

POWER SYSTEM WORK STANDARDS

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Transmission and Distribution
Operating Authority

A MESSAGE FROM THE OPERATING AUTHORITY

Work on or near the power system involves inherent risks to employees, system security and customer supply. However, strict adherence to appropriate work standards, procedures and methods will minimize those risks and allow employees to work safely.

Designed to complement and support other ATCO Electric safety standards, Power System Work Standards was developed by a team of experienced employees, including Operators-in-Charge of the transmission and distribution systems. All employees working on or near the ATCO Electric power system are required to:

- Meet applicable training, knowledge and skill requirements, as per HS&E Practice 1101: Power System Worker Authorization;
- Review and consistently follow the standards in this document; and
- Perform work only as authorized by their supervisor and the Operator-in-Charge.

Your commitment will help to ensure both employee safety and the efficient operation of the power system.

ORIGINAL SIGNED BY:

Doug Smeall, P.Eng.
Manager, System Operations
Transmission and Distribution Operating Authority

TABLE OF CONTENTS

SECTION 100: HOW TO USE THIS DOCUMENT	1
101 Purpose.....	1
102 Scope.....	2
103 Document Compliance.....	2
104 Definitions.....	2
SECTION 200: RESPONSIBILITIES.....	7
201 Operating Authority	7
202 Operator-in-Charge	7
203 Permit Holder	8
204 Switchman.....	9
205 Employees	9
SECTION 300: PREPARING TO ESTABLISH REQUIRED CONDITIONS	11
301 Process	11
302 Determining Required Conditions.....	12
303 Notification and Permission Requirements	14
A. Substation Entry	14
B. Vegetation Control.....	15
C. Work on the Power System.....	16
304 Permission to Establish Required Conditions	17
A. Operator-in-Charge-Administered Switching	17
B. Worker-Administered Switching	17
305 Switching Diagrams	18
306 Switching Orders.....	19
A. Operator-in-Charge-Administered Switching	19
B. Worker-Administered Switching	20
307 Voice Communications	20

SECTION 400: ESTABLISHING REQUIRED CONDITIONS.....	23
401 Conducting a Power System Risk Assessment.....	23
A. General	23
B. Distribution Tie Switches	24
402 Switching.....	24
A. Communicating During Switching.....	24
B. General Switching Procedures	25
403 Isolating Apparatus.....	26
404 Tagging.....	27
405 Issuing and Holding Permits.....	29
A. General Permit Requirements.....	29
B. Changing Permit Holders	30
C. Expanding or Contracting Safe Work Area Permit Conditions	31
406 Return to Normal	31
SECTION 500: PERMITS	33
501 Guarantee of Isolation Permit.....	33
A. Restrictions and Requirements	33
B. Issuing a Guarantee of Isolation Permit	34
C. Releasing a Guarantee of Isolation Permit	34
502 Test and Operate Permit	35
A. Restrictions and Requirements	35
B. Issuing a Test and Operate Permit.....	36
C. Releasing a Test and Operate Permit.....	36
503 Hold-Off Permit.....	36
A. Restrictions and Requirements	37
B. Issuing a Hold-Off Permit	38
C. Releasing a Hold-Off Permit	38
504 Control System Permit.....	39
A. Restrictions and Requirements	39
B. Issuing a Control System Permit	40
C. Releasing a Control System Permit	40
SECTION 600: ATTACHING AND DETACHING APPARATUS.....	41
601 Procedure	41
SECTION 700: OPERATING INTERFACE POINTS	43
701 Location of Operating Interface Points.....	43
702 Joint Operating Procedures/Agreements	43

703 Condition Guarantee44
 A. Restrictions and Requirements.....44
 B. Issuing a Condition Guarantee.....44
 C. Releasing a Condition Guarantee.....45

SECTION 800: PROCEDURAL TOOLS 47

801 Switching Diagrams47
 A. General.....47
 B. Revisions.....47

802 Switching Information/Permit Request.....48

803 Switching Order/Permit Form.....49
 A. General.....49
 B. Numbering Switching Steps.....49
 C. Numbering Permits50

804 Do Not Operate Tags50

805 Transfer of Authority51

806 Record Keeping.....51

SECTION 900: SPECIAL SITUATIONS..... 53

901 Emergency Situations.....53


902 Inadvertent Operation of Apparatus.....54

APPENDICES

Appendix A: Operating Interface PointsA-1

Appendix B: Switching OrderA-2

Appendix C: Do Not Operate TagA-3

 This symbol refers to additional reference material that will assist you with your work.

SECTION 100: HOW TO USE THIS DOCUMENT

SECTION 100 – HOW TO USE THIS DOCUMENT

101 Purpose


Power System Work Standards provide ATCO Electric employees with standards for establishing conditions on the power system that will, when combined with appropriate work standards, procedures and methods, provide a safe work area.

Before starting any work on the power system, employees must obtain permission from the Operator-in-Charge.

No permission, no work.


A. Limitations

It is important to note this document provides a process for establishing required power system conditions only. In addition to obtaining permits, employees must implement barriers to protect against all other hazards identified in the job planning process.

 Safety Standards Manual

102 Scope

Power System Work Standards apply to all employees authorized to work on or near ATCO Electric power system apparatus and/or supporting control and communication apparatus.

 HS&E Practice 1101: Power System Worker Authorization

103 Document Compliance

Power System Work Standards comply with the following:

- CEA Guide on Electric Utility Workplace Electrical Safety for Generation, Transmission & Distribution
- Alberta Electrical Utility Code (AEUC)
- Occupational Health & Safety Act, Regulation and Code
- ATCO Electric Corporate Health, Safety and Environment Principles and Policies
- ATCO Electric HS&E Management System and Best Practices
- ATCO Electric HS&E Safety Standards Manual

104 Definitions

Apparatus – Equipment of every kind and description used in the transformation, distribution, delivery or use of electrical power or energy. Also includes the supporting control and communication equipment used to manage the delivery and use of electrical power.

Charged – Containing stored electrical energy.

Condition Guarantee – Formal declaration between operating authorities that a device is in a specific state, tagged as such and guarantee is given that it will not to be

operated until the Condition Guarantee is released. This is not a work permit.

De-energized (Dead) – At a potential equal to or not significantly different from that of ground (earth) at the work site.

Device – A type of electrical apparatus used as a switch or control mechanism (e.g., gang switch, recloser, auto-sectionalizing scheme, etc.).

Disable – To make a device inoperable.

Do Not Operate Tag– See Appendix C.

Employee – For the purposes of this document, any individual employed by or contracted to ATCO Electric who is authorized as one or more of the following, as per HS&E Practice 1101: Power System Worker Authorization:

- Qualified Utility Worker (also known as a Qualified Utility Employee, as defined in the AEUC)
- Utility Worker (also known as a Utility Employee, as defined in the AEUC)
- Utility Tree Trimmer
- Utility Tree Worker

Note: Utility Tree Trimmers and Utility Tree Workers do not automatically assume Utility Worker authorizations.

