



**ISOLATED OPERATIONS
LOCK OUT/TAG OUT
(LO/TO) WORK STANDARD**

© Copyright 2009

All rights reserved.



ISOLATED OPERATIONS LOCK OUT/TAG OUT (LO/TO) WORK STANDARD

© Copyright 2009

All rights reserved.

Reproduction of this document in whole or in part by any means is prohibited, unless authorized in writing by:

ATCO Electric Ltd.
Transmission Maintenance & Isolated Operations Manager
10035 - 105th Street
Edmonton, Alberta Canada T5J 2V6
Phone: (780) 420-7180
Fax: (780) 420-5410

TABLE OF CONTENTS

TABLE OF CONTENTS	1
SECTION 100: HOW TO USE THIS DOCUMENT	1
101 Purpose.....	1
A. Limitations	1
102 Scope.....	2
103 Installation Design Requirement.....	2
104 Document Compliance.....	2
105 Definitions.....	3
SECTION 200: RESPONSIBILITIES	9
201 Operating Authority	9
202 IGS Operator.....	9
203 Employee-in-Charge	10
204 Permit Holder.....	11
205 Workers.....	12
SECTION 300: PREPARING TO ESTABLISH REQUIRED CONDITIONS.....	13
301 Process	13
302 Determining Required Conditions	14
303 Condition and Permit Requirements	14
304 Notification and Permission Requirements.....	16
305 Permission to Establish Required Conditions	18
306 Isolation Diagrams	19
307 Isolation Orders.....	20

SECTION 400: ESTABLISHING REQUIRED CONDITIONS.....	23
401 Conducting an IGS Risk Assessment	23
402 Isolating	24
403 Isolating Devices	28
404 Tagging.....	29
405 Issuing and Holding Permits and Isolations	30
A. General Requirements	30
B. Transfer of Isolation and Work Permits	32
C. Expanding or Contracting Work Permit and Isolation Safe Work Area	33
406 Return to Normal	34
SECTION 500: PERMITS AND ISOLATIONS	35
501 Work Permits.....	35
502 Isolations.....	37
A. Restrictions and Requirements	37
B. Issuing an Isolation.....	38
C. Releasing an Isolation.....	38
D. Test and Operate (T&O).....	38
E. Conditional Release of Isolation Points.....	39
F. Work on Distribution Facilities.....	41
SECTION 600: ATTACHING AND DETACHING FACILITIES	43
601 Preventing Inadvertent Attachment	43
602 Attachment/Detachment Procedure	44
603 Attachment in Stages	44
SECTION 700: OPERATING INTERFACE POINTS.....	47
701 Location of Operating Interface Points.....	47
702 Joint Operating Procedures/Agreements	47
703 Operator-in-Charge/IGS Operator Interface Procedures	48
SECTION 800: PROCEDURAL TOOLS.....	49
801 Isolation Diagrams.....	49
802 Work Permit and Isolation Requests	50
803 IGS Work Permit and Isolation Forms	51
804 “Do Not Operate” Tags	52
805 Transfer of Authority.....	52
806 Record Keeping	53
SECTION 900: SPECIAL SITUATIONS	55
901 Emergency Situations	55
902 Inadvertent Operation of Apparatus	55

APPENDIX 59

Appendices

Appendix A: Work Access Request form A-57

Appendix B: Work Permit form A-58 – A-59

Appendix C: Isolation form..... A-60 – A-61

Appendix B: Do Not Operate Tag A-62



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

SECTION 100: HOW TO USE THIS DOCUMENT

101 Purpose

The Isolated Operations Lock Out / Tag Out (LO/TO) Work Standard provides ATCO Electric employees and contractors with standards for establishing the required conditions to control the potentially hazardous energy associated with machines, equipment and processes. These, when combined with appropriate work standards, procedures and methods, will provide a safe work area.

Before starting any work in an Isolated Generation Station (IGS), workers must obtain a Work Permit from the IGS Operator for that facility.

No Work Permit, no work.

A. Limitations

It is important to note that this document provides a process for establishing required conditions only. In addition to obtaining Work Permits, workers must ensure equipment Isolation and implement barriers to protect against all other hazards identified in the job planning process.

102 Scope

The Isolated Operations LO/TO Work Standard applies to:

- a. activities such as, but not limited to: erecting; installing; constructing; repairing; adjusting; inspecting; cleaning; operating and maintaining machines, equipment and processes; and
- b. energy sources such as, but not limited to: electrical, mechanical; hydraulic; pneumatic; chemical; radiation; thermal; compressed air; energy stored in springs and potential energy from suspended parts (gravity).

Note: The Isolated Operations LO/TO Work Standard applies to all IGS facilities up to operating interface points identified on the Operating SLD beyond which the Distribution Operator in Charge (OIC) Power System Work Standard (PSWS) and/or Industrial Area customer procedures apply.

103 Installation Design Requirement

Whenever replacement or major repair, renovation or modification of a machine, a piece of equipment or a process is performed, and whenever new machines, equipment or processes are installed, energy-isolating devices must be designed to accept a lockout device that will positively secure them in the isolated position.

104 Document Compliance

The Isolated Operations LO/TO Work Standard complies with the following:

- Canadian Standards Association Z460-05 (Control of Hazardous Energy - Lockout and Other Methods)

- Occupational Health & Safety Act, Regulation and Code
- ATCO Electric Corporate Health, Safety and Environment Principles and Policies
- Power System Work Standard, with respect to operating interfaces
- ATCO Electric HSE Management System and Best Practices
- ATCO Electric HSE Safety Standards Manual

105 Definitions

Competent – Adequately qualified, suitably trained and with sufficient experience to safely perform work without supervision or with minimal supervision as determined by their supervisor.

