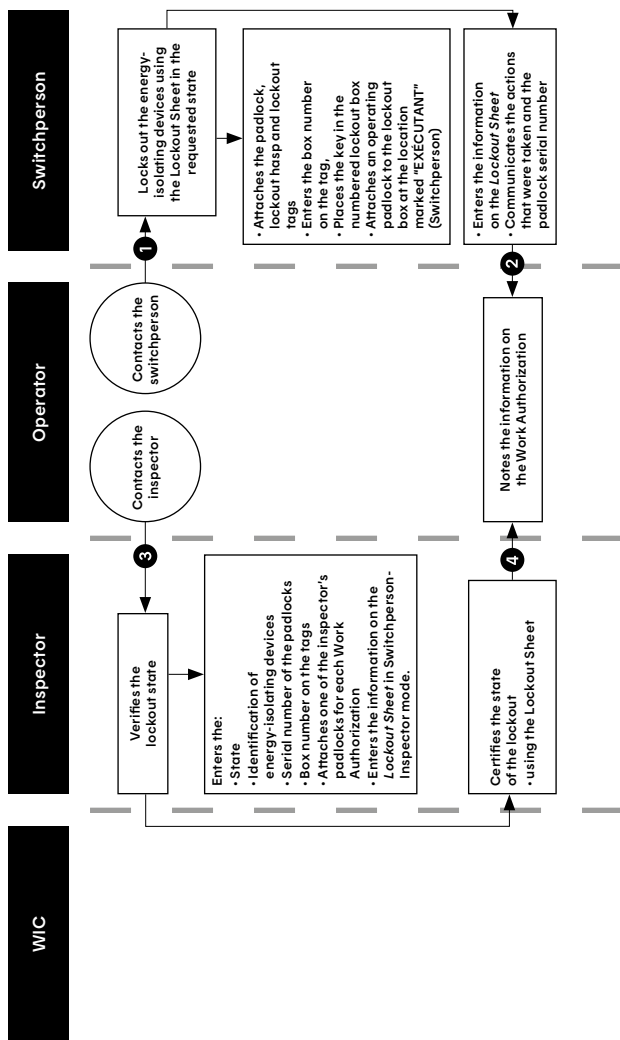
Note: When a line is classified under Switchperson-Inspector mode and the protected zone must be established by withdrawing a physical component, the latter is locked out in Priority mode if it takes less than 60 minutes.

Note: For lockouts in Priority mode under the “Transmission Lines” chapter for line workers who must perform lockouts on the Distribution system. The transmission WIC and at least one member of their team must be accompanied by an authorized worker assisted by at least one member of their team from Distribution to lock out the isolation points of the protected zone.

Table 2 – Documenting protection switches (underground lines)

	System Safety	Work Zone Safety
Responsibility	The operator establishes, or has someone establish, the measures related to power system safety.	The WIC establishes, or has someone establish, the safety measures for the work zone.
Identification of open switches	The switchperson places the tag specified in the operating guideline (<i>GEN-D-520</i>).	The WIC performs the lockout. (See Section 5)
Documenting the switches	Switches that protect the system are documented according to the applicable guideline.	The switches that serve as safety measures for the work zone are entered by the WIC on the Safety Measures Sheet.
Regime	No safety regime.	The regime is held by the WIC.

Table 3 – Switchperson-Inspector mode – Procedure before issuing the regime



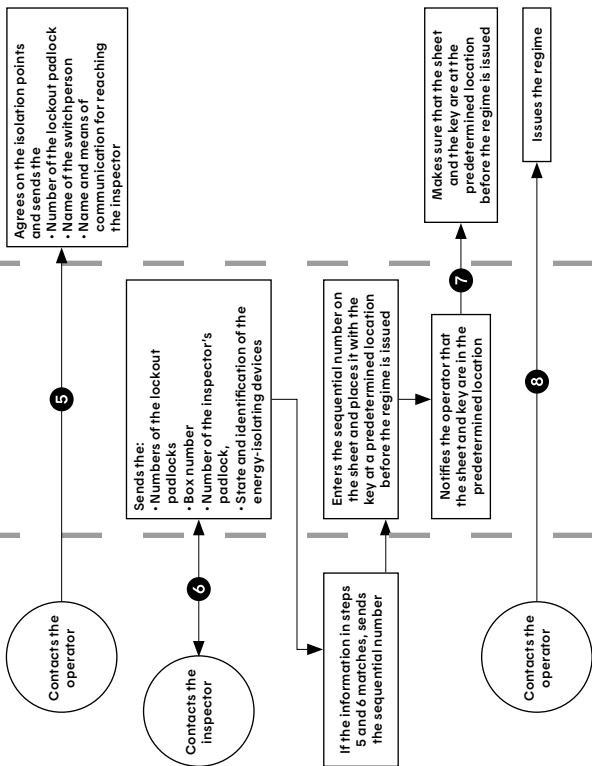
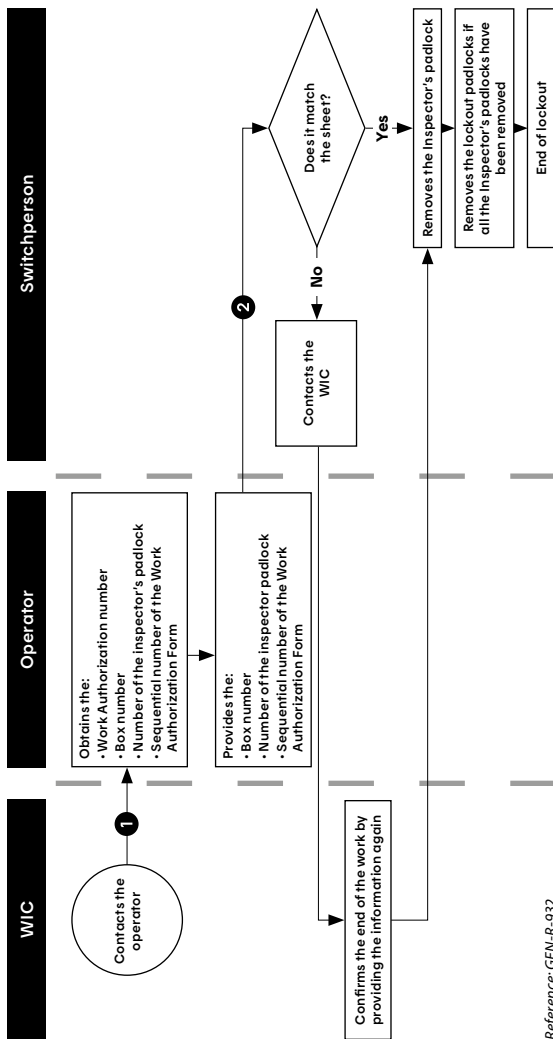
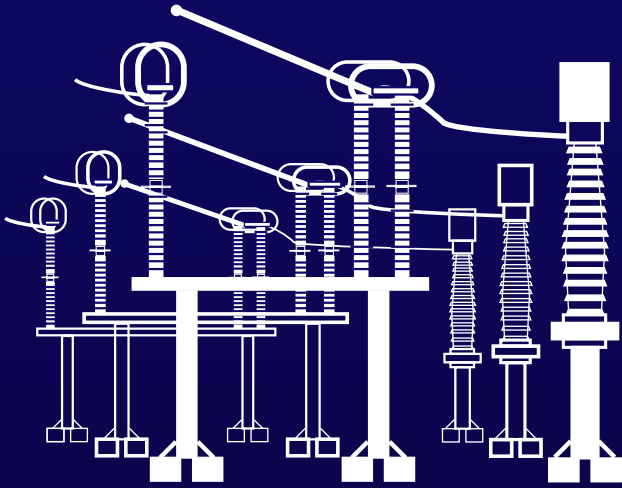


Table 3 (cont'd) – Switchperson-Inspector mode – Procedure before issuing the regime



Reference: GEN-R-932



Substations



Substations

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General

1 Introduction

1.1 Purpose

The Work Safety Code sets out the measures to be applied so that workers can perform work safely. Safety measures pertain to the hazards related to energy sources in Hydro-Québec's generating, transmission, distribution, and telecommunications facilities.