Employee-in-Charge – The individual responsible for all employees in a work group or groups working on or near the same related power system apparatus. When working alone, the employee is considered the Employee-in-Charge.

Enable – To make a device operable.

Energized (Live) – At a potential significantly different from that of ground (earth) at the work site and which presents an electrical hazard.

Note: A part is energized when it is electrically connected to a source of electric energy. It can also be

energized when it is electrically charged under the influence of an electric or magnetic field. Apparatus must be considered energized unless confirmed isolated and grounded.

Isolate – To disconnect completely a device or circuit from other devices or circuits, separating it physically, electrically and mechanically from all sources of electrical energy.

Note: Such separation may not eliminate all the effects of electromagnetic induction.

Isolated Generating Station (IGS) - The generating apparatus operated by ATCO Electric and used to supply the distribution and/or transmission power system in isolated systems or provide support to interconnected systems.

Live Line Work – All work performed on energized electrical equipment or lines using protective insulating devices, live line tools or barehand techniques.

Locked – Physically secured with a keyed padlock. Only applies to devices where provision for locking is provided.

Near – For the purposes of electrical operations, distance at which there is a possibility of contacting energized lines or equipment.

Operating Authority – The person designated by ATCO Electric to make policy decisions affecting operations of the power system. Also known as the Operator of a Utility System, as defined in the AEUC.

Operating Interface Point – The location on the power system separating the responsibilities of respective Operators-in-Charge. Operating interface points are identified on switching diagrams. Also see Appendix A.

Operator-in-Charge – The Qualified Utility Worker designated by the Operating Authority to coordinate control of the power system or a portion thereof, in accordance with the requirements of established safety standards and operating standards and procedures.

Operator-in-Charge-Administered Switching – Switching directed by the Operator-in-Charge, in accordance with switching orders developed by the Operator-in-Charge

Permit – Document that defines and provides permission to work under established power system conditions.

Permit Holder – The employee to whom a permit has been issued.

Potential – Voltage, in the context of electricity.

Power System – All electrical apparatus above 750 V comprising the transmission and distribution systems.

Release – The surrender of the permit.

Return to Normal – Restoration of the power system or apparatus to a normal operating state.

Safe Work Area – A defined area on or near the power system where conditions have been established that will, when combined with appropriate work standards, procedures and methods, eliminate or control hazards.

Software Tags – Tags applied to computer-based systems to alert the Operator-in-Charge and if possible prevent the operation of devices by those systems.

Switching – Process by which the electrical configuration of a system is changed, usually through the operation of devices designed for this action, but may also include the removal or installation of jumpers and the making or breaking of normally permanent connections.

Switching Diagram – Simplified electrical representation of the power system or a part thereof. Includes Single Line Diagrams and switching maps.

Switching Order – Documentation that describes the specific switching sequence required to place power system devices in a desired operating state. If only one switching step is required, the tag may be the switching order.

Switchman – An employee who operates electrical apparatus and performs switching and tagging of devices under the direction of or with the permission of the Operator-in-Charge.

System Security – The integrity of the power system; maintained by identifying the next contingency related to the work being considered that could impact power system operations and/or customer supply.

Transfer of Authority – Formal transfer of duties and responsibilities from one Operator-in-Charge to another.

Worker-Administered Switching – Switching performed by an employee who has received permission from the Operator-in-Charge to establish the power system conditions required for a safe work area.

SECTION 200: RESPONSIBILITIES

201 Operating Authority

The **Operating Authority** has overall responsibility for the operation of the transmission and distribution systems and is responsible to make sure the Operator-in-Charge responsibility is assigned.

The Distribution and Transmission Operating Authority is assigned to the Manager, System Operations.

202 Operator-in-Charge

The **distribution Operator-in-Charge** (“DOIC”) is responsible for all power system apparatus rated 36 kV and below, excluding that portion shown on transmission substation switching diagrams.

The DOIC is the Superintendent, Distribution Operations or designee.

The **transmission Operator-in-Charge** (“TOIC”) is responsible for all power system apparatus rated 72 kV and above and substation equipment rated below 72 kV, as shown on transmission substation switching diagrams.

Exceptions to this requirement are identified as interface points on affected switching diagrams.

The TOIC is the Supervisor, Transmission Operations or designee.

The **Operator-in-Charge** is responsible to:

- Coordinate the day-to-day operation of the transmission, distribution or generation system, as applicable, in compliance with approved standards and procedures;
- On request, establish power system conditions that will, when combined with appropriate work standards, procedures and methods, provide a safe work area;
- Issue permits as required for all work on the transmission or distribution system, as applicable, including the attachment and detachment of apparatus; and
- Maintain operational documentation for a minimum of three years.

203 Permit Holder

The permit holder is normally the Employee-in-Charge of a single work group or multiple work groups, as applicable. The permit holder must have the following qualifications:

- Qualified Utility Worker for Guarantee of Isolation.
- Qualified Utility Worker, Utility Worker, Utility Tree Trimmer or Utility Tree Worker for Hold Off Permits.
- Qualified Utility Worker or Utility Worker for Test and Operate and Control System Permits

The permit holder is responsible to:

- Request and hold the permits that will, when combined with appropriate work standards, procedures and methods, provide a safe work area;
- Notify the Operator-in-Charge prior to starting work;

- Provide permission to all employees and work groups under their direction to work under the permits held;
- Stop work and promptly notify the Operator-in-Charge in the event of any unscheduled occurrence or incident related to the power system that may affect:
 - Employee safety;
 - Power system security; or
 - Continuity of customer supply; and
- Release all permits to the Operator-in-Charge when the work is completed.

204 Switchman

The Switchman must be a Qualified Utility Worker who is responsible to:

- At the direction of the Operator-in-Charge perform switching; or
- With permission of the Operator-in-Charge establish his or her own protection under Worker Administered Switching.

205 Employees

Employees are responsible to:

- Comply with all standards provided in the Power System Work Standards document.

SECTION 300: PREPARING TO ESTABLISH REQUIRED CONDITIONS

301 Process

In preparing to establish the required conditions to work on or near the power system, employees must complete the following six steps, as applicable:

1. Obtain current switching diagrams.
2. Determine the power system conditions required to accommodate the work.
3. Notify or request permission from the appropriate Operator-in-Charge to establish those conditions.
4. Receive permission to establish required conditions through Operator-in-Charge administered switching or worker-administered switching.
5. Obtain or develop switching orders.
6. Establish an on-site means of communication with the Operator-in-Charge.

302 Determining Required Conditions

The first step in planning work on or near the power system is to determine the conditions that will, when combined with appropriate work standards, procedures and methods, provide a safe work area.