Condition Guarantee –A Power System Work Standard (PSWS) used to establish a safe work area between Power System operating authorities. It is formal declaration that a device is in a specific state, tagged as such and is guaranteed not to be operated until the Condition Guarantee is released. A Condition Guarantee between the IGS Operator and Distribution OIC is required to achieve IGS Isolation from the distribution system. A Condition Guarantee is not an IGS Work Permit or Isolation.

Conditional Release – Is a temporary release of an Isolation point within an Isolation to allow for change of state and testing.

Device – A type of apparatus that can be used as an isolation point or control mechanism.

Disable – To make a device inoperable.

“Do Not Operate” Tag – See Appendix D.

Employee-in-Charge (EIC) – The individual responsible for all workers in a work group or groups working on or

near the same or related facilities. When working alone, a worker is considered the Employee-in-Charge.

EIC Administered LO/TO – A Lock Out administered by an EIC who has permission from the IGS Operator to establish conditions required for a safe work area in an IGS using either Worker or Group LO/TO.

Enable – To make a device operable.

Group Lock Out /Tag Out (LO/TO) - A method of isolating, locking and tagging a device; documenting the isolation sequence, isolation points, worker names and locks; and securing the keys to the isolation point locks within a uniquely numbered lock box.

Hold Off Permit – A PSWS standard used to prevent automatic or manual restoration following an unplanned circuit (line) outage on a power system. This permit is requested by the Distribution Operator in Charge. To establish conditions to issue a Hold Off Permit, the Distribution OIC may require IGS breaker re-closing disabled, Plant automation placed in manual, N.O. tie switches confirmed open and tagged; and breaker (local and remote controls) tagged “Do not Operate” until released by the interfacing OIC.

Isolate – To securely disconnect a machine, piece of equipment or process from known sources of potential and tag all disconnecting devices “Do Not Operate”.

Isolated Generation Station (IGS) – The generation apparatus operated by ATCO Electric and used to supply customers directly, Transmission substation and telecom facilities, or to supply distribution isolated systems.

IGS Operator – The employee assigned overall responsibility for the day-to-day operation of the IGS facility, including: overseeing the operation of the plant; ensuring Employee-in-Charge responsibility is assigned and issuing Work Permits and Isolations as appropriate for all work on the IGS machines, equipment or processes.

Isolation – The process and documentation authorized under a Work Permit that:

- a. describes the specific switching sequence, procedures and tags required to Isolate a machine, equipment or process; and
- b. records issue, receipt, and release of isolation points by the IGS Operator and EIC as identified for Lock Out to create a safe work environment under the Work Permit.

An example of an Isolation form is in Appendix C.

Isolation Diagram – An approved drawing which accurately details the energy-isolating devices relevant to the machine, equipment or process contained within that system.

Isolation Order – That part of an Isolation detailing switching sequence and procedures to be followed to place a machine, equipment or process into a desired state including the Isolation of the specific machine, equipment process, or part thereof.

Job Safety Plans – Job planning requirements are as per SSM 202 for daily and large capital or O&M project job safety plans. IGS Work Permits (see Appendix B) document job plans based on EIC/worker discussions during initial work request and is updated to reflect any changes prior to permit issue. Daily tailboards may be recorded on a Work Permit form, or other approved form, and shall document all required information, and be attached to the Work Permit. Large projects shall use approved job planning forms and be attached to the Work Permit.

Locked Out, or Capable of Being Locked Out – The state of an energy-isolating device equipped with a hasp or other means of attachment to which or through which a lock is, or can be affixed, or that has a built-in locking mechanism. Other energy-isolating devices are also considered capable of being locked out if lockout can be achieved without the need to dismantle, rebuild or replace

the energy-isolating device or permanently alter its energy control capability.

Operating Interface Point – A PSWS standard that identifies a location on the Power System used to separate operational responsibilities between Operators-in-Charge (OIC). IGS/Distribution Operating Interface Points are identified on a SLD.

Operator Administered LO/TO – A Group LO/TO administered by the IGS Operator.

Operator-in-Charge (OIC) – As per the Alberta Electrical Utility Code and PSWS, the Operator-in-Charge is the employee designated by the Operating Authority to coordinate control of a Power System >750v or a portion thereof, in accordance with the requirements of established safety standards and operating standards and procedures. For Distribution the OIC is the Superintendent Distribution Control Center (DCC) or designee. The DCC or designee (area Team Lead – Service) is the Interfacing Distribution Operating Authority for IGS Operators.

Permit Holder – The Competent worker to whom a Work Permit has been issued.

Potential – Stored energy: electrical; mechanical; hydraulic; pneumatic; chemical; radiant; thermal; compressed air; energy stored in springs and potential energy from suspended parts (gravity).

Power System – Transmission and Distribution facilities >750v as per the Alberta Electrical and Communication Utility Codes and PSWS.

Power System Work Standard (PSWS) – The work standards document governing planning and execution of work on Transmission and Distribution facilities >750v.

Release – The surrender/sign off of a permit by a worker or EIC recorded on applicable forms.

Return to Normal – Restoration of the machine, equipment or process to a normal operating state following a Work Permit or Isolation.

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

Transfer of Operating Authority – Formal transfer of duties and responsibilities from one IGS Operator to another as recorded in log books.

Transfer of IGS Work Permit/Isolation – Formal transfer of obligations with respect to a Work Permit or Isolation from one EIC to another, recorded on the applicable form.

Work Permit – Formal document that defines and provides permission to work under established IGS conditions as issued by the IGS Operator. An example of a Work Permit is in Appendix B.