1.2 Scope

The Work Safety Code applies to work performed by Hydro-Québec and contractor personnel on or near Hydro-Québec's energized or de-energized facilities.

In an emergency, if someone's safety is in jeopardy, full application of the Work Safety Code is not required. Once the emergency is under control, the Code applies again in full.

The Work Safety Code applies to work in areas designated as "construction sites" for facilities or parts of facilities that have already been commissioned.

The Work Safety Code does not apply to:

- Facilities or parts of facilities designated as "construction sites" that have never been commissioned.
- A substation designated as a "construction site," is not connected to the grid and is no longer under the responsibility of an operator.

In such cases, the Safety Code for the Construction Industry applies up to the commissioning stage.

1.3 Sector standards

The Work Safety Code applies when work is being done on certain specific facilities with special characteristics.

The principles of the Work Safety Code apply and are described in the applicable guidelines (*A73-03, A73-04, D.24-26*).

2 Training and qualification

The rules pertaining to the training and qualification of Hydro-Québec and contractor personnel are defined in the guideline entitled Work Safety Code Training and Qualification (*HQ-SST-N-1003*).

3 Inquiries

Any inquiries related to the understanding of this Work Safety Code must be submitted using the procedure set out in the guideline entitled *Mécanisme de compréhension du Code de sécurité des travaux (SST-N-100)* [Inquiries relating to the Work Safety Code].

4 **Monitoring enforcement of the *Work Safety Code***

Hydro-Québec Distribution must implement an audit program to enforce compliance with the Work Safety Code and related guidelines in order to confirm that parties are aware of and use the prescribed guidelines.

The audit program must include the following:

- Roles and responsibilities in coordinating, planning, conducting audits and implementing corrective action
- Criteria relating to auditor qualifications and selection
- Audit scope
- Annual audit frequency
- Methods to be used and analysis of findings
- Production of reports

The audit plan must be submitted to the Work Safety Code Committee.

Audit findings and conclusions along with all action plans must be documented and communicated to the workers involved, the parties responsible for the corrective actions, and submitted annually to the Work Safety Code Committee.

Substations

1 Application to substations

This chapter specifies how the Work Safety Code applies to work performed in substations.

It also covers work performed:

- on power transformers, even when located inside a generating station
- on series compensation apparatuses, even when the latter is on lines
- for transmission line commissioning
- on Hydro-Québec's metering, telecommunications or automation facilities at a customer's facility
- on switches, even when located on a transmission line
- on the self-controlled variable inductance with air gaps
- on telecommunications components, even when located on a transmission line or in underground distribution facilities

2 Definitions

Device

Any component in a facility (e.g., circuit breaker, transformer, disconnect switch, reactor).

Apparatus

Group of devices in a facility (e.g., switching, transformer).

Telecommunications network component

Any element part of the telecommunications network.

Delegated worker

Authorized worker who performs the lockout for the WIC.

Energy-isolating device

Device that physically prevents electrical or mechanical energy from being transmitted or released.

Note: Pushbutton switches and similar controls are not energy-isolating devices.

Autonomous power

Power from an autonomous source that does not contribute to the operation of a device, apparatus or facility.

Auxiliary power

Mechanical, hydraulic, pneumatic, electrical energy under 750 V, whether radiant or optical, that contributes to the operation of telecommunications network devices, equipment or components.

Induced power

Electrical power generated inductively or capacitively.

Main power

Electrical power at a voltage of more than 750 V present or flowing through a facility or in a device.

Equipment

Materials and machinery used for the maintenance of a facility such as a passenger elevator, traveling crane, freight elevator, sprinkler system, telephone or PA system.

Switchperson

An authorized worker who carries out or supervises switching operations under the orders of an operator.

Operator

An authorized worker from Hydro-Québec designated by an administrative unit as being in charge of operating specific facilities.

Security guard

An authorized worker from Hydro-Québec who is in charge of applying the safety measures set out in this Code (This worker may suspend work if there is a hazard that may put workers' safety at risk, and then notifies their supervisor.)

Note: For the sake of readability, this term will not be repeated in the document. A security guard has the same duties as a worker in charge (WIC), with the exception of work coordination.

Facility

A defined set of devices and apparatuses or telecommunications network components such as substations, telecommunications rooms or sites, taken as a whole or in part.

Authorized worker

A worker who meets the qualification criteria specified in the Work Safety Code (*HQ-SST-N-1003*).

Initiated worker

A worker who has taken the introductory course on the Work Safety Code ("Initiation au Code de sécurité des travaux").

Electrical isolation point

An energy-isolating device that enables separation in an electrical circuit that can be verified visually or positively according to the applicable guideline (*TET-SEC-N-0037*).

Mechanical isolation point

An energy-isolating device that prevents the transmission of mechanical energy and that can be visually or positively verified according to the applicable guideline (*TET-SEC-N-0037*).

Team leader (responsible)

Authorized worker who oversees the work and is responsible for applying the safety measures applicable to their team in the work zone.

Note: Depending on the type of job, qualification under the Work Safety Code is not required for Hydro-Québec or contractor personnel who act as team leaders. The types of jobs concerned by the qualification can be found in the training and qualification guideline (HQ-SST-N-1003).

Worker in charge (WIC)

Hydro-Québec or contractor authorized worker who is in charge of applying the safety measures in the Code. When there is more than one team, the WIC is responsible for coordinating the work in the work zone.

Inspector

An authorized worker who certifies to the operator the lockout status of the isolation points for the protected zone and who confirms to the WIC the safety measures put in place for them and the members of their team.

Work zone

Area established by the WIC and the team members at the site where the work is to be carried out.

Protected zone

Area established by the operator by means of isolation points corresponding to a WIC's needs and within which measures taken by the operator enable the WIC to establish a work zone.

3 Equipment

Lockout box

Lockable box used by the WIC and team members designed to allow workers to check whether there are any lockout padlock keys.

Numbered lockout box

Numbered lockable box used by switchpersons and inspectors to check for the presence of key(s) for the padlocks used to lock out the isolation points for the protected zone. It contains the lockout tags bearing the same number as the lockout box, hasps and padlocks.

Inspector's padlock

Padlock with an alphanumeric identifier and a single key, used by inspectors to lock out the numbered lockout box.

Lockout padlocks

A series of padlocks opened using the same key, bearing the same alphanumeric serial number and used for lockout purposes.

Operations padlocks

Set or series of single-key padlocks for use by operations personnel, namely, the switchperson, to lock out the numbered lockout box.

Individual padlocks

Lock or series of single-key locks marked with the worker's name for the duration of the work and for which only that worker has the key.

Transfer envelope

An envelope used by the WIC to carry out an indirect change in WIC when no lockout box is used. The envelope contains at least the Safety Measures Sheet. It is designed so that the seal number, safety regime number, identification and location of the work can be seen.

Switchperson-Inspector Lockout Form

Form on which the inspector enters information relating to the verification.

Lockout Sheet

Form containing all the information related to the lockout and verification of the isolation of the energy-isolating devices (*HQ-SST-M-1002*).

Note: During the deployment period, the absence of any Lockout Sheets does not prevent work from being performed.

Safety Measures Sheet (SMS)

Form containing all the information related to the safety measures put in place for the safety regime being used.

Work Authorization Form

Form used to enter all the information related to a protected zone. The operator delivers a protected zone to the WIC under conditions agreed upon with the latter.

Accord tag

Blue and white tag marked "ACCORD" used when work is to be done under the Accord regime.

Self-protection tag

Yellow and white tag that reads "NE PAS MANŒUVRER – AUTOPROTECTION" [No switching – Self-protection] displayed when work is to be done under the Self-protection regime.

Lockout tag

Red and white tag that reads "APPAREIL CONDAMNÉ – DÉFENSE DE MANŒUVRER" [Device locked out – No switching] used when work is to be done under the Work Authorization regime.

Hold Order tag

Green and white tag that reads "RETENUE" [Hold Order], used for work done under the Hold Order regime.

Note: On the operators' monitors, the Accord, Work Authorization and Hold Order tags are represented by icons.

Lockout hasp

Device that allows several locks to be installed.

Transfer seal

Single-use device with unique numbering installed on a lockout box or transfer envelope to ensure lockout continuity. Used only when there is an indirect change in WIC.