Conditions and Permits required:

Isolation from all sources of potential above 750 V:

- Allows work on isolated apparatus
- May require a Condition Guarantee from another operating authority
- May require a Guarantee of Isolation Permit. See Sections 303C and 501, or
- May require Worker-Administered Switching.

Intermittent operation of apparatus:

- Allows apparatus to be safely operated or energized so that adjustments, repairs, maintenance, or commissioning tests can be performed.
- May require a Condition Guarantee from another operating authority.
- May require a Test and Operate Permit. See Sections 303C and 502, or
- May require Worker-Administered Switching.

Control of re-energization:

- Prevents automatic or manual restoration following an unplanned circuit outage, preventing further exposure of apparatus and employees to electrical current.
- May require a Condition Guarantee from another operating authority.
- May require a Hold-Off Permit. See Sections 303C and 503, or

- May require Worker-Administered Switching.

Work on auxiliary apparatus that directly impacts the power system:

- Makes sure system security, customer supply and other permits are not compromised by work on apparatus under 750 V (e.g., relays, protection circuits, voice and data communication systems) that directly impacts or could impede operation of the power system.
- Requires a Control System Permit. See Sections 303C and 504.

Attach or Detach Apparatus

- Allows apparatus to be attached to or detached from the energized power system. See Section 600: Attaching and Detaching Apparatus.
- May require a Condition Guarantee from another operating authority
- May require a Guarantee of Isolation Permit or a Hold-Off Permit. See Sections 303C, 501 and 503, or
- May require Worker-Administered Switching

Enter a Substation

- Requires notification to the appropriate Operator-in-Charge. See Section 303A.

Vegetation Control

- Requires notification to and approval of the appropriate Operator-in-Charge. See Section 303B.
- Some situations may also require a Guarantee of Isolation Permit or a Hold-off Permit. See Sections 303C, 501 and 503, or
- May require Worker-Administered Switching
- Refers to vegetation control near power lines and other power system apparatus (e.g., mowing, tree trimming and danger tree removal).

- Alberta Sustainable Resources Forest Management Department will occasionally request power lines be taken out of service during water bombing operations. This is done to prevent the power line starting or rekindling a forest fire. Requests of this nature are approved by the appropriate Operator-in-Charge with the understanding that this does not provide public and/or worker protection, i.e. no permit is issued. Approval by the Operator-in-Charge is subject to an acceptable risk to the reliability of the remaining power system.

Switching to establish a required condition between operating authorities or between Operators-in-Charge within the same operating authority

- Formal assurance of another operating authority or Operator-in-Charge that identified devices are in the position requested and will not change status until the device status request is formally released by the requestor.
- Requires a Condition Guarantee
- A Condition Guarantee is not a permit

303 Notification and Permission Requirements

A. Substation Entry

1. All persons entering a substation must be a Utility Worker or escorted by a Utility Worker.
2. The Employee-in-Charge must notify the appropriate TOIC prior to entering or departing from a transmission substation. The following information must be provided:
 - The first and last name of the Employee-in-Charge;
 - The substation name or number;
 - The reason for entering;
 - The risks associated with the work; and

- The expected duration of the work (and, as applicable, the need for an extension).

This information allows the Operator-in-Charge to contact the Employee-in-Charge if necessary (e.g., to gather information, to respond to an unplanned outage, etc.).

3. If an entry alarm is received from a remotely monitored substation without a confirming call, the Operator-in-Charge must:
 - Call the substation;
 - If no one answers, contact local employees to investigate; and
 - Request police assistance, as required.
4. If the Employee-in-Charge fails to report back after completing the work, the Operator-in-Charge must notify the employees supervisor who is responsible for further investigation.

Notes:

- *Employees are also required to check in and out of unmanned IGS sites.*
- *The area TOIC is responsible for monitoring entry into IGS sites.*
- *The preceding Sections 303 A. 2 through 4 shall also apply to IGS entry.*


B. Vegetation Control

1. The Employee-in-Charge must provide the appropriate Operator-in-Charge with the following information prior to starting the first day of work:
 - A work schedule;
 - Contact information; and
 - A permit request, as applicable. See Section 303C.
2. If the power system trips while the work is taking place, the Operator-in-Charge must attempt to contact the Employee-in-Charge. **If no permits exist for the**

work, the Operator-in-Charge may attempt to re-energize the system.

3. The Employee-in-Charge must advise the Operator-in-charge when the work schedule has been completed (and, as applicable, of the need for an extension).

Note: If day-to-day check-in is advisable due to the nature of the work (e.g., brushing in a remote area), formal check-in procedures should be used, as described in the Safety Standards Manual.

 Safety Standards Manual, Section 201: Check-In Procedures

C. Work on the Power System

No work is allowed on the power system without the permission of the Operator-in-Charge.

1. The necessary permits must be requested in writing from the Operator-in-Charge, preferably at least three working days in advance.
 - Minimum notice of thirty days is required for work involving Alberta Interconnected Electric System (AIES) transmission apparatus.
 - Reasonable efforts are to be made to assist the Alberta Electric System Operator (AESO) in finalizing 240kV outages at least thirty days prior to the relevant operating week.

See Section 802.

2. The Operator-in-Charge must review the request with the employee to identify any concerns
3. The Operator-in-Charge must advise the employee as soon as possible whether the permit can be issued as requested.
4. The Operator-in-Charge cannot issue himself a permit; it must be checked and issued by another Qualified Utility Worker.

304 Permission to Establish Required Conditions

After considering system security, customer supply and current permits, the Operator-in-Charge will schedule the work and provide permission to establish the required conditions through either Operator-in-Charge-administered switching or worker-administered switching.

A. Operator-in-Charge-Administered Switching

Switching is developed and directed by the Operator-in-Charge. Upon completion of the switching the Operator-in-Charge issues:

- a permit (Hold-off, GOI, Test and Operate, and CSP) to the worker, or
- A Condition Guarantee to an adjacent Operator-in-Charge

who has requested the operation or confirmation of devices in order to establish a safe work area.

B. Worker-Administered Switching

The Operator-in-Charge gives permission to a Qualified Utility Worker to establish his/her own protection. This can only apply to workers establishing protection for themselves or for one or more persons working as a team and supervised by the Qualified Utility Worker. No permit is issued.

Worker-Administered Switching may only occur on authorization of the Operator-in-Charge. The Operator-in-Charge gives permission for the Qualified Utility Worker to do the switching and establish the safe work area.

Worker-Administered Switching may occur where a single device or multiple devices in a small area can easily establish protection and risk to the power system is minimal provided the following conditions are met:

- 1) All devices are under the authority of **one** Operator-in-Charge. (i.e. No distribution connected generation, no operating REA's, etc.)

- 2) There is only one Employee-in-Charge of the work.
- 3) The work is limited to one continuous work period.
- 4) There will be no overlapping Worker-Administered Switching permissions.
- 5) The work does not involve switching capacitors, regulators and autoboosters in and out of service.