Worker Administered LO/TO – A method of isolating, locking out and tagging isolating devices associated with a machine, equipment or process performed by an EIC and/or worker using personal locks having received permission from the IGS Operator to establish the conditions required for a safe work area using this method.

SECTION 200: RESPONSIBILITIES

201 Operating Authority

The Operating Authority has overall responsibility for the operation of the Isolated Generating Stations and is responsible to make sure the IGS Operator function is assigned.

The IGS Operating Authority is the Manager,
Transmission Maintenance and Isolated Operations

202 IGS Operator

The **IGS Operator** has overall responsibility for all generating plant apparatus owned by ATCO Electric used to provide power generation to isolated distribution, telecom, substation and customer systems.

The IGS Operator is the Isolated Operations
Superintendent or designee.

The IGS Operator is responsible to:

- Coordinate the day-to-day operation of the plant, as applicable, in compliance with approved standards and procedures;
- Make sure the Employee-in-Charge responsibility is assigned prior to issuance of isolation instructions or permits (Note: The Employee-in-Charge function may be the IGS Operator or someone assigned to perform a specific task involving two or more workers within the plant);
- Issue Work Permits and Operator Administered Isolation for all work on the IGS machines, equipment or processes, including Group LO/TO and the attachment and detachment of facilities;
- Give the Employee-in-Charge permission to perform Worker LO/TO to establish required conditions, after having assessed the risks; and
- Formally transfer IGS Operator responsibility if duties can no longer be met.
- Maintain operational documentation for a minimum of three years, including but not limited to: Work Permits; Isolation Orders; tags used as isolation orders; transfers of authority; documentation of any investigations regarding tagging or unauthorized operation of IGS devices or apparatus and log books.

IGS Operator day to day operational responsibility is designated through area Plants Supervisors as follows:

- For Northern Operations generation sites, the IGS Operator is the local area Maintenance Technician scheduled on standby;
- For the Jasper plants, the IGS Operator is normally the Palisades scheduled “on shift” operator;

203 Employee-in-Charge

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

- Request a Work Permit for all work on IGS sites;
- With permission, establish Worker or Group LO/TO self-protection conditions that will, when combined with appropriate work standards, procedures and methods, provide a safe work area; and
- Maintain responsibility for all workers in a work group working on the same or related IGS machines, equipment or processes.
- These responsibilities are to be based on task assignment from their supervisor and acknowledgement of their Employee-in-Charge status by the IGS Operator during Job Plan and Work Permit activities.

204 Permit Holder

The **permit holder (the Employee-in-Charge)** is responsible to:

- Request and hold the Work Permits and required Isolation that will, when combined with appropriate work standards, procedures and methods, provide a safe work area;
- Notify the IGS Operator prior to starting work each day to receive or confirm permission to work;
- Provide permission to all workers and work groups under their direction to work under the permits held;
- Stop work and promptly notify the IGS Operator of any unscheduled occurrence or incident related to the IGS that may affect:
 - Worker safety;
 - IGS operation; or
 - Continuity of customer supply.

Transfer any Work Permit and/or Isolation to another competent individual if that EIC is unable to remain on site while work is in progress. If another competent worker is not available on site then work must be halted and any permits using Worker LO/TO must be released until the EIC/Worker can return to site.

Release all permits to the IGS Operator when the work is completed.

205 Workers

Workers are responsible to:

- Comply with all applicable regulatory and work standards including the Isolated Operations Lock Out/Tag Out (LO/TO) Work Standard document.

SECTION 300: PREPARING TO ESTABLISH REQUIRED CONDITIONS

301 Process

In preparing to establish the required conditions to repair, renovate or modify a machine, a piece of equipment or a process, and whenever new machines, equipment or processes are installed, workers must complete the following five steps, as applicable:

1. Determine the IGS conditions required to complete the work.
2. Request a Work Permit from the appropriate IGS Operator to establish those conditions. Refer to IGS Work Access Request form Appendix A.
3. Receive a Work Permit providing for either IGSO administered Group LO/TO or permission for the EIC to establish required conditions through Isolation using either Group or Worker LO/TO protection.
4. Obtain current and relevant Isolation Diagrams of the machine, equipment or process.

5. Obtain or develop isolation procedures and job plans, as applicable.

302 Determining Required Conditions

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

If the requirement is to work on an IGS site, then a Work Permit is required under the Isolated Operations LO/TO Work Standard.

If the requirement is to establish isolation from stored energy including electrical, mechanical, hydraulic, pneumatic, chemical, radiation, thermal or compressed air energy sources; energy stored in springs and potential energy from suspended parts (gravity), then an Isolation is required under the Isolated Operations LO/TO Work Standard.

If the requirement to work at an IGS involves Isolation from both sides of the interface point, then a Condition Guarantee is required by the operating authority under which jurisdiction the work is to be done from the interfacing Operating Authority. An EIC would be granted a either Guarantee of Isolation for work on distribution facilities or an IGS Isolation for work in IGS facilities depending on which jurisdiction was coordinating the establishment of required conditions. The standards of both the Isolated Operations LO/TO Work Standard and PSWS must be met.

303 Condition and Permit Requirements

A. Isolation from all potential energy sources:

- Requires either Operator Administered or EIC Administered Group LO/TO, or Worker LO/TO isolation.
- Isolation from Distribution System interface points requires a Condition Guarantee issued by the Distribution OIC to the person in charge of the IGS work/process (i.e., the IGS Operator or

the Employee-in-Charge), as applicable, to further isolate IGS facilities as required

- Isolation from Customer, Substation or Telecom sites requires an Isolation from the interfacing facility consistent with the Isolated Operations LO/TO Work Standard
- For jobs involving both sides of an interface point, job safety planning and the jurisdiction the work is to be completed in will determine which Operating Authority is responsible to issue EIC/Workers permission to work.