4 Safety regimes

The types of safety regimes include:

- Work Authorization
- Accord
- Self-protection

- Hold Order

(When work is performed by Hydro-Québec personnel under a Work Safety Code regime, the regime is held by Hydro-Québec authorized personnel. However, support or expertise provided by Hydro-Québec personnel is permitted in a work zone for which the Work Safety Code regime is held by contractor personnel, provided the work is performed by the contractor.)

4.1 Work Authorization regime

4.1.1 Application

The Work Authorization regime applies to work that is de-energized to ensure the safety of Hydro-Québec and contractor personnel on or near Hydro-Québec's facilities operated at 750 V or more under an operator's responsibility.

4.1.2 Electrical isolation points for the protected zone

The electrical isolation points for the protected zone are achieved by:

- opening the switches
- removing the plug-in circuit breakers
- removing or securing a physical component
- opening the molded-case circuit breaker at less than 750 V

4.1.3 Outage request

When scheduled work has to be done under the Work Authorization regime, an outage request must be submitted to the operator in accordance with the operating rules. The outage alone is not sufficient to authorize the work (*GEN-D-007*).

Relevant information regarding the protected zone as well as all other information needed to plan and carry out the work must be provided to the WIC before work begins.

4.1.4 Establishing the protected zone

The operator must establish, or have someone establish, the isolation point(s) ensuring the protected zone. The operator disables, or has someone disable, the energy-isolating devices(s) acting as electrical or mechanical isolation points. The operator confirms, or has someone confirm, the verification of the isolation (*TET-SEC-N-0037*).

The operator verifies, or has someone verify, zero voltage using an approved detector. If a detector cannot be used, refer to the applicable guidelines (*TET-APE-N-7001*, *GEN-D-941*, *GEN-D-946*, *TET-SEC-P-0026*).

Protected zones must never overlap. However, establishing a new protected zone is not considered an overlap as long as a Work Authorization has not been issued. Separate protected zones may have common isolation points.

In synchronous compensators, if required, the interruption in hydrogen supply is considered as an isolation point for the protected zone.

When creating the protected zone, isolation points of less than 750 V located after the secondary winding of an auxiliary service transformer must be considered as isolation points for the protected zone when there is a possibility of reverse power.

For a plug-in circuit breaker, the air space constitutes the electrical isolation point for the protected zone. The electrical isolation point for the protected zone is then identified by the circuit breaker cell involved (e.g., cell 25-4).

When a WIC requests a Work Authorization from the operator for a device, the operator checks whether Accord regimes have been issued on control and/or protection circuits related to the device covered by the request.

When Accord regimes have been issued on control and/or protection circuits covered by the request, the operator and the requesting WIC must apply the communication procedure described in Appendix III.

The WIC and the operator must agree on the size of the protected zone.

4.1.5 Lockout of protected zone

Each worker must install a padlock as a protective measure to prevent the device the worker is working on from being accidentally started up or re-energized.

When a physical component that has been removed or controlled is used to create an isolation point for the protected zone, the lockout must be done in accordance with the applicable guideline (*TET-SEC-P-0010*).

The isolation of the energy-isolating devices acting as electrical or mechanical isolation points for the protected zone must be visually or positively verifiable according to the applicable guideline (*TET-SEC-N-0037*).

The lockout mode to be used for each facility is established according to the criteria specified in Table 1. However, at the work site, the lockout is always done in Priority mode.

The lockout can be done once the zone is protected, or simultaneously when performing switching operations in order to create the protected zone.

Note: The lockout must be performed in accordance with the instructions on the Lockout Sheet. The fact that there is no Lockout Sheet does not prevent the lockout from being performed; but it must be done in accordance with the guideline (HQ-SST-M-1002).

Lockout modes

There are three possible lockout modes:

I Priority lockout mode

The WIC and at least one team member lock out the energy-isolating devices acting as isolation points for the protected zone, as defined in the Lockout Sheets (*HQ-SST-M-1002*).

The entire team should participate with the WIC in the lockout process in order to become familiar with the energy-isolating devices.

For these lockouts, after verifying the isolation, the WIC uses one or a number of lockout padlocks. Each padlock must be installed using a lockout hasp. When the energy-isolating device serving as an isolation point for the protected zone has already been locked out, the isolation is considered to be verified.

The WIC places the key(s) for the lockout padlocks being used in the lockout box, and each team member, including the WIC, locks the box with an individual padlock.

This is done after locking out the energy-isolating devices for any energy sources present in the work zone that may constitute a hazard for the entire team.

II Delegated worker lockout mode

At the operator's request and for the WIC, two delegated workers who are not part of the team perform the lockout for part of the protected zone as follows:

a) Delegated workers:

- Use one or more sets of lockout padlocks and hasps which they place on the lockable energy-isolating devices serving as isolation points

- Place a lockout tag bearing the sequential number of the Safety Measures Sheet when the energy-isolating devices serving as isolation points are not lockable
- Enter on the Distribution Safety Measures Sheet the identification of the energy-isolating devices, the numbers of the padlocks being used, and their names
- Place at a predetermined location the key(s) for the lockout padlocks being used as well as the Safety Measures Sheet and, where applicable, the Lockout Sheets
- Communicate the actions taken to the operator

b) The WIC:

- Retrieves the key(s) for the lockout padlocks and the Safety Measures Sheet and, where applicable, the Lockout Sheet(s)
- Makes sure that the energy-isolating devices serving as isolation points entered on the Distribution Safety Measures Sheet match those required for the protected zone according to the facility diagram
- Confirms the energy-isolating devices serving as isolation points transmitted by the operator against those entered on the Distribution Safety Measures Sheet
- Places the key(s) for the padlocks used by the delegated workers in the lockout box
- Locks the lockout box and has each team member lock it with an individual padlock

III Switchperson-Inspector lockout mode (see Table 3)

The lockout by the switchperson and the inspection and lockout by the inspector must not be performed at the same time.

Two different authorized workers take part in locking out the protected zone as follows:

a) The switchperson

At the operator's request, locks out the energy-isolating devices using the Lockout Sheet(s) in the requested state

To do so, after verifying the isolation, the switchperson:

- Uses a series of lockout padlocks and tags from a numbered lockout box
- Places the lockout padlocks, tags and hasps on the energy-isolating devices and enters the number of the lockout box where they came from on the tags, places the lockout padlock key in the numbered lockout box and attaches an operating padlock at the location marked "EXÉCUTANT" (switchperson)
- Informs the operator of the actions taken at the latter's request along with the serial number of the lockout padlocks that were used but does not give the operator the number of the lockout box being used
- Enters the information on the Lockout Sheet

b) Inspector

The operator sends an inspector to verify the state of the isolation points and the lockout of the energy-isolating devices, as well as to lock out the numbered lockout box.

The inspector:

- Notes the state of the isolation points and the identification of the energy-isolating devices, the serial number of the lockout padlocks, and the number of the lockout box entered on the tags
- Places a padlock from the inspector on the numbered lockout box for each Work Authorization to be issued
- Enters all the necessary information on the Switchperson-Inspector Lockout Form
- Certifies to the operator, using the Lockout Sheet, the state and lockout of the energy-isolating devices
- Transmits the information to the WIC, and if such communication is not done during the inspector's work shift, they ask the operator to disable the inspector padlock for which they provide the number and the operator has the padlock removed within 24 hours
- Before taking the regime, places the Switchperson-Inspector Lockout Form at a predetermined location with the single key for the padlock they installed for each Work Authorization on the numbered lockout box

c) The WIC:

- Calls the operator, identifies and comes to an agreement with the operator on the isolation points for the protected zone
- Obtains the serial number of the lockout padlocks placed on the energy-isolating devices serving as isolation points by the switchperson, as well as the latter's name, and obtains the name of the inspector and how to contact them

- Contacts the inspector(s), obtains the serial number of the lockout padlock(s), the number of the lockout box, and the number of the padlock from the inspector assigned to them, as well as the state and identification of the locked-out energy-isolating devices
- Makes sure that the information provided by the inspector(s) matches the information obtained from the operator and sends the sequential number of the Work Authorization Form to the inspector(s)
- Calls back the operator and obtains the Work Authorization number

d) Multiple Work Authorizations

If multiple Work Authorizations are required at the same time in the same protected zone, the inspector only performs one verification but places a padlock from the inspector for each required Work Authorization.