The following rules pertain to the administration of Worker-Administered Switching:

- The Operator-in-Charge will give "**permission**" for a worker to establish his own protection under Worker-Administered Switching.
- The Operator-in-Charge will issue a unique reference number for the Worker-Administered Switching.
- The Operator-in-Charge **does not "pre-approve" the switching order.**
- The Qualified Utility Worker will do the risk assessment of the work.
- The Qualified Utility Worker will write up the switch order/tag.
- The switching order must be reviewed by a second Qualified Utility Worker if more than one Qualified Utility Worker is involved with the work.
- The Qualified Utility Worker will advise the Operator-in-Charge when the work is completed.

305 Switching Diagrams

Before performing any switching, the switchman must have in his/her possession valid, approved switching diagrams that accurately detail the apparatus contained within that system.


Copies of interim switching diagrams may be obtained through the System Operations Centre and authorized by the appropriate Operator-in-Charge.

306 Switching Orders

A. Operator-in-Charge-Administered Switching

1. The Operator-in-Charge cannot direct any switching without a written switching order, except in the following situations:
 - A switching order may not be required for voltage control work (e.g., adjusting regulator taps, capacitors or reactors).
 - A switching order is not required in an emergency situation. See Section 901.
 - During troubleshooting situations, the Operator-in-Charge must document each switching step prior to taking that action. However, all troubleshooting actions must be transferred to the switching order and a second approval received before a permit is issued.
2. The switchman must obtain the switching order from the Operator-in-Charge before performing the switching, and verify the switching instructions against the switching diagram.
3. If the written switching order is not available on site, the Operator-in-Charge will verbally provide the switching order step-by-step to the switchman. The switchman must:
 - Record the switching steps exactly as stated; and
 - Repeat the switching steps back to the Operator-in-Charge.

If multiple sites are involved, the Operator-in-Charge will verbally summarize the overall process and provide the switchman with only the step-by-step switching instructions pertinent to their site.

 SO-403: Standard Practices for Developing Switch Orders in SOC
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B. Worker-Administered Switching

The employee performing the switching must:

- Prepare a switching order;
- If more than one Qualified Utility Worker is involved with the work, the switching order must be reviewed with another Qualified Utility Worker before proceeding; and
- Document the time of switching on the switching order.

If only four or less switching steps are required, a “Do Not Operate” tag may be used as the switching order. See Section 805.

307 Voice Communications

Voice communication systems must be available for use between the permit holder and the Operator-in-Charge, and the switchman and the Operator-in-Charge.

1. Employees must not rely solely on telephone devices. When within range of ATCO Electric’s private radio system, it is preferred that the switchman have an operating two-way radio unit.
2. All transmission substations must have one or more voice communication systems available for use at all times. If there is any doubt as to the effect of a portable radio or cell phone on apparatus in the building (e.g., a warning sign is posted), it must not be used.

3. Where continuous communication is not possible due to the site location, the Operator-in-Charge may allow scheduled communications. Consideration must be given to the following:
 - Impacts to system security due to the communication delays; and
 - Customer outages may be extended due to the communication delays.

SECTION 400: ESTABLISHING REQUIRED CONDITIONS

401 Conducting a Power System Risk Assessment

A. General

1. To minimize any hazardous situations or adverse effects on the power system, the Operator-in-Charge must conduct a thorough risk assessment:
 - Before switching;
 - During switching; and
 - After switching.
2. The risk assessment must include a review of the following, as applicable:
 - System voltages and line flows;
 - Status of adjacent substations;
 - Status of interconnected utilities and customer loads;
 - Apparatus and system capabilities;

- Effect of the next worst contingency;
- Conflicting scheduled outages; and
- Current permits.

 SO-500: Risk Assessment

B. Distribution Tie Switches

Before operating distribution switches that tie distribution feeders or transmission substations together, the distribution Operator-in-Charge must:

- Notify the transmission Operator-in-Charge; and
- Consider the following:
 - Possibility of inadvertently bypassing regulators;
 - Settings and control of voltage regulators;
 - Load shift;
 - The state of the transmission system;
 - System capabilities;
 - Protection settings; and
 - Settings and switching of capacitors.

 SO-221: Confirming 25kV Relay Settings for Load Transfers

402 Switching

A. Communicating During Switching

1. The Operator-in-Charge must communicate switching instructions directly with the switchman. The following exception is allowed:
 - Switching instructions may be relayed through a third party when voice communication is not available. The third party must also be a Qualified Utility Worker.


2. All parties must use full name identification when relaying switching instructions.
3. Verbal communications must be:
 - Repeated back by the receiving party as heard; and
 - Verified against the switching order.

B. General Switching Procedures

1. A discussion (tailboard) must occur between the Operator-in-Charge and the switchman immediately before any switching to review the switching order and make sure that it is complete, correct, understood and all related hazards are identified.
2. Where provision has been made, preference will be to perform switching remote from the device. Remote operation refers to off site control using SCADA or on site control using the HMI in the substation control building.
3. The switchman is required to check local devices and apparatus and report any adverse conditions that could influence the switching to the Operator-in-Charge.
4. The step-by-step switching instructions must be followed in sequential order as provided on the switching order. If anyone identifies inconsistencies or concerns about the switching instructions at any time, the switching must be stopped and cannot proceed until their concerns are addressed.
5. The switchman must have the switching order in his/her possession when performing the switching and record the time each switching step or sequence, as applicable, is successfully completed.
6. Whenever switching devices are being operated, the switchman must advise employee's onsite to stay clear.
7. Before operating any switch, the Operator-in-Charge must either check the device is rated for the operation or alternatively make sure that associated load break devices (e.g., circuit breakers) are opened first.

This check should include at least two of the following indicators:

- Power flow (MW and/or Mvar);
 - Current flow or voltage on each individual phase;
 - Operating position of supervisory control or local switchboard device; and/or
 - Positions of the mechanical indicators on the associated load break devices.
8. If operating a non-load break switch locally, the switchman must check the open status of the associated load break device, e.g., breaker, OCR etc
 9. When supervisory controlled switching is being performed and a switchman is onsite, the switchman must verify the correct position following the operation of any disconnect switch.
 10. Switches, grounding devices and other apparatus that can be locked must be secured using a company system lock.

 Safety Standards Manual, Section 802: Working on Overhead Power Systems

403 Isolating Apparatus

All devices used as isolation points must be fully opened, confirmed to have an adequate visible air gap on all phases, tagged and locked before a permit is issued.

Exception:

Where no visible air gap exists, the isolated apparatus must be tested for potential and the isolating device locked and tagged inoperable (e.g., padmount transformer with live front bushings and internal switchgear).