Allows work on the isolated machine, equipment, or process.

B. Intermittent operation of apparatus or work on auxiliary apparatus that directly impacts the operation of the IGS:

Requires a Work Permit and Isolation to test operate apparatus. See Section 502.

- May require Group LO/TO or Worker LO/TO isolation and a Conditional Release of an isolation point(s) by other workers.

Allows apparatus to be safely operated so that adjustments, repairs or maintenance tests can be performed.

Ensures IGS operation, customer supply and other permits are not compromised by work on machines, equipment or processes.

C. Attach or detach facilities may require:

- Isolation under Group or Worker LO/TO; or
- Condition Guarantee for IGS facilities directly connected with facilities under Distribution OIC jurisdiction.

D. Switching to establish a required condition between IGS Operator and an Operator-in-Charge:

Requires a Condition Guarantee from Distribution OIC if work is on the IGS side of an Operating Interface Point (i.e., formal assurance to the IGS Operator that identified

Distribution devices are in the position requested and will not change status until the Condition Guarantee is released).

- Requires a Condition Guarantee or, depending on work plans, a Safety Hold Off from the IGSO to the Distribution OIC if work is on the Distribution side of an Operating Interface Point (i.e. formal assurance to the Distribution OIC that the identified IGS devices are in the position requested and will not change status until the Isolation is released.


A Condition Guarantee is not permission to work.

304 Notification and Permission Requirements

A. IGS Entry

1. Prior to entering or departing an IGS, the Employee-in-Charge must notify the IGS Operator in the case of manned sites or the System Control Centre in the case of unmanned sites. For access to Astoria, the Palisades operation control center must be contacted. The following information must be provided:
 - The first and last name of the Employee-in-Charge;
 - The IGS 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).
2. If an entry alarm is received from a remotely-monitored IGS without a confirming call, the IGS Operator, or SCC designee must:
 - Call the IGS.

- If no one answers, contact local employees to investigate; and
 - Request police assistance, as required.
3. If the Employee-in-Charge fails to report back after completing the work, the IGS Operator or SCC designee must initiate an investigation.

 Safety Standards Manual, Section 201: Check-In Procedures

B. Work in the IGS

No work is allowed in an IGS without a Work Permit from the IGS Operator for that facility.

1. A Work Permit must be requested from the IGS Operator, preferably in writing and at least three working days in advance.
2. The IGS Operator will review the request with the worker to identify concerns, clarify requirements and conduct a preliminary risk assessment (Section 401).
3. The IGS Operator will advise the worker as soon as possible whether the permit can be issued as requested.
4. The IGS Operator can issue an Isolation under Group LO/TO but cannot receive an Isolation issued by himself/herself under an Operator Administered Group LO/TO.
5. An EIC coordinating a Group LO/TO can issue an Isolation to other EIC's and workers under the Group LO/TO providing permission is received to do so from the IGSO under a Work Permit.
6. If the EIC is to perform work under an Isolation issued by him/her, he/she will also sign on the Isolation as an Isolation holder and sign off prior to returning to normal.
7. An IGS Operator working alone is considered an EIC/Worker and must use EIC

administered Group LO/TO or Worker LO/TO methods.

305 Permission to Establish Required Conditions

After considering IGS operation, customer supply and current permits, the IGS Operator provides permission to establish the required conditions through issue of a Work Permit and Isolation using either Group LO/TO or Worker LO/TO protection, if required, prior to start of work.

A. Group LO/TO

Refers to an Isolation developed and directed by the IGS Operator, or an EIC with permission from the IGS Operator, under an associated Work Permit using Group LO/TO methods. Upon completion of the Isolation Order the IGS Operator or EIC, if permitted, issues an Isolation to the worker(s) who has requested the operation in order to establish a safe work area. The Isolation establishes an agreement between the IGS Operator and the Permit Holder that the system is configured to provide the protection requested.

B. Worker LO/TO

Under Worker LO/TO, the IGS Operator gives permission under a Work Permit to an Employee-in-Charge to establish his/her own protection and protection for the workers under their direction. Each worker must apply their own lock prior to working under Worker LO/TO. No Isolation is issued.

Worker LO/TO is applicable where a single device or multiple devices in a small area can easily establish protection and the risk to the IGS is minimal, provided the following conditions are met:

- All devices are under the authority of the IGS Operator.
- There is only one Employee-in-Charge of the work.

- The work is limited to one calendar day or shift.
- If an EIC/ worker must leave site prior to completion of the required work the Worker LO/TO must be returned to normal and the Work Permit and any applicable Isolations released or transferred to another competent worker/EIC (see Section 405 A and B).
- Other than identical isolations, no overlapping Worker LO/TO Isolations are permitted using the same isolation points. In such cases, Group LO/TO is required.

The following rules apply to the administration of Worker LO/TO:

- An Employee-in-Charge wanting to establish his/her own protection under Worker LO/TO must obtain a Work Permit from the IGS Operator.
- The IGS Operator will not “pre-approve” the IGS Isolation Order.
- The Employee-in-Charge must do the risk assessment of the work.
- The Employee-in-Charge must write up the IGS Isolation Order and tags.
- The Employee-in-Charge must use his/her own unique identifier and log in the station log book.
- The Isolation Order must be reviewed by a second competent worker, if more than one worker is involved with the work.
- The Employee-in-Charge must advise the IGS Operator when the work is completed and release their Work Permit.