If other Work Authorizations are required in the same protected zone, the operator once again sends out an inspector and the verification procedure is repeated. In this situation, the inspector may also be the switchperson provided each function is carried out on different dates with at least eight (8) hours of rest in-between. The WIC is notified of this situation by the operator. In addition, the Inspector places an Inspector padlock on the numbered lockout box for each new Work Authorization that is required.

The inspector confirms to the operator and the WIC the actions and information required for each one.

4.1.6 Issuing the Work Authorization

The operator provides the Work Authorization to the WIC by issuing a Work Authorization number (*Guide formule AdT-RDT, GEN-R-981*).

The operator and the WIC agree to not alter the protected zone.

No work is permitted on an energy-isolating device serving as an electrical isolation point for the protected zone. Regarding switches, no work is allowed on the jaw or pivot sides when one side is energized, even if the approach distances are observed. It is also forbidden to remove or connect jumpers to disconnect switches. However, a jumper may be disconnected at the opposite end of the disconnect switch serving as an isolation point (*TET-SEC-P-0010*).

No work is allowed that could modify the open or closed state of a mechanical isolation point (e.g., synchronous condensers).

4.2 Accord regime

4.2.1 Application

Under the Accord regime, Hydro-Québec and contractor personnel can perform the following:

- Energized or de-energized work on automatic controls and telecommunications systems
- De-energized work on apparatuses operating at less than 750 V or powered by another form of auxiliary power
- De-energized work on apparatuses operating at over 750 V
- Operating checks and tests that require auxiliary power, with or without the presence of main power

- Energized work on the power supply and batteries
On facilities under the responsibility of an operator

I Energized or de-energized work on automatic controls and telecommunications systems

The Accord regime applies to de-energized work that must be done on automatic controls and telecommunications systems.

The Accord regime applies to energized work on automatic controls and telecommunications systems in accordance with applicable guidelines (*TET-SEC-P-0004, TET-SEC-P-0011, TEL-SEC-P30-00-006*).

The Accord regime also applies to work on the telecommunications network that affects the Hold Order regime (*TEL-GES-P-31-05-001-O*).

If the de-energizing of automatic controls and telecommunication systems prevents normal operation of the device, an outage request must be made; otherwise, the device may remain in operation.

II De-energized work on apparatuses operating at less than 750 V or powered by another type of auxiliary power

The Accord regime applies to de-energized work on apparatuses operating at less than 750 V or powered by another type of energy.

If de-energizing such an apparatus prevents normal operation of the device it is supplying with auxiliary power, an outage request must be made; otherwise, the device may remain in operation.

III De-energized work on apparatuses operating at more than 750 V.

The Accord regime allows de-energized work to be performed on apparatuses that may be isolated from the power system.

Use of this regime must be justified according to the work to be done and when the type of work allows approach distances to be observed (*AP-GS-N002*).

Examples:

- Replacing silica gel
- Replacing the heating element
- Taking oil samples

In each case, the work must follow a guideline developed using a standard template (*TEI-SEC-P-0003*).

IV Operating checks and tests that may require auxiliary power in the presence of main power or not

The Accord regime applies during operating checks that may require auxiliary power with or without the presence of main power.

During operating checks and tests on automatic controls and telecommunications systems, auxiliary power may or may not be present, while main power may or may not be required.

V Energized work on the power supply and batteries

The Accord regime applies to work performed on batteries.

The Accord regime applies to energized work using a DC power supply in distribution panels and when that power supply cannot be eliminated (*TET-SEC-P-0004, TEL-SEC-P-34-00-006, TET-SEC-P-0011*).

The work to be performed must be done in accordance with the applicable guidelines (*TET-SEC-P-0031, TET-APE-P-8001, TET-APE-P-8002, TET-APE-P-8003, TET-AUT-P-7.1.1.1, TET-AUT-P-7.1.1.2, TEL-EQR-P-24-05-002, TEL-EQR-P-24-05-006, TEL-EQR-P-24-05-007*).

4.2.2 Advance request

The WIC must request the required operating conditions ahead of time.

When a WIC requests an Accord regime from the operator for one or more control and/or protection circuits, the operator must check whether a safety regime has been issued for one or more devices related to the circuit(s).

When a safety regime is issued for the device covered by the request, the operator and the requesting WIC must apply the communication procedure described in Appendix III.

If the work requires an outage request, the request must comply with the operating rules (*GEN-D-007*).

If the objective of the outage is also to ensure worker safety, the WIC must apply the Work authorization regime. This includes work on the secondary winding of current transformers.

4.2.3 Issuing the Accord regime

The Accord regime may be issued on the electronic portion (control, protection and regulation) of the excitation system of a compensator, as well as on the measurement, control and protection circuits if they are outside the device, even if a safety regime was issued for it.

An Accord regime may be issued for telecommunications network components.

An Accord regime may be issued for the control of a device located between two switches used as “two isolation points in series” for testing purposes.

The operator issues the Accord regime to the WIC by providing the Accord regime number. (*TEL-GES-P-31-05-001-O, GEN-D-923, C.36-04*)

4.3 Self-protection regime

4.3.1 Application

The Self-protection regime applies to de-energized and energized work on batteries performed by Hydro-Québec and contractor personnel on facilities, parts of facilities or equipment outside the responsibility of an operator, namely:

- Construction of a facility or part of a facility, or the installation of apparatuses not yet connected to the power system
- Dismantling of a facility or part of a facility or apparatus that has been disconnected from the system and will not be connected back to it
- Maintenance by Hydro-Québec personnel of mechanical or electrical equipment of 750 V or less
- Customer metering work performed by Hydro-Québec personnel
- Work on a facility's grounding system while observing approach distances, except for the neutrals of power transformers, grounding reactors, voltage transformers and surge arresters (*TET-APE-P-9003*)

Note: The Self-protection regime does not apply to contractor personnel performing maintenance work on mechanical or electrical assemblies of 750 V or less.

4.3.2 Terms of application

For this regime, no control number is issued to personnel performing the work.

4.4 Hold Order regime

4.4.1 Application

The Hold Order regime applies to energized work performed on or near facilities operated at 750 V or more.

4.4.2 Terms of application

The Hold Order regime is a guarantee a WIC receives from an operator that:

- the AC line supply apparatus or AC device under the Hold Order will not be reclosed without the WIC's consent should the device trip or open
- all protections and teleprotection links required to issue the Hold Order are connected
- circuit breaker maintenance is performed in accordance with the applicable guideline (*TET-APE-N-0001*)
- protection system maintenance is performed according to the applicable guideline for issuing the Hold Order
- no work will be done on the protections

On the HVDC system:

- the device or HVDC line under the Hold Order regime will not be re-energized without the WIC's consent should an event on the line or device result in de-energization
- no work will be done on protections and teleprotection links that could potentially affect the Hold Order

- protection system maintenance is performed according to the applicable guideline for issuing the Hold Order
- all protections and teleprotection links required to issue the Hold Order are connected

Note: Given that the protection elements do not guarantee worker safety to the same extent as on the AC system, no Hold Order may be issued for work on the neutral bus.

A Hold Order may be recalled at any time at the operator's request.

4.4.3 Advance request

When work has to be done under the Hold Order regime, an advance request must be submitted to the operator, in accordance with the operating rules (*GEN-D-007*).

4.4.4 Establishing the Hold Order

I For non-remotely-controlled circuit breakers

The operator:

- connects, or has someone connect, the fast neutral ground, if the device has one
- disconnects, or has someone disconnect, the reclosers, if the device has any
- makes sure there is auxiliary power for circuit breakers/reclosers
- removes, or has someone remove, the reclosing fuse for the reclosing breakers, if the devices have one
- identifies, or has someone identify, the control and reclosing devices using Hold Order tags

II For remotely-controlled circuit breakers:

The operator:

- connects, or has someone connect, the fast neutral ground, if the device has one
- disconnects, or has someone disconnect, the reclosers
- identifies, or has someone identify, the control and reclosing devices using Hold Order tags

III On the HVDC system:

On a direct-current device, the operator:

- ensures that all protections covering the zone where the device is located are connected
- identifies, or has someone identify, the converter startup mechanisms using a Hold Order tag
- if required for substations equipped with the metallic return transfer control:
 - disconnects, or has someone disconnect, the metallic return transfer control
 - identifies, or has someone identify, the metallic return transfer control using a Hold Order tag

4.4.5 Issuing the Hold Order

The operator issues the Hold Order to the WIC by giving them a Hold Order number.