1. Approved Live Line Work Methods may be used to establish an isolation point (e.g., isolators or open jumpers).

2. When motor operated switches or circuit switchers are used as isolation points, the isolation procedure must include disabling the motor mechanism by:
 - Locking the main drive or hand wheel in such a way that the main vertical operating shaft cannot turn; and
 - De-coupling the motor from the operating shaft; and/or
 - Removing the auxiliary power supply to the motor.
3. When a normally open switch is used as an isolation point, the switch must be confirmed open onsite and locked and tagged.
4. When isolating a portion of the system where a PT or station service is connected, the PT or station service must also be isolated using the secondary or primary disconnects unless confirmed to have no source of backfeed.
5. When isolating indoor switch gear:
 - The breaker must be removed from the cubicle or racked out to the disconnect position, locked and tagged to create the isolation point; or
 - If the breaker is not removable, the associated solid blade disconnects or bus switches must be opened, locked and tagged to create the isolation point.

404 Tagging

Employees must understand and utilize the following tagging procedures:

1. To prevent unauthorized operation of devices, standard ATCO Electric "Do Not Operate" tags (or software tags, where available) must be installed as directed by the Operator-in-Charge or, in the case of Worker-Administered Switching, as directed by the employee performing the switching. See Section 804 to determine the information required on each tag.

2. Only Qualified Utility Workers are permitted to install and/or remove tags.
3. Each active permit must have a corresponding tag at each location which is required to be tagged (e.g., Five active GOI's would require five tags on each isolation point.)
4. Where a Condition Guarantee has been issued, the Operator-in-Charge who receives the Condition Guarantee may be permitted to install additional locks and tags on associated isolating devices.
5. An Operator-in-Charge who receives a Condition Guarantee can use the associated tags to form part of the first permit he may issue. If a Condition Guarantee is to be used for more than one permit the Operator-in-Charge issuing the permits must add additional tags to the associated isolating devices.
6. Where possible, electronic tag(s) must be installed on remote control equipment for each tag installed on devices in the field.
7. Only a Qualified Utility Worker may install or supervise the installation of tags for the Operator-in-Charge.
8. Tags must be installed on the same side as the switch identification number and as close as possible to the switching device (e.g., on the operating handles or, in the case of solid blade disconnects, on the associated structure, preferably at eye level).
9. Tags may be removed only at the direction of the Operator-in-Charge or, in the case of worker-administered switching, by the employee who installed the tags.
10. The Operator-in-Charge must be notified if:
 - A tag discovered on any device or apparatus appears unsupported by a permit; or
 - An employee suspects a device has been operated unsupported by a tag or permit.

The Operator-in-Charge will initiate an investigation and take appropriate action (e.g., direct removal of the tag, direct tagging and issue a permit or energize, as applicable).

405 Issuing and Holding Permits

For a detailed description of the restrictions and requirements for specific permits, see Section 500.

A. General Permit Requirements

The permit is the employee's assurance that the power system conditions defined by the permit will not change until the permit is released. This assurance depends on strict adherence to the following requirements:

1. In planned situations where switching is involved in establishing the required conditions, the permit holder must have in his/her possession a current copy of the switching diagram and the switching order prepared by the Operator-in-Charge before the permit is issued.

If the written switching order is not available on site, the Operator-in-Charge will verbally provide the portion which contains the permit to the permit holder. The permit holder must:

- Record the permit exactly as stated; and
 - Repeat the permit back to the Operator-in-Charge.
2. A tailboard discussion must be held between the permit holder and the Operator-in-Charge prior to:
 - Issuing a permit, to verify required power system conditions have been established through the switching order; and
 - Releasing a permit, to confirm established conditions can be returned to normal.
 3. All parties must use full name identification and repeat-back procedures whenever issuing, receiving or releasing permits.

4. All switching and tagging on the switching order required to provide the safe work area must be completed before the associated permit is issued.
5. All permits must be assigned a unique number using the switching order reference number with an alphabetical suffix. See Section 803C.
6. The Employee-in-Charge may accept a permit only for the work group(s) under their direction.
7. If the permit holder needs to leave the work location, he/she must either release the permit(s) or arrange to maintain established conditions with the permission of the Operator-in-Charge (e.g., by providing a means of contact while offsite or changing permit holders). See Section 405B.
8. Permits must be released when no longer required.
 - If permits are not released and the permit holder cannot be contacted, the Operator-in-Charge must contact the permit holder's immediate supervisor. The supervisor, if unable to locate the permit holder, must contact the Operating Authority for approval to release the permits.
9. If continuous or scheduled communications cannot be maintained with the Operator-in-Charge, all applicable permits must be released.
10. During critical situations, permits must be released as soon as practicable at the request of the Operator-in-Charge.

B. Changing Permit Holders

If a permit holder needs to leave a site before the work is completed, established conditions can be maintained (with the permission of the Operator-in-Charge) by briefly overlapping the original permit with a new permit issued to another employee.

1. The original permit holder must personally advise the Operator-in-Charge and everyone working under the permit of the proposed change.

2. The new permit holder must review and confirm the established conditions with the Operator-in-Charge.
3. The Operator-in-Charge will issue the new permit before releasing the original permit.

Note: If a tag is used for Worker-Administered Switching, the new Qualified Utility Worker must place their tag on the device before the original tag is removed.

C. Expanding or Contracting Safe Work Area Permit Conditions

If a safe work area has to be expanded or contracted from an existing permit the Operator-in-Charge must:

- Direct installation of tags on the new devices which are required to be tagged to establish the new safe work area.
- If a new switching order is required, transfer the required existing tags and reference numbers defined in the previous switching order to the new switch order.
- Check that all devices have been identified and tagged to establish required conditions on the new permit.
- Issue the new permit to the permit holder.
- Release the previous permit.
- Direct removal of tags that are not required from the previous permit.

406 Return to Normal

When the work has been completed, the permit holder must inform the Operator-in-Charge and:

- In the case of Operator-in-Charge-administered switching, follow procedures to release the permit(s). See the following sections, as applicable:
 - 501C: Releasing a Guarantee of Isolation Permit
 - 502C: Releasing a Test and Operate Permit

503C: Releasing a Hold-Off Permit

504C: Releasing a Control System Permit; or

- In the case of worker-administered switching, remove all tags and document the time.
- After all permits have been released, return to normal switching may proceed. See Section 402.

SECTION 500: PERMITS

501 Guarantee of Isolation Permit

The Guarantee of Isolation Permit guarantees the permit holder that:

- A line or apparatus has been isolated from all known power system sources of potential (and PT and station service disconnects, as applicable) and tagged on all boundaries of isolation; and
- The operating state of the isolating devices will not change until the permit is released.