306 Isolation Diagrams

Before performing any isolation, the worker must have in his/her possession valid, approved Isolation Diagrams that

accurately detail the energy-isolating devices relevant to the machine, equipment or process contained within that system. This may include but is not limited to the following:

- Manually operated electrical circuit breaker
- Disconnect switch
- Manually operated switch by which the conductors of a circuit can be disconnected from all ungrounded supply conductors and no pole can be operated independently
- Line valve
- Block
- Blank
- Any similar device used to block or isolate energy

307 Isolation Orders

A. Group LO/TO Isolation

1. The IGS Operator, or EIC if permitted, will not Isolate or direct any switching without a written Isolation Order, with the following exceptions:
 - An Isolation Order is not required in an emergency situation. See Section 901.
 - In troubleshooting situations, the IGS Operator must document in the IGS log book or Isolation Order each isolation step prior to taking that action. All troubleshooting actions must be transferred to an Isolation Order and a second approval obtained before an Isolation is issued.
2. For Operator Administered Isolations using a competent third party EIC or worker to perform the isolation steps, the EIC or worker must obtain the Isolation Order from the IGS Operator before performing the isolation, and verify the isolation instructions against the isolation diagram.

B. Worker LO/TO Isolation

1. The worker performing the isolation must:
 - Prepare a Isolation Order;
 - If more than one worker is involved with the work, have the isolation order reviewed by another competent worker before proceeding;
 - Be oriented to the facility and become familiar with the task at hand;
 - Document the time of operation of the isolating devices on the Isolation order; and
2. When Worker LO/TO is used, a “Do Not Operate” tag may be used as the Isolation Order for single point isolations. Single point Isolation still requires a lock.

SECTION 400: ESTABLISHING REQUIRED CONDITIONS

401 Conducting an IGS Risk Assessment

To minimize any hazardous situations or adverse effects to the IGS, the IGS Operator must conduct a thorough risk assessment in conjunction with the Employee-in-Charge. The risk assessment, contingency mitigation, and recovery plans shall be recorded on the Work Permit and include a review of the following, as applicable:

- IGS voltages, frequency and power flows;
- Status of generating units on line and available as spinning reserve;
- Status of loads;
- Apparatus and system capabilities;
- Conflicting scheduled outages (concurrent work permits and concurrent Isolations);
- Probability and effect of reasonably expected IGS, distribution, or work caused contingency events.
- Actions required to mitigate contingency effects and recover from contingencies;

402 Isolating

A. Communicating During IGS Isolation:

1. The IGS Operator, or EIC if permitted, must communicate isolation instructions directly with any competent worker performing an isolation. In the case of Worker LO/TO, this is not applicable; however, the IGS Operator will have already given permission to proceed with Worker LO/TO isolation.
2. Unless the communication is face-to-face, all parties must use full name identification and repeat back practices when relaying isolation instructions.
3. Unless face to face, verbal communications must be:
 - Repeated back by the receiving party as heard; and
 - Verified against the isolation order.

B. General Lockout Principles

1. All workers must comply with the provisions of the Isolated Operations Lock Out/Tag Out (LO/TO) Work Standard. IGS Operators and Employees-in-Charge must enforce the use of personal locks and tags to ensure the protection of all workers required to perform tasks where they may be exposed to unexpected energy release. Each lock must have a unique mark or label that identifies the worker to whom the lock is assigned.
2. Station locks and tags must be standardized throughout the facility and be recognized as the only authorized method of locking out hazardous energy sources for Group LO/TO. Station locks and tags used as part of the lockout system must not be used for any purpose other than worker protection.

3. Personal locks and tags must be applied and removed by each worker exposed to the potential for unexpected energy release. The lock may be placed on a lock box under Group LO/TO (refer to Section 402D).
4. Where equipment is not lockable, special hazardous energy control procedures must be used; for example threading a cable through a valve or placing a cover over a breaker to prevent access.
5. When locks are used in the lockout application, they must be accompanied by Do Not Operate tags.
6. Energy-isolating devices must be clearly labeled or identified to indicate their function. The identifiers must match those used in the device procedures. Such identification is necessary to reduce possible errors in applying the lockout.
7. The lockout of electrical energy sources must occur at the circuit disconnect switch or in line fuses.

C. General LO/TO Isolation Procedures

1. When directing a Group LO/TO using a designee to perform isolation steps, the IGSO or EIC administering the group LO/TO must have a tailboard discussion with the worker performing the steps immediately before any isolating, to review the Isolation Order and make sure that it is complete, correctly sequenced, understood, and that all related hazards are identified.
2. The worker performing the isolation is required to check machinery, equipment and processes and report any adverse conditions that could influence the isolation to the IGS Operator.

3. The step-by-step switching instructions must be followed in sequential order as provided on the isolation order. If anyone identifies inconsistencies or concerns about the isolation instructions at any time, the isolation must be stopped and cannot proceed until their concerns are addressed.
4. The worker performing the isolation must have the isolation order in his/her possession when performing the isolation and record the time each isolation step or sequence, as applicable, is successfully completed.
5. Whenever isolating devices are being operated, the worker performing the isolation must advise other workers onsite; in certain circumstances, they may be required to stay clear.
6. No work shall be performed until the equipment has come to a complete stop, and a worker has:
 - locked-out or rendered the equipment inoperative;
 - tagged all energy isolating devices;
 - discharged any stored energy (drains opened, springs discharged, etc.); and
 - a start or bump test is performed as a final check of apparatus Isolation.

If Worker LO/TO is used the number of locks on an isolating device equals the number of workers.