5 Establishing safety measures for the work zone

For the Work Authorization, Accord and Hold Order regimes, the planning of the safety measures to be taken for establishing the work area begins once the WIC has the number of the safety regime issued by the operator.

I Work Authorization and Hold Order

If the work involves several trades, a team leader must be appointed for each trade to oversee the work and apply the safety measures specific to their team.

However, under a Work Authorization, at the WIC's request, a team leader from the same trade as the WIC may be appointed, depending on the type of work and the work environment.

II Work Authorization

There may be several work zones within a protected zone, but no work zones may overlap.

5.1 Planning the safety measures

The WIC and the team members plan the required measures for establishing the work zone. For instance, they must:

- A) Define the work zone based on the work to be performed
- B) Identify the safety measures to apply
 - 1) Controlling re-energization caused by induced energy, lightning or accidental re-energization.

At no time should the protection provided by the grounding devices be affected by the opening of an electrical circuit when work is being performed.

The location(s) chosen for installing the grounding devices that provide protection against the risk of re-energization by induced energy, lightning or accidental re-energization must be identified according to applicable guidelines, the type of work being done and the short-circuit current (*TET-SEC-P-1031*, *TEI-SEC-P-1032*, *TEC-GES-N-1023*).

When personnel is required to work on a device operating at over 750 V that has been de-energized and the type of work allows approach distances to be observed, grounds do not need to be installed on the de-energized device, except for work on the secondary winding of current transformers (*AP-GS-N002*, *TET-SEC-P-3001*, *AP-GS-M021*).

2) Identify auxiliary and other energy sources

The WIC and the team members must make sure that potentially hazardous energy sources of all types have been eliminated. Some types of work require the application of an energy control method; in such a case, refer to the applicable guidelines.

If such energy sources constitute a hazard for the entire team, they must be eliminated at the start of the work.

If such energy sources constitute a hazard for only part of the team, they must be eliminated during the work.

- C) Enter the safety measures identified in B) on the Safety Measures Sheet.

5.2 Applying the safety measures

The WIC applies, or has someone apply, the safety measures determined by the team.

The WIC applies, or has someone apply, the safety measures specific to their team.

- A) Controlling re-energization caused by induced energy, lightning or accidental re-energization.

Designate, in the case of work involving the main electrical energy, a person in charge of verifying zero voltage using an approved detector or according to the applicable guideline for SF₆-insulated devices and DC devices (*TET-APE-N-7001, TET-LIA-P-OUT0002, TET-SEC-P-0022, TET-SEC-P-0026*).

Assign a person in charge of installing, at the chosen location and in accordance with the applicable guidelines, grounding devices that provide protection against re-energization caused by induced energy, lightning or accidental re-energization (*TET-SEC-N-0017, TET-SEC-P-0020, TET-SEC-P-1023, TET-SEC-N-0002, TET-SEC-P-1002, TEI-SEC-P-1032, TEC-GES-N-1023*).

Note: The grounds must be installed immediately after the zero-energy check.

A lockout tag must be used bearing the sequential number of the form for each Work Authorization for grounding facilities that are:

- shared

or

- installed on the primary or secondary side of the power transformers located at the generating unit outlet

or

- located outside the work zone

B) Eliminating auxiliary and other energy sources (see Table 2)

When the energy sources present in the work zone may present a hazard for the entire team, the WIC and at least one team member, using the Lockout Sheets and after checking the isolation, lock out the energy-isolating devices with a lockout padlock and hasp.

I Accord, Self-protection or Hold Order

The WIC and the team members can also use their individual padlocks and a hasp to lock out the energy-isolating devices that present a hazard for the entire team.

Under Self-protection:

The WIC places a Self-protection tag identified in their name on each energy-isolating device to be locked out.

The isolation provided by the energy-isolating devices must be visually or positively verifiable in accordance with the applicable guideline (*TET-SEC-N-0037*).

When a lockout box is used, the WIC places the key for the lockout padlock in the lockout box and each member of the team locks the box with their individual padlock.

All team members should take part in the lock-out process in order to become familiar with the energy-isolating devices (*HQ-SST-M-1002*).

For energy sources that present a hazard for only part of the team, each worker locks out, using the Lockout Sheets, the energy-isolating devices with an individual padlock and hasp. The WIC or team leader also places their own individual padlock. If more than one energy-isolating device has to be locked out, a lockout box can be used. These lockout mechanisms are set up before the work begins and may be removed when no longer required.

The lockout device, when there is one, must be installed before starting the work.

5.3 Delimiting the work zone

The WIC and team members must delimit the work zone.

Markers must be installed while observing approach distances based on the work to be performed and its duration. Markings must be placed so that they can be seen by workers to keep them from crossing the work zone boundaries (*AP-GS-N002, HQ-SST-N-9001*).

Markings may be modified once the work in the section to be removed from the work zone has been completed.

In general, depending on the type of work involved, this zone does not include the control and protection panels, even if there are work zone safety measures there.

The work zone must be delimited with one or more clearly visible entrances.

The materials used for delimiting the work zone must be standard material suited for that purpose.

However, depending on the type of work under the Accord, Self-protection and Hold Order regimes, a physical delimitation is done.

6 Instructions to personnel

The WIC informs the team members of the area of the protected zone and of the lockout of the area of the work zone, if applicable, along with the safety measures that have been installed. The WIC provides the instructions to personnel according to the Safety Measures Sheet terms of applications.

The team members sign the Safety Measures Sheet to certify that they understand and agree with the information and the instructions that were given. The WIC signs the Safety Measures Sheet only once all the team members have signed it and he or she has authorized the start of the work.

If any Team Leaders are present, each one fills out a Safety Measures Sheet and enters the safety regime number if applicable (*Guide FMS PO/CE*).

Before entering a work zone, each worker must have been given the instructions to personnel, signed the Safety Measures Sheet and attached their individual padlock. Any worker unfamiliar with the Code must be accompanied by an authorized worker.

7 Presence of WIC and team leader

The WIC must be present in the work zone when work is being done in order to provide adequate supervision.

The WIC must not allow work to be performed in more than one work zone at a time.

The team leader must be present in the work zone when work is being performed by their team to provide adequate supervision.

1 Work Authorization

However, they may briefly leave the work zone after notifying their personnel if doing so is related to the purpose of the Work Authorization and does not affect worker safety.

8 Change and rotation of WIC

8.1 Change in WIC

A) Direct change of WIC

When a direct change in WIC is planned, the following procedure applies:

- If a safety regime has been issued, the operator is notified of the change. The operator confirms the safety regime number. Under a Work Authorization, the operator confirms the isolation points for the protected zone to the new WIC.
- The new WIC obtains from their predecessor the Work Authorization Form, where applicable, the Lockout Sheet(s), the Safety Measures Sheet(s), and fills out a new Safety Measures Sheet with the team members. In signing, the new WIC confirms having been informed by their predecessor of the safety measures that were taken, after verification if required, and of agreeing with them.
- In addition, the WIC must, when applicable:
 - Accept the lockout performed in Switchperson-Inspector mode and according to Delegated Worker mode

- Check the lockout that was done according to priority mode before accepting it (except for the isolation verification steps, which are considered as having been completed)
- contact the WICs concerned when the communication procedure is applied (see Appendix III)
- The new WIC installs their individual padlock and their predecessor removes their own padlock.

B) Indirect change in WIC

When an indirect change in WIC is planned, meaning that the WICs do not cross paths physically, the following procedure applies:

The WIC leaving the work zone must:

- Enter the transfer seal number in the appropriate box on the Safety Measures Sheet
- If a lockout box is being used:
 - Place the transfer seal on the lockout box
 - Have the individual padlocks removed from the lockout box and remove their individual padlock
- When no lockout box is used, a transfer envelope must be used:
 - Place the Safety Measures Sheet(s) and, where applicable, the associated Lockout Sheets and Work Authorization Form inside the transfer envelope (the Safety Measures Sheet must be positioned so that the seal number, safety regime number, identification and work location can be seen).
 - Place the transfer seal on envelope

- Place the lockout box or transfer envelope at a predetermined location, along with the Safety Measures Sheet, the associated Lockout Sheet(s) and the Work Authorization Form, if required.
- If a safety regime has been issued by the operator, the WIC informs the latter of the measures that were taken.