A. Restrictions and Requirements

1. A Guarantee of Isolation Permit may be held by any Qualified Utility Worker.
2. A Guarantee of Isolation Permit will not be issued using an isolation device that has an outstanding Test and Operate Permit issued on it.
3. Before a Guarantee of Isolation Permit is issued, tags must be securely placed on all isolating devices.
4. Devices located within the isolation points of a Guarantee of Isolation Permit and not tagged may be

operated by the permit holder, with the understanding that, before the permit is released, the devices will be:

- Returned to their original operating state; or
 - Placed in the operating state desired by the Operator-in-Charge, as applicable.
5. When applied potential is being used to test apparatus (e.g., Doble testing, Hypot testing, primary injections) within a GOI zone of isolation, the permit holder must inform the Operator-in-Charge that such testing will be taking place. No additional GOI's are to be issued within the same zone of isolation while injection testing is in progress.
6. In the case of two or more work groups working under the same Guarantee of Isolation Permit, the permit holder must:
- Provide each work group with permission to establish their own work protection (i.e., install grounds); and
 - Monitor work group activities to make sure all grounds are removed prior to releasing the permit.

B. Issuing a Guarantee of Isolation Permit

When all conditions have been met, the Operator-in-Charge will issue the Guarantee of Isolation Permit (GOI) to the permit holder using the following words:

*This is (name) informing (name) that (device or line) is now (isolated between/opened at) (location or locations).
 You may proceed with your work under GOI Permit # _____
 Date _____.*

C. Releasing a Guarantee of Isolation Permit

1. Before releasing the Guarantee of Isolation Permit, the permit holder must verify that:
- Work has been completed;

- All devices located within the isolation points of the permit are in their original operating state or the operating state desired by the Operator-in-Charge, as applicable;
 - Workers and equipment are clear;
 - Working grounds are removed; and
 - Apparatus covered by the permit can be energized.
2. The Guarantee of Isolation Permit is released to the Operator-in-Charge with these words:

This is (name) informing (name) that I have completed my work on (device or line) and I am releasing my GOI Permit # _____ Date _____ .

502 Test and Operate Permit

The Test and Operate Permit provides assurance the Operator-in-Charge has assessed system security and adjustments, repairs or tests can be performed on apparatus that may or may not be energized, as covered by the permit.

A Test and Operate Permit is NOT intended as a form of personal protection – no grounding is allowed unless an overlapping Guarantee of Isolation is issued.

A. Restrictions and Requirements

1. A Test and Operate Permit may be held by a Qualified Utility Worker or a Utility Worker.
2. Only one Test and Operate Permit will be issued on a single apparatus at any time.
3. A Test and Operate Permit will not be issued on any device defined as an isolation point for a Guarantee of Isolation Permit.
4. A Test and Operate Permit will not be issued on any device that is part of a Hold-Off Permit.

5. Before a Test and Operate Permit is issued, tags must be securely placed on the switching devices that create the test condition.
6. If a device or apparatus is required to be operated during tests, it may be operated only on instructions from the permit holder (e.g., opening/closing a circuit breaker).

B. Issuing a Test and Operate Permit

After all requirements have been met, the Operator-in-Charge will issue the Test and Operate Permit to the permit holder using these words:

This is (name) informing (name) that it is okay to test and operate (device) at (location) under Test and Operate Permit # ____ Date _____ .

C. Releasing a Test and Operate Permit

1. Before releasing a Test and Operate Permit, the permit holder must verify:
 - Work has been completed; and
 - Devices associated with the permit are in their original operating state or the operating state desired by the Operator-in-Charge, as applicable.
2. The Test and Operate Permit is released to the Operator-in-Charge with these words:

This is (name) informing (name) that I have completed my work on (device) at (location) and I am releasing my Test and Operate Permit #_____ Date _____.

503 Hold-Off Permit

A Hold-Off Permit prevents automatic or manual restoration following an unplanned circuit outage, preventing further exposure of apparatus and employees to electrical current.

It confirms:

- Restoration and reclosing schemes are disabled;
- High-voltage sources of backfeed (e.g., normally open tie switches, distribution-connected generators) will not continue to feed into a line fault; and
- Any device or line covered by the Hold Off Permit which has become de-energized will not be re-energized without the consent of the permit holder.

A Hold-Off Permit is NOT intended as a form of personal protection – under no circumstances will the Hold-Off be considered as isolation.

A. Restrictions and Requirements

1. A Hold-Off Permit may be held by any Utility Worker, Qualified Utility Worker, Utility Tree Worker or Utility Tree Trimmer.
2. Tags must be securely placed on all devices used to create the Hold-Off condition, including:
 - Switchboard control switches of circuit breakers associated with the electrical apparatus covered by the Hold-Off;
 - Switchboard control switches or structures of any auto-sectionalizing, auto-transfer, or automatic reclosing schemes that could re-energize the apparatus covered by the Hold-Off; and
 - Other control mechanisms not located within a control building.
3. If the Hold-Off condition is being established through supervisory control, field tags referenced in Section 503A.2. do not have to be installed however the Operator-in-Charge must apply software tags to all devices associated with the permit.
4. Normally open switches that tie circuits or apparatus to other electrical sources must be confirmed open and tagged.
5. If the Operator-in-Charge receives an alarm indicating the associated protection may fail to operate under fault

conditions (e.g., alarm for loss of DC), they must notify the permit holder. The permit holder and Operator-in-Charge must then determine if the Hold-Off can continue.

6. If the associated protection operates or a loss of potential is suspected, the permit holder must notify the Operator-in-Charge, or the Operator-in-Charge must notify the permit holder, as applicable.
7. The permit holder must notify the Operator-in-Charge if a contact or incident occurs.
8. If the protection operates to trip the line/equipment out of service during an outstanding HOP, the permit holder must release the HOP prior to re-energization. If the permit holder requires re-issuance of the HOP after the line is re-energized, it is permissible for the permit holder to leave insulating equipment and tools connected to the line during the re-energization process so long as all workers are clear.

B. Issuing a Hold-Off Permit

After all requirements have been met, the Operator-in-Charge will issue the Hold-Off Permit to the permit holder using these words:

This is (name) informing (name) that reclosing has been disabled on (device or line) at (location) and (location) and (location) and there is no backfeed from (line number(s) and switch number(s)). You may proceed with your work under Hold-Off Permit # _____ Date _____.

C. Releasing a Hold-Off Permit

1. Before releasing the permit, the permit holder must verify that:
 - Work has been completed; and
 - Devices associated with the permit are in their original operating state or the operating state desired by the Operator-in-Charge, as applicable

(e.g., as required for attaching or detaching apparatus).

2. The Hold-Off Permit is released to the Operator-in-Charge with these words:

This is (name) informing (name) that I have completed my work on (device or line) and I am releasing my Hold-Off Permit # Date .

504 Control System Permit

The Control System Permit allows the Operator-in-Charge to assess risks and condition the system to minimize the impact to system security, customer supply, and other permits before work is performed on apparatus under 750 V that directly impacts or could impede operation of the power system (e.g., relays, voice and data communication systems and protection circuits).