D. Group LO/TO Isolation Procedures

In Group LO/TO, the **IGS Operator or EIC administering the Group LO/TO** shall:

1. List all isolation points covered by the Group Lock-Out on an Isolation form.

2. Place the key from each isolation device lock in a uniquely numbered lock box, apply an IGS Operator or EIC lock to the lock box and note the lock and lock box # on the Isolation Permit.
3. Retain the Isolation form on site.
4. Issue the Isolation to the EIC or, if EIC administered Group LO/TO, sign on to the Isolation as the Isolation holder.
5. Have all workers sign on to the Isolation under the Group LO/TO, as appropriate, and have each worker place his/her personal lock on the identified lock box and ensuring the lock/key identifier number is recorded on the applicable Isolation form. Individually keyed locks must be used by workers securing Isolation protection under a Group LO/TO.

The worker shall:

1. Ensure the isolation provided is adequate for the scope of work to be performed.
2. Sign on the tailboard/job plan and isolation under the Group LO/TO.
3. Place an individually keyed personal lock(s) on each Isolation lock box(s) and record lock number on applicable isolation prior to beginning work each day.
4. Sign off Isolation and remove personal lock when work is completed at the end of each work day as required by the job plan or as directed by the EIC, in the event that the IGSO is not available at the site.

If Group LO/TO is used the number of locks on the lock box equals the number of workers plus the lock of the EIC or IGSO administering the Group LO/TO.

403 Isolating Devices

1. All isolating devices must be designed with a hasp, multi-hasps or other means of attachment, to which or through which a lock can be affixed; or have a built-in locking mechanism. Other energy-isolating devices are also considered capable of being locked out, if lockout can be achieved without the need to dismantle, rebuild or replace the energy-isolating device or permanently alter its energy control capability.
2. All isolating devices must be tagged and locked before a Isolation is issued.
3. When isolating a portion of the system where a Potential Transformer (PT) or station service is permanently connected, the PT or station service must also be isolated using the secondary or primary disconnects unless confirmed to have no source of back feed.
4. 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.
 - Application of specially designed ground trucks used as working grounds in metal clad switchgear and applied to discharge electrical equipment must be identified on the Isolation and tagged "Do Not Operate".
5. When isolating molded case breakers, lockout must be achieved by using a sliding bar across the breaker handle or by another positive barrier providing equal or greater protection acceptable to the IGS Operator.
6. Valves used to isolate equipment shall be locked closed and tagged.

7. Valves used to depressurize or drain equipment must be tagged Do Not Operate and documented on the Isolation form. If required, work can be carried out on the valve or vent (i.e., re-packing valves, etc.), while ensuring it remains in the required position.
8. Fire protection systems have specific standards and insurance considerations. Please refer to the Safety Standards Manual for proper isolation application.

 Safety Standards Manual, section 1304

404 Tagging

Workers must understand and utilize the following tagging procedures:

1. To prevent unauthorized operation of devices, standard ATCO Electric "Do Not Operate" tags must be installed as directed by the IGS Operator, or EIC if permitted, and, in the case of Worker LO/TO, as directed by the worker performing the isolation. See Section 804 for instructions on completing the tag.
2. Each isolation point identified on an Isolation must have a corresponding tag.
3. Only a Competent worker may install or supervise the installation of tags for the IGS Operator.
4. Tags must be installed on the same side as the isolation device identification number and be as close as possible to the isolation device.
5. Tags may be removed only on the direction of the IGS Operator, EIC if permitted or, in the case of Worker LO/TO, by the worker who installed the tags.
6. The IGS Operator must be notified if:

- A tag affixed to any device or apparatus appears to be unsupported by a permit; or
- A worker suspects a device has been operated unsupported by a tag or permit.

The IGS Operator will initiate an investigation and take appropriate action (e.g., direct removal of the tag, direct tagging and issue a permit or put the device back into service, as applicable).

405 Issuing and Holding Permits and Isolations

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

A. General Requirements

If work on an IGS site is required, then a Work Permit from the IGS Operator is needed prior to starting work, Issue of a Work Permit constitutes permission to work under agreed to conditions as documented in the permit.

If a Work Permit requires isolation of apparatus to create a safe work environment an Isolation is required. An Isolation documents the sequence of switching, isolating, and tagging necessary to create the desired isolation; and to record issue, receipt and release of EIC/workers.

The Isolation is the worker's assurance that the machine, equipment or process conditions defined will not change until released. This assurance depends on strict adherence to the following requirements:

1. A tailboard discussion must be held between the IGS Operator and Isolation/Permit Holder prior to:
 - Issuing a Work Permit, to verify the required conditions, undertake hazard and risk assessments;
 - Issue of an Isolation to verify the required conditions have been established through the Isolation Order; and

- Releasing an Isolation or Work Permit, to confirm the established conditions can be returned to normal.
2. In all situations where Isolation is required to establish the required conditions, the Permit and Isolation holder(s) and IGSO must have access to a current copy of the isolation diagram and discuss all isolation points before the Work Permit is issued.