Note: No work may be performed when a transfer seal is placed on a lockout box or transfer envelope.

The new WIC must:

- Retrieve the lockout box or transfer envelope at the predetermined location, as well as the Safety Measures Sheet(s), the related Lockout Sheet(s) and the Work Authorization Form, if required
- Make sure the transfer seal number matches the number on the Safety Measures Sheet

Note: If the seal number does not match the one on the Safety Measures Sheet or if the transfer seal has been tampered with, lockout continuity cannot be ensured.

- Place their individual padlock on the lockout box, if required
- Remove the transfer seal from the lockout box or transfer envelope
- If a safety regime has been issued by the operator, notify the latter of the change and confirm the safety regime number (under a Work Authorization, the operator confirms the isolation points for the protected zone to the new WIC)
- Complete and sign the Work Authorization Form, when applied

- Check the lockout that was done according to Priority mode before accepting it (except for the isolation verification steps, which are considered as having been completed), or accept the lockout that was done in Switchperson-Inspector mode or Delegated Worker mode
- Fill out a new Safety Measures Sheet (In signing, the WIC certifies having verified the safety measures taken by their predecessor and of agreeing with them.)
- Contact the WICs concerned when the communication procedure is applied (see Appendix III)

C) Unforeseen absence

In case of an unforeseen absence on the part of the WIC, the immediate superior designates a new WIC and notifies the operator. The absent WIC's individual padlock remains in place and the immediate superior takes the necessary action with the employee as per Appendix 1, if required.

The immediate superior and a team member inform the new WIC of the safety measures taken by the latter's predecessor, and the remainder of the procedure regarding a direct change in WIC applies.

8.2 WIC rotation under the Work Authorization and Accord regime

For scheduled WIC rotations, the name of each WIC must appear on the Work Authorization Form, when applicable.

The WIC and at least one team member who are taking the first rotation perform the lockout using the Lockout Sheet(s), in accordance with the Code. Upon arriving, the WICs and the team members place their individual padlocks on the lockout box.

For the first rotation, each WIC checks the lockout using the Lockout Sheets with at least one team member (except for the isolation verification steps, which are considered to be done).

All team members should take part in the lockout process in order to become familiar with the energy-isolating devices (*HQ-SST-M-1002*).

At the end of each rotation, the WIC and a team member leave their individual padlocks on the lockout box, except for their last rotation for the work in question.

At each rotation, the WIC fills out a Safety Measures Sheet according to the procedures in the applicable guideline, and makes sure that the safety measures are being applied, reminds workers of the instructions, and then authorizes access to the work zone.

9 Work interruptions

When work is stopped by the WIC, the latter must make sure that all team members have left the work zone. The WIC prohibits anyone from returning to the work zone and schedules the time and place for everyone to meet before work is resumed.

Upon returning, the WIC makes sure that safety measures are being applied, reminds workers of the instructions, enters the information on the Safety Measures Sheet, and then authorizes access to the work zone.

When a lockout box is used, it must be unlocked at the end of the workday by all the team members, except for the WIC and one member of the team. Upon returning, a Safety Measures Sheet must be completed in accordance with the applicable procedures.

10 Operating checks and/or tests

10.1 Operating checks involving auxiliary power

When work is performed under a Work Authorization, Accord or Self-protection regime and operating checks and tests are required involving auxiliary power on control, protection or teleprotection circuits, such as the verification of alarm signal receiving, the transmission of control signals, and several safety regimes are involved, the WICs must:

- Establish the safety measures to be applied based on the Lockout Sheet(s) (when required)
- Enter the above safety measures in the "Comments" section on the associated Safety Measures Sheet or on the Lockout Sheets
- Brief the members of their team
- Apply the safety measures that have been established

If auxiliary power is required for such checks, the WIC must inform the team members and then proceeds as follows:

- If auxiliary power is required at the start of the work, the energy-isolating devices are not locked out.
- If the above energy is required after work has been done, removal of the lockout is done using the Lockout Sheet(s) according to one of the following procedures:
 - a) If the lockout was done by the WIC, they gather the entire team to remove the lockout on the energy-isolating devices and then returns the key back to the lockout box, and each team member locks the box again.

- b) When the lockout is performed by a team leader and/or part of the team, they must notify the WIC.

Once the checks have been completed, the lockout is done as specified in Section 5.

10.2 Tests involving autonomous power sources

When work is performed under a Work Authorization, Accord or Self-protection regime and tests must be performed that involve autonomous power sources and several work zones are involved, the work must be performed under a single regime and in a single work zone.

When tests need to be performed using autonomous power sources while work is under way:

- The WIC makes sure the power source is not hazardous for the workers; otherwise, the WIC must evacuate the workers not needed for the tests

For autonomous sources of electrical energy:

- The WIC makes sure that no power can be released from the work zone by electrically isolating it from all other work zones within the protected zone.
- In cases where autonomous power may be released from the work zone, the WIC must confirm with the operator that no other Work Authorization or Accord regime is in effect in areas that may receive energy from the autonomous power source.

10.3 Operating checks involving main power

The WIC must hand in the Work Authorization before performing operating checks involving main power.

If checks must be done by connecting the device to the power system, the WIC must use the Accord regime.

The safety measures to be taken are set out in the following documents:

- Essais en réseau ou mise en exploitation des installations [Operational testing or commissioning of facilities] (*TET-AUT-P-0.0.1.3*)
- Application des mesures de sécurité et des règles d'exploitation dans un contexte de mise en route [Application of safety measures and operating rules at startup] (*PT-3002-02*)

10.4 Tests involving hydrogen (synchronous condenser)

When work is being performed under the Work Authorization regime and tests have to be carried out, the WIC must make sure that the testing does not pose a hazard to personnel; otherwise, the WIC must evacuate the personnel not required for testing. The tests must be conducted using a test procedure.

When the hydrogen valve is part of the energy-isolating devices for the protected zone, the WIC must:

- Stop the work
- Notify the personnel
- Change the isolation point as specified in Section 12.2 on the modification of the protected zone
- Agree with the operator on a means of communication so that the WIC can reach the operator at all times
- Complete a new Safety Measures Sheet

At the end of their shift, the WIC makes sure that the detection systems are operational and informs the operator.

11 Removal of safety measures in a work zone

Once the work has been completed, the WIC makes sure that all safety measures implemented in the zone by them and the team members are removed by:

- Having non-essential workers leave and prohibit them from returning
- Removing, or asking someone to remove, the work zone markings
- Removing, or asking someone to remove, the grounds and restoring bypass devices to their initial state
- Removing the individual padlocks together with the team members
- Removing the lockouts performed for the team in the work zone according to the Lockout Sheet(s)
- Notifying the team members that the work zone has been closed and prohibiting anyone from returning to or accessing the area

Note: Under a Work Authorization, when common grounds are used, the WIC notifies the other WIC(s) that their work zones have been closed and that they must remove their lockout tag from the common grounds.

12 End of work

12.1 Removal of lockout devices in the protected zone under a Work Authorization regime

- A) If the lockout was done in Priority mode, the WIC must make sure that all the lockout materials installed by them or their team has been removed in accordance with the Lockout Sheet(s).
- B) If the Delegated Worker mode was used for isolation points located on the distribution system, the WIC deposits the key(s), Lockout Sheet(s) and the Distribution Safety Measures Sheet signed in the "End of work" section at a predetermined location and notifies the operator.

Delegated workers:

- Retrieve the key(s), the Lockout Sheet(s), and the Distribution Security Measures Sheets
 - Make sure that the work has been completed by checking for the WIC's signature on the Distribution Safety Measures Sheet and proceed to remove the lockout devices
 - Complete the form
- C) If the lockout was performed in Switchperson-Inspector mode, the WIC provides the operator with the number(s) of the numbered lockout boxes that were used, the number of the inspector padlock that was assigned to them, and the sequential number of the Work Authorization Form.