If there is any doubt, contact the Operator-in-Charge.

A Control System Permit is NOT intended as a form of personal protection.

A. Restrictions and Requirements

1. A Control System Permit may be held by any employee.
2. A Control System Permit will not be issued on protective relays or any other apparatus associated with the devices covered by a Hold-Off Permit.
3. Before receiving a Control System Permit, the permit holder must describe to the Operator-in-Charge what they are doing and any local impacts if something goes wrong with the work.
4. If unexpected problems are encountered, the permit holder must report to the Operator-in-Charge before proceeding.
5. If conditions on the power system change and continuation of the work will jeopardize system security

or customer supply, the Operator-in-Charge must request the release of the Control System Permit.

B. Issuing a Control System Permit

The Operator-in-Charge will review the information provided by the permit holder, conduct a power system risk assessment (see Section 401), document any operational impacts and consider other existing permits before issuing a Control System Permit.

*This is (name) informing (name) you may proceed with your work under Control System Permit # _____
Date _____.*

C. Releasing a Control System Permit

Before releasing the permit, the permit holder must verify that the apparatus associated with the permit is in its original operating state or the operating state desired by the Operator-in-Charge, as applicable.

*This is (name) informing (name) that I have completed my work and I am releasing Control System Permit # _____
Date _____.*

SECTION 600: ATTACHING AND DETACHING APPARATUS

601 Procedure

When new construction is physically close to the point where it will eventually be tapped on to the existing electrical system, a tag may be installed on the open span or jumpers to prevent inadvertent connection to the system. Jumpers and open spans used for isolation purposes shall be assigned a unique identifier. The tag can be installed as part of the Operator-in-Charge administered switching Condition Guarantee or alternatively installed as part of the Worker-Administered Switching.

When new construction is physically close to the existing electrical system and is only separated by a switch, a lock and/or tag must be installed on the open switch. The lock and/or tag can be installed as part of the Operator-in-Charge administered switching Condition Guarantee or alternatively installed as part of the Worker-Administered Switching.

To attach or detach apparatus from the energized power system, the Employee-in-Charge must:

1. Provide the appropriate Operator-in-Charge with suitable written documentation (e.g., final inspection, commissioning report stating “Approved to Energize”)

or de-commissioning report stating “Approved to De-Energize”).

2. Provide the Operator-in-Charge with an interim switching diagram, verified and approved by the Employee-in-Charge.
3. Identify the power system conditions required to complete the work, and request permission to establish those conditions from the Operator-in-Charge.
4. Release associated Worker Administered Switching permissions, permits or Condition Guarantees.

Note: When a project requires energization in stages:

- *The isolation points defining each stage must be identified in the project work plan and a copy of the work plan provided to the Operator-in-Charge.*
- *Before each segment is energized, the Operator-in-Charge must be provided with interim switching diagrams verified and approved by the Employee-in-Charge.*

SECTION 700: OPERATING INTERFACE POINTS



701 Location of Operating Interface Points

To determine the location of operating interface points, refer to the table provided in Appendix A.

702 Joint Operating Procedures/Agreements

Wherever there is a direct interconnection to the power system, reference to switching practices must be included in a Joint Operating Procedure or Agreement.

The Joint Operating Procedure or Agreement provides information to aid in the development of switching orders (e.g., location of operating interface points, identity of the Operator-in-Charge, etc.).

-  System Operations Policy and Procedures, Section 900: Joint Operating Procedures
-  Distribution Interconnection and Operating Agreements

703 Condition Guarantee

A. Restrictions and Requirements

1. The Operator-in-Charge must give adjoining Operators-in-Charge prior notification of any action or condition that could impact their system.

This includes, as applicable:

- Changes to operating conditions;
 - Operation of adjacent devices; and
 - Any work being performed that could present a risk to their system.
2. When establishing conditions which require switching beyond an operating interface point, the Operator-in-Charge must:
 - Exchange copies of corresponding switching orders with the adjoining Operator-in-Charge when coordinated switching is required with the other party; and,
 - Before completing the switching process, receive a verbal Condition Guarantee from the adjoining Operator-in-Charge that required switching and tagging has been performed on their system and established conditions will not change until released by the Operator-in-Charge making the request.

B. Issuing a Condition Guarantee

When all conditions have been met, the Operator-in-Charge will issue the Condition Guarantee to the adjacent Operator-in-Charge using the following words:

This is (name) at the ATCO Electric System Operations Centre informing (name) at (company or organizational name) you have a Condition Guarantee that (describe condition) on/at (line number or substation name and number). Reference # _____ Date _____.

C. Releasing a Condition Guarantee

Once the adjacent Operator-in-Charge no longer requires the Condition Guarantee, he/she must release it with the following words:

This is (name) at (company or organizational name) informing (name) at the ATCO Electric System Operations Centre that work is completed on (line or equipment number and location) and I am releasing my Condition Guarantee Reference # _____ Date _____. (line or equipment) can be returned to normal.

SECTION 800: PROCEDURAL TOOLS

801 Switching Diagrams

A. General

Employees performing switching and/or receiving permits on the power system are required to use, for reference, approved and up-to-date switching diagrams. Switching diagrams include:

- All substation and line apparatus, each identified by its unique number; and
- Operating interface points, as identified by the Operating Authority. See Appendix A.

B. Revisions

1. Verified and approved interim switching diagrams (i.e., checked, dated and signed by the Employee-in-Charge) must be provided to the Operator-in-Charge whenever modifications are made to the power system.
2. The Operator-in-Charge may accept verbal notification of a change to a switching diagram from an Employee-in-Charge if:

- The change is minor and easily understood (e.g., a change to a switch number); and
- The Employee-in-Charge will provide the Operator-in-Charge with a verified and approved interim switching diagram as soon as practicable.

The Operator-in-Charge has the discretion to deny the verbal notification and request a verified and approved interim switching diagram before accepting the change.

3. Interim and revised switching diagrams used to operate the power system must be authorized by the appropriate Operator-in-Charge.
4. The Operator-in-Charge must obtain approval from the affected Operating Authority to change an operating interface point.

802 Switching Information/Permit Request

Switching information/permit requests must include:

- The line or apparatus affected and the work location;
- The type of permit(s) requested;
- The dates and times the permit(s) are required and the anticipated duration of the work;
- The estimated time needed to release the permit in a critical situation;
- A description of the work;
- Required isolation points, as applicable;
- Any risks the permit holder is able to identify (i.e., local impacts if something goes wrong with the work);
- The means of communication to be used between the permit holder and the Operator-in-Charge, if other than radio or telephone; and
- The name of the permit holder.

803 Switching Order/Permit Form


A. General

Using the information on the permit request, the Operator-in-Charge will conduct a power system risk assessment (see Section 401), schedule the work and prepare a switching order/permit form with the following information:

- A unique reference number;
- The dates and times the required power system conditions will be in effect;
- The switching sequence to be used to create those conditions;
- The switching sequence to be used to return to normal; and
- Permit issuance and release documentation.