If the written Isolation is not available on site, the IGS Operator will verbally provide the portion which contains the Isolation Order to the Isolation holder who must:

- Record the Isolation Order exactly as stated; and
 - Repeat the Isolation Order back to the IGS Operator.
3. Unless face to face, all parties must use full name identification and repeat-back procedures whenever issuing, receiving or releasing Work Permits and Isolations.
 4. All isolation and tagging on the Isolation Order required to provide the safe work area must be completed before the associated Isolation is issued.
 5. All Work Permits and Isolations must be assigned a unique number.
 6. An Employee-in-Charge may accept a Work Permit or Isolation only for work group(s) under his/her direction.
 7. If an EIC or worker must leave site while work is in progress the related Group or Worker LO/TO Isolation and related Work Permit must be released. If it is not safe or practical to release the Isolation and Permit to return the IGS facility to normal then following appropriate review and revision of work plans the Isolation and Work Permit must be
 - Transferred to another competent EIC;
 - If another competent EIC or Worker is not on site, work must be halted and any Isolations and Work Permits released to the IGS Operator under the condition it remain isolated until the EIC returns to

- complete the work or the Isolation and Work Permit is transferred to another EIC; or
 - If Worker LO/TO, another Worker LO/TO applied by a competent Worker prior to the initial EIC or worker removing personal locks, tags and leaving site. See Section 405B.
8. If an EIC must leave site at the end of each day of work on a multiple day job then all work must be halted prior to the EIC leaving site and must not commence the following day until the EIC is on site and tailboard job plans are completed for that day of work.
 9. Isolations and Work Permits must be released when no longer required.
 - If they are not released and the holder(s) cannot be contacted, the IGS Operator must contact the permit holder's immediate supervisor. The supervisor, if unable to locate the permit holder, may release the permits so long as all affected workers are notified that the isolation is released and they are no longer able to work under the isolation.
 10. During critical situations, permits/Isolations must be released as soon as practicable at the request of the IGS Operator.

B. Transfer of Isolation and Work Permits

If an EIC or Worker must leave a site before the work is completed, established conditions can be transferred to another EIC or worker. If a new Work Permit or Isolation can be maintained by the new Work Permit and Isolation is written, applied and issued to a new EIC or worker. The original Work Permit and Isolation can be released as follows.

1. The original Permit Holder must personally advise the IGS Operator and everyone working under the Work Permit and/or Isolation of the proposed change.
2. The new Work Permit and/or Isolation holder must review and confirm the established conditions with the IGS Operator.

3. The IGS Operator will, depending on revised job plan, transfer existing Work Permit and/or Isolation to the new EIC/worker or alternately issue a new Work Permit and/or Isolation before releasing the original permit.

Note: If a tag is used for Worker LO/TO isolation, the new worker must place their lock and tag on the device(s) before the original lock and tag is removed.

C. Expanding or Contracting Work Permit and Isolation Safe Work Area

If a safe work area as established under a Work Permit and Isolation has to be expanded or contracted from an existing permit, the IGS Operator must:

1. Confirm the Permit Holder has advised everyone working under the Work Permit or Isolation of proposed change to work plan.
2. Review and document changed Work Permit job requirements. IGS Operator and EIC initial changes on existing permit or issue and receive a revised Work Permit.
3. Review and document changed Isolation requirements through Conditional Release of points or altering or adding points to the Isolation.
4. In the case of a large number of changes, prepare a new Isolation (as identified in revised safe work plans, transfer the existing tags and reference numbers in the original Isolation Order to the new Isolation Order);
5. Direct the installation of tags on devices as needed to establish the new safe work area.
6. Check that all necessary devices have been identified and tagged to establish the required conditions for the safe work area on the new Isolation.
7. Guarantee added or altered points or issue the new Isolation to the EIC/worker as appropriate.
8. Direct the removal of tags that are no longer needed from the original Isolation as per any Conditional Release.

9. Close the original Isolation if required.
10. The EIC must undertake and document a tailboard job safety planning meeting to advising workers of changed conditions.

406 Return to Normal

1. When the work has been completed, the permit holder must inform the IGS Operator and:
 - In the case of Group LO/TO Isolation, follow procedures to release the Isolation and Work Permit(s). See sections 501 and 502, as applicable:
 - Confirm that all work is completed, workers and materials have been removed, protective guards reinstalled, temporary working grounds are removed and all devices within the isolation zone have been returned to required state (as found position unless specified otherwise by IGS Operator).
 - In the case of Worker LO/TO, remove all tags and document the time and date.
2. After all permits have been released, return to normal operating conditions may proceed.
3. Isolation orders are normally reversed to Return to Normal. Where a variance to reverse sequence is required the Isolation Order must detail the return to normal sequence.

SECTION 500: PERMITS AND ISOLATIONS

IGS Work Permits and Isolations provide ATCO Electric employees and contractors with reliable methods for assessing IGS work and establishing the required conditions to control the potentially hazardous energy associated with machines, equipment and processes. These, when combined with appropriate work standards, procedures and methods, will provide a safe work area.

In addition to obtaining a Work Permit and, when required, an Isolation, an EIC/worker must implement barriers to protect against all other hazards identified in the job planning process and, in the case of an EIC, maintain responsibility for all workers in a work group working on the same or related IGS machines, equipment or processes.

501 Work Permits

The **IGS Operator** is responsible for issuing Work Permits for all work on the machines, equipment or processes in their areas of responsibility, including the attachment and detachment of facilities.

Before starting any work in an IGS, an EIC/worker must obtain a Work Permit that identifies, defines and provides

permission to work under established conditions from the IGS Operator of that facility. An example of a Work Permit is in Appendix B.

The IGS Operator in consultation with the EIC/worker must undertake review of safe work plans and document on the Work Permit the hazards/management plans, IGS risk assessment, and fill in all applicable parts of the Work Permit form to complete the permit record prior to issue of the Work Permit.

The Work Permit provides assurance the IGS Operator has reviewed and assessed hazards, system security and made appropriate consideration and adjustments in establishing the identified conditions with the EIC/worker and authorizes the EIC or worker to undertake the identified activities.

If a Work Permit identifies requirements for an Isolation of IGS machines, equipment or processes to provide a safe work area, the IGS Operator must either initiate an Isolation when required by the job plan or give the EIC/Worker permission to perform Group or Worker LO/TO to establish required conditions.