Since the operator is responsible for the removal of the lockout devices, this must be done using the Lockout Sheets. The operator must first obtain the end-of-work notice.

If several Work Authorizations have been issued for the same protected zone, the operator has the inspector's padlocks placed on the numbered lockout box removed as the Work Authorizations are returned.

Note: If the numbers provided by the WIC do not match, the switchperson must contact the WIC.

12.2 End-of-work notice

When a safety regime is issued by the operator, the WIC provides them with the end-of-work notice by returning the regime number and indicating the state in which the facility is being returned.

I Work Authorization:

If a protected zone is modified, the WIC leaves the work uncompleted in the work zone, without removing the grounds and lockouts needed for a new Work Authorization to be issued.

In Switchperson-Inspector mode, for the energy-isolating devices for the protected zone that do not need to be changed, only the inspector's padlocks need to be removed from the numbered lockout box. When issuing the new Work Authorization, the operator sends an inspector to repeat the steps, as specified in Section 4.1.5 III b).

The same WIC obtains a new Work Authorization as soon as the new protected zone has been established to complete the work.

12.3 Removal of Hold Order

The operator:

- Removes, or has someone remove, the Hold Order tags on the reclosing and control devices

- Puts back, or has someone put back, the reclosing fuse for the non-remotely-controlled reclosing breakers
- Reconnects, or has someone reconnect, the reclosing devices
- Disconnects, or has someone disconnect, the fast neutral ground

On the HVDC system, the operator:

- Removes, or has someone remove, the Hold Order tags that they installed or had someone install
- Connects, or has someone connect, the metallic return transfer control, if applicable
- Connects, or has someone connect, the restart automatic control for each converter connected to the line, if applicable

13 Specific types of work

Application of the Work Safety Code is described in the applicable guidelines for the specific types of work listed below:

- Application du Code de sécurité des travaux dans les installations blindées isolées au gaz SF₆ (*TET-APE-N-7001, GEN-D-946*) [Application of the Work Safety Code in SF₆-insulated shielded facilities]
- Application des mesures de sécurité et des règles d'exploitation dans un contexte de mise en route (*PT-3002-02*) [Application of safety measures and operating rules at startup]
- Condamnation matérielle, réseaux voisins (*PT-3012-01*) [Lockout involving neighboring systems]

- Application of Hydro-Québec Distribution's Safety Standards (*D.25-05 section 500*) applicable to employees involved in metering
- Condition d'émission et maintien du régime "Retenue" ou d'une "Concession" selon GEN-D-923 Article 5: Intervention sur l'un ou l'autre des composants du système informatique d'un Centre de téléconduite (CT) [Condition for issuing and maintaining the "Hold Order" regime or a "Concession" in accordance with GEN-D-923 Section 5: Work on a component of a Telecontrol Center computer system]
- Application des mesures de sécurité lors d'intervention dans les sous-sols de bâtiments de postes en présence de câbles moyenne tension de distribution (Concession) (*TET-SEC-N-0008*) [Application of safety measures during work in substation basements in the presence of medium-voltage distribution cables (Concession)]
- Application des mesures de sécurité pour les travaux à proximité des câbles moyenne tension de distribution situés à l'étage des postes intérieurs (Retenue) (*TET-SEC-N-0009*) [Application of safety measures for work near medium-voltage distribution cables located on the indoor substation floor]
- Application des mesures de sécurité lors de travaux majeurs de construction sur une partie d'installation Poste ayant déjà été mise en exploitation (*TET-SEC-N-0036*) [Application of safety measures during major construction work on a portion of a substation facility that has already been commissioned]
- Réalisation des travaux à distance dans les installations électriques sur les automatismes (*TET-GES-PRO 5.0.0.2*) [Remote work on automatic controls in electrical facilities]

Appendix I

Padlock Control

A) Principles

Only one key is allowed for lockout padlocks, individual padlocks and inspector padlocks.

No copies may be made of such keys.

The name of the worker who places their individual padlock must be clearly indicated on the padlock if no record is kept.

If the key or an individual padlock is defective or if the key was lost, only the employee involved who is present at the work site can cut their own padlock.

At all times, before authorizing that a padlock be cut, the immediate superior must make sure that doing so does not jeopardize anyone's health, safety or physical well-being.

B) Procedure for authorizing the cutting of an individual padlock

If an individual lock has remained attached because it was forgotten or due to an unforeseen absence, the WIC must contact their immediate superior to notify them of the situation.

Before cutting an employee's padlock, the immediate superior should always consider waiting for the employee to return the same day or on the following days. If the operator has no other choice, they may have the padlock cut, but only after strictly following the steps outlined below:

- 1) Make sure that the employee who owns the padlock to be removed is no longer at the work site.
- 2) Use all reasonable means to reach the employee directly.
- 3) If the employee is no longer at the work site but can be reached, the immediate superior must inform them of the situation and ask them to come back to the work site to remove their padlock, if they are reasonably able to do so.
- 4) If the employee is no longer at the work site and cannot be reached, or is not reasonably able to return to the work site, the immediate superior must complete the designated form documenting all of the following actions that have been taken:
 - a) The immediate superior contacts their superior or replacement to obtain the latter's consent to authorize the forgotten padlock to be cut.
 - b) The immediate superior confirms with the WIC that the employee has left the work zone and determines whether it is safe to cut the lock.
 - c) The immediate superior, accompanied by the WIC, cuts the individual padlock that was left in place. If the immediate superior is not reasonably capable of going on site, upon receiving their superior's approval, they authorize the WIC to cut the padlock while accompanied by a team member.
 - d) The immediate superior must meet with the owner of the padlock when the latter returns to work to notify them that their padlock was cut. The immediate superior completes the form by documenting the notice and a copy is sent to the employee and to the health and safety committee concerned.

C) Procedure for authorizing the cutting of a lockout padlock or inspector's padlock

If a lockout padlock or inspector's padlock has been forgotten, the immediate superior, after confirming that the safety regime has been handed in, uses the key to remove the padlock or has someone else remove it.

When a lockout or inspector's padlock must be cut following a defect or if the key has been lost, the WIC notifies the members of their team and contacts their immediate superior to inform them of the situation. The immediate superior may authorize that a lockout padlock be cut, but they must complete the required form by documenting that:

- 1) They made sure, when required, that the safety regime was given to the operator
- 2) They contacted their immediate superior or substitute to obtain the latter's consent to authorize the padlock to be cut
- 3) The immediate superior, accompanied by the WIC or an operator, cut the padlock that was left in place if the immediate superior was not reasonably capable of going on site, they authorized the WIC to cut the padlock
- 4) They filled out the form and sent a copy to the health and safety committee concerned

D) Padlock cutting tracking form

Each time a padlock is cut, it must be entered on the appropriate form by the immediate superior and kept for one (1) year.

Appendix II

Installation of lockable energy-isolating devices

Following discussions between Hydro-Québec and the trade, technical and clerical employee unions while establishing the lockout method, Hydro-Québec agreed to introduce the following measures aimed at eliminating the number of non-lockable energy-isolating devices:

A) New facilities, including additions to existing facilities

All new energy-isolating devices must be lockable.

B) Major changes to existing facilities

When projects involve major modifications to part of an existing facility, the non-lockable single-pole disconnect switches in this part must be replaced with lockable disconnect switches. The following conditions must be observed:

- The work does not cause any problems with electrical clearances or approach distances once the disconnect switches have been installed
- Installation does not involve replacing any structures

C) Replacement during maintenance work

In the event of single-pole disconnect switch failure, the three single-pole disconnect switches involved will be replaced with a lockable three-pole switch when the following conditions are met:

- The replacement does not create any problems resulting from the electrical clearance and approach distance once the switch has been installed
- The work does not involve replacing structures
- The repair time is more than 48 person-hours
- The materials and drawings or as-built diagrams are available
- The replacement work does not affect customer service

D) Other means of locking out

Other methods may be developed to make devices lockable and to use them following an agreement between the parties.

Appendix III

Communication Procedure

If a safety regime is issued for the device involved by a request (advance or outage request), the operator and the requesting WIC must apply the communication procedure.