For a sample form, see Appendix B.

Note: Where Worker-Administered Switching is involved, the “Do Not Operate” Tag may be the switching order. See Section 804.

 SO-403: Standard Practices for Developing Switch Orders in SOC

B. Numbering Switching Steps

1. The Operator-in-Charge must assign each switching step a unique number. That number cannot be repeated on the same switching order.
2. Switching step numbers must be sequential (i.e., in numerical order).
3. Switching steps may be added to an existing switching order by using alphabetical suffixes to preserve the existing sequence (e.g., 36A, 36B, 36C, etc.).

C. Numbering Permits

The Operator-in-Charge must assign each permit a unique number:

- A reference number (e.g. 12345) will be electronically (CROW, Maximo, OMS etc.) generated when a new switching order is documented on the system. For each required permit, the Operator-in-Charge will create a unique permit number utilizing the reference number as a base followed by a unique alphabetical suffix. (e.g. 12345A, 12345B); or
- Where an electronic system is not available to assign a unique reference number, the Operator-in-Charge must use the following format: initials-year/month/day-sequence # (e.g., a reference number of LJD-01Aug20-1 would have a permit number LJD-01Aug20-1A).

Notes: The date reflects the work start date. The month must be expressed as a three-letter abbreviation.

804 Do Not Operate Tags

All tags placed on power system devices and apparatus must be associated with:

- A specific switch order reference number; or
- Worker Administered Switching reference number

Only standard ATCO Electric “Do Not Operate” tags or software tags may be used.

The following information must be legibly recorded on the tag:

- The identifying number of the line or apparatus being worked on;
- The identifying number or legal location of the device to which the tag is applied;

- The reason for the isolation or condition;
- If the tag is being used as a switching order, the switching step(s);
- The person requesting the permit. Usually the permit holder but can include the person organizing the work;
- The full name of the switchman;
- The time and date of the tag installation and removal; and
- The reference number (e.g. 12345).

For a sample tag, see Appendix C.

805 Transfer of Authority

1. The Operator-in-Charge must transfer operating authority:
 - At the end of their work shift; or
 - Whenever they cannot provide the dedicated time and attention required to monitor and operate their portion of the power system effectively.
2. Transfers of authority for each Operator-in-Charge shall be recorded in the logbook.
3. The outgoing Operator-in-Charge must record and communicate to the new Operator-in-Charge any outstanding permits or known work being done and abnormal system conditions at the time of the transfer.

806 Record Keeping

1. For Worker-Administered Switching only, all switching orders and tags used as switching orders must be forwarded to the appropriate Operator-in-Charge as soon as possible.
2. The Operator-in-Charge must maintain the following records for a minimum of three years:
 - Transfers of authority;

- All switching orders used to issue permits, including tags used as switching orders;
- Documentation of any investigations regarding tagging or unauthorized operation of power system devices or apparatus; and
- Log books documenting:
 - All permit information including reference numbers;
 - All Condition Guarantee information;
 - Operator-Administered switching;
 - Worker-Administered switching; and
 - Unscheduled transfers of authority.

SECTION 900: SPECIAL SITUATIONS

901 Emergency Situations

In an emergency, (a present or imminent event that requires prompt coordination of action to protect the health, safety or welfare of people or to limit damage to property and/or the environment), an employee may take action to remove apparatus from service without prior authorization.

- **Always protect yourself.**
- **NEVER put yourself in imminent danger or do anything of which you are in doubt – call for help.**

After emergency action has been taken, the operation and the reason for the action must be reported to the appropriate Operator-in-Charge as soon as possible.

The Operator-in-Charge will review the action and take the necessary steps to restore the power system.

902 Inadvertent Operation of Apparatus

If an employee inadvertently operates any component of the power system, the employee must NOT attempt to correct the error, but immediately notify the Operator-in-Charge.

The Operator-in-Charge will review the inadvertent operation and take the necessary steps to restore the power system, as applicable.

All employees must realize the potential results of their actions – all incidents must be reported and investigated.

APPENDIX A – Operating Interface Points

	Transmission	Distribution	Generation	Customer	Other Utility
Transmission	Not Applicable.	Any distribution system apparatus downstream from the apparatus shown on the transmission substation switching diagram.	As agreed to by the Operating Authorities and clearly defined on transmission substation switching diagrams. Where there is a direct interconnection, a Joint Operating Procedure must be established (see Section 700).	As agreed to by the Operating Authorities and clearly defined on associated customer and company switching diagrams. Where there is a direct interconnection, a Joint Operating Procedure must be established (see Section 700).	As agreed to by the Operating Authorities and clearly defined on associated utility, company and transmission switching diagrams. Where there is a direct interconnection, a Joint Operating Procedure must be established (see Section 700).
Distribution	Any distribution system apparatus downstream from the apparatus shown on the transmission substation switching diagram.	Not Applicable.	Located on the distribution system apparatus electrically closest to the unit breaker, unit transformer or station auxiliary transformer.	As agreed to by the Operating Authorities and clearly defined on associated customer and company switching diagrams and/or distribution switching maps. Where there is a direct interconnection, a Joint Operating Procedure must be established (see Section 700).	As agreed to by the Operating Authorities and clearly defined on associated utility, company and distribution switching diagrams.
Generation	As agreed to by the Operating Authorities and clearly defined on transmission substation switching diagrams. Where there is a direct interconnection, a Joint	Located on the distribution system apparatus electrically closest to the unit breaker, unit transformer or station auxiliary transformer.	Not Applicable.	Not Applicable.	Not Applicable.

ATCO ELECTRIC POWER SYSTEM WORK STANDARDS

	Operating Procedure must be established (see Section 700).				
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APPENDIX C – Do Not Operate Tag

ATCO Electric

DO NOT OPERATE TAG

DANGER

DO NOT REMOVE THIS TAG

CAUTION

MEN AT WORK

DO NOT OPERATE

SEE OTHER SIDE

ATCO Electric

DO NOT OPERATE TAG

LINE / TAP / CIRCUIT / EQUIPMENT _____

SWITCH NO. OR
JUMPER LOCATION _____

REASON FOR
ISOLATION/CONDITION _____

SWITCH STEP # () _____

SWITCH STEP # () _____

SWITCH STEP # () _____

SWITCH STEP # () _____

REQUESTED BY:
(Permit Holder) _____

OPENED / CHECKED BY:
(Switchman) _____

DATE: YYYY/MM/DD _____ TIME: 2400 HRS _____

CLOSED / CHECKED BY:
(Switchman) _____

DATE: YYYY/MM/DD _____ TIME: 2400 HRS _____

REFERENCE NUMBER _____

0205-0336-0499 REPROGRAPHICS