- 1) Before issuing a safety regime, the operator informs the requesting WIC that a safety regime has been issued for the device or on the control and/or protection circuits involved by their request.
- 2) The requesting WIC contacts the WIC holding the safety regime, reaches an agreement with the latter on the safety measures to be applied (e.g., switch, disconnect switch cabinet, fuse) and obtains the number of the safety regime from the WIC involved.
- 3) The requesting WIC contacts the operator and confirms the safety regime number of the WIC concerned by their safety regime request.
- 4) After checking the safety regime number sent by the requesting WIC, the operator issues the safety regime.
- 5) At the end of the work, the WICs concerned by the agreed-on safety measures must contact each other to confirm the return of their safety regime.

Note: If modifications need to be made to the agreed-on safety measures or if there is a change in WIC, the WICs must contact one another.

If several devices or control and/or protection circuits are involved in the safety regime request, the communication procedure must be used with each WIC concerned.

This procedure does not apply to the following devices:

- Transformer without a tap changer or with a manual tap changer
- Current transformer
- Reactor
- Circuit breaker (equipped with a disconnecting cabinet or switches)

Table 1 – Lockout of protected zone

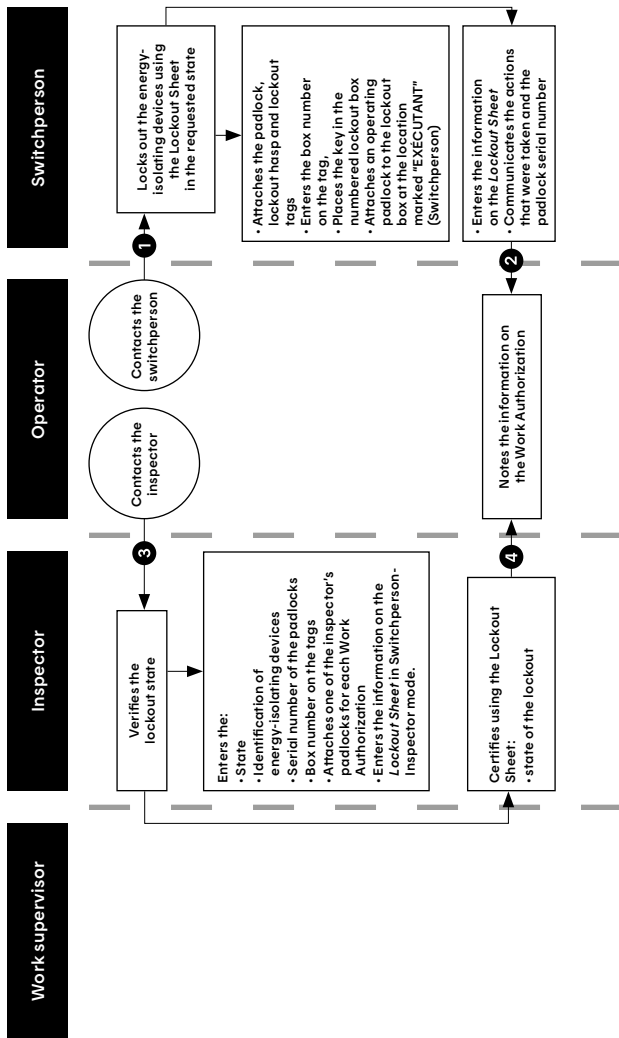
Worksite	Priority Mode	Delegated Worker Mode	Switchperson-Inspector Mode
Substations excluding line feeders	At all times.	N/A	N/A
Transmission line feeders	If the lockout lasts less than 60 minutes.	N/A	If the lockout in priority mode lasts more than 60 minutes.
Distribution line feeders	If the lockout lasts more than 60 minutes and the isolation point(s) are overhead/underground.	a) If the lockout lasts more than 60 minutes and the isolation points are not located in an underground system. b) At all times if the isolation points are located on an underground system.	N/A

The Priority mode applies at the work site. Transmission lines are classified based on Table 1. The classification must be monitored by the regional health and safety committee (CRSS). In addition, special cases must be agreed upon by the CRSS.

Table 2 – Documenting protection switches

	System Safety	Work Zone Safety
Responsibility	The operator establishes, or has someone establish, the measures related to power system safety.	The WIC establishes, or has someone establish, the safety measures for the work zone.
Identification of open switches	The switchperson applies the tag indicated in the operating guideline (GEN-D-520).	The WIC performs the lockout (see Section 5).
Documenting the switches	Switches that protect the system are documented according to the applicable guideline.	The switches that serve as safety measures for the work zone are entered by the WIC on the Safety Measures Sheet.
Regime	No safety regime.	The regime is held by the WIC.

Table 3 – Switchperson-Inspector mode – Procedure for returning to safety regime



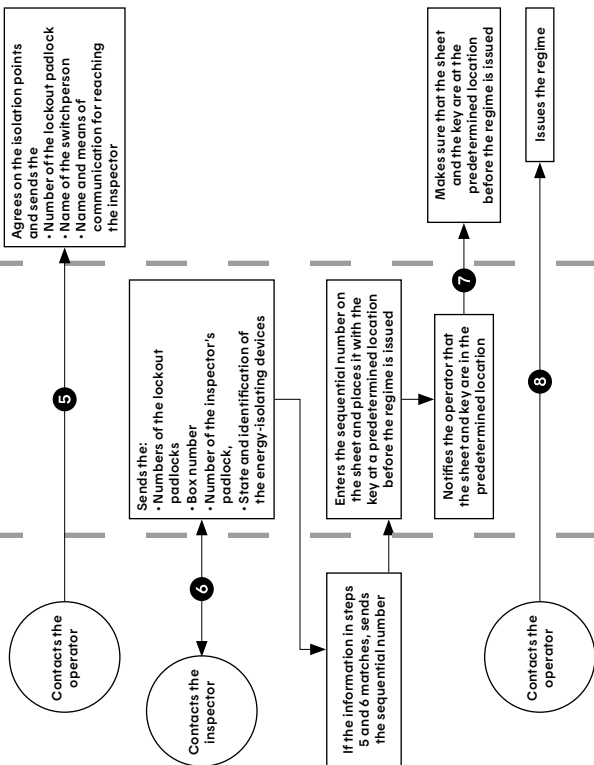
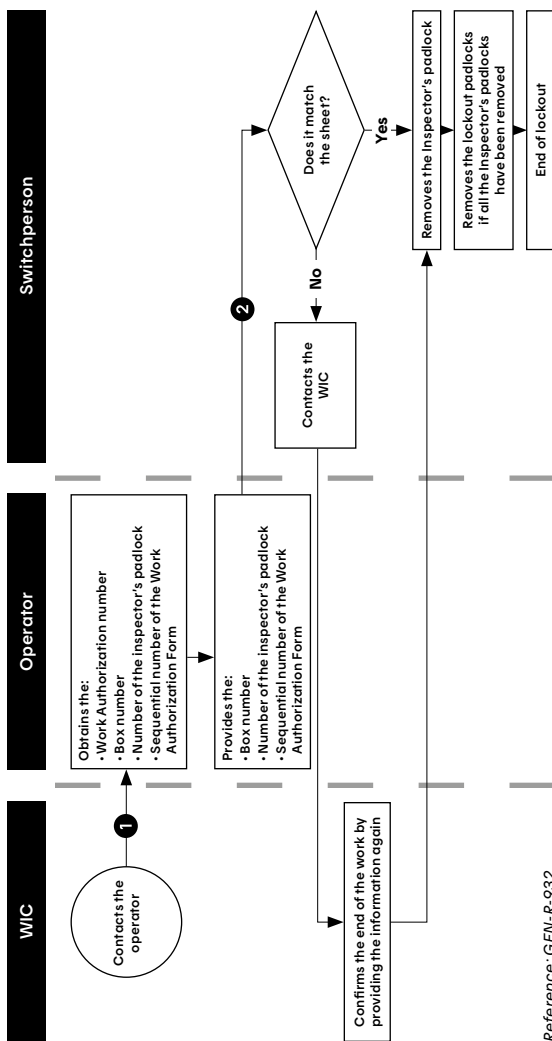


Table 3 (cont'd) – Switchperson-Inspector mode – Procedure for returning to safety regime



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