The **EIC/Permit Holder** is responsible to:

- Request and hold the Work Permits and Isolations that will, when combined with appropriate work standards, procedures and methods, provide a safe work area;
- Establish permitted Group or Worker LO/TO protection conditions that, when combined with appropriate work standards, procedures and methods, will provide a safe work area;
- Notify the IGS Operator prior to starting work daily and receive or confirm permission to work;
- Provide permission to all workers and work groups under their direction to work under the permits held;

- Transfer any Work Permit to another competent individual if that they are unable to remain on site while work is completed (or release permit and isolations as identified in section 405B).
- Release all permits to the IGS Operator when the work is completed.

502 Isolations

The IGSO is responsible for issuing isolations that are not Worker LO/TO or EIC Administered Group LO/TO as identified in Work Permits. The Isolation guarantees the holder that:

- A machine, equipment, or process has been isolated from all known sources of potential, locked and tagged on all boundaries of isolation; and
- The operating state of the isolating devices will not change until the Isolation is released.

A. Restrictions and Requirements

1. An Isolation must be held by any Competent worker in accordance with their skills and knowledge.
2. Isolations will not use an isolating device that has an outstanding Work Permit and Isolation for Test and Operate issued on it.
3. Before Isolations are issued, locks and tags must be securely placed on all isolating devices.
4. Devices located within the isolation points of a Isolation and not tagged may be operated by the Isolation 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 required by the IGS Operator, as applicable.
5. When applied potential is being used to test apparatus within a zone of isolation, the Isolation

holder must inform the IGS Operator and everyone working under the Isolation during the tailboard job safety planning that such testing will be taking place and ensure the device to be tested has been physically disconnected from the system within the Isolation.

B. Issuing an Isolation

When all conditions have been met, the IGS Operator will issue the Isolation to the holder and document by signing the applicable parts of the Isolation form. If face to face communication is not possible, formal issuance using the words located on the permit must be used and recorded on the Isolation form.

C. Releasing an Isolation

1. Before releasing an Isolation, 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 required by the IGS Operator, as applicable;
 - Workers, material, temporary grounds and equipment are clear and guards replaced; and
 - Apparatus covered by the Isolation can be energized.
2. The Isolation is released to the IGS Operator and if face to face communication is not possible, formal release using the words on the permit must be used.

D. Test and Operate (T&O)

IGS machines, equipment or processes may be tested, energized, and/or placed in service providing appropriate precautions are taken to ensure planned testing does not cause unacceptable risk to workers, plant integrity, or IGS processes.

Issue of a Work Permit by the IGS Operator for test and operate of apparatus may or may not require an Isolation to create a safe work environment.

When Test and Operate is required the Work Permit will specify the conditions required identifying either a Group or Worker LO/TO Isolation be executed indicating T&O on the Isolation prior to any testing activities.

Isolations issued to Test & Operate Devices:

- Is **NOT** intended as a form of personal protection;
- Must only be held by a Competent worker in accordance with their skills and knowledge;
- Will only be issued on a single device at any time; and
- Will not be issued on any device defined as an isolation point for an Isolation.

E. Conditional Release of Isolation Points

In situations where energy-isolating devices are locked out and it is necessary to temporarily release isolation points to the IGSO for the purpose of testing, normal use or emergency use of the machine, equipment or process, the following procedure allows for Conditional Release of applicable isolation points for this purpose:

The **EIC/worker** will:

1. Ensure that the machine, equipment or process components are operationally intact;
2. Remove any temporary working grounds;
3. Clear the machine, equipment or process of tools and materials;
4. Clear all personnel working under the Isolation by advising them of need to sign off the pending release;
5. Identify job requirement to the IGS Operator;

6. Tailboard with IGS Operator and other impacted EIC's;

The IGS Operator or EIC if permitted will:

1. Revise and develop all related Work Permits and job plans;
2. Secure Conditional Release of some or all applicable Isolation points from all involved EIC and workers.
3. Clear the required energy-isolating device(s) of locks and tags.
4. Issue the Work Permit for purpose of testing or repositioning devices if required or return equipment to service.
5. Proceed with any test only on instructions from the permit holder.

Once testing is completed and the EIC has released the Work Permit for testing or the requirement for normal or emergency use has ended, the IGS Operator, or EIC if permitted, will return devices associated with the original Isolation to their prior state or the operating state desired as follows:

1. De-energize, relock and tag energy-isolating device(s) that were Conditionally Released to allow test operation.
2. Operate controls, etc. to verify energy isolation.
3. Open, lock and tag required depressurizing devices.
4. Reapply any temporary working grounds.
5. Allow work to restart by re-issue of Isolations that were Conditionally Released.

If it becomes necessary to permanently release isolation points following a Conditional Release; or return to work with an altered job plan as a result of a Conditional Release; or where a Conditional Release is complicated

and impact more than one crew a revised safe work plan and tailboard meeting is required.

F. Work on Distribution Facilities

Worker Protection for work on Distribution facilities requires application of Power System Work Standards and may require a Condition Guarantee or Hold Off Permit be issued by the IGS Operator to the Distribution OIC,

The IGS Operator will utilize the Work Permit form in assessing and documenting work plans as well as the identified forms, terminology and methods identified in Power System Work Standards for all such work.

G. Condition Guarantee

Where a Distribution OIC requires IGS isolation devices opened, checked, locked and tagged as part of establishing required conditions for a safe work area on Distribution systems the IGS Operator will issue a Condition Guarantee. A Condition Guarantee is formal declaration that a device is in a specific state, locked and tagged as such and is guaranteed not to be operated until the Condition Guarantee is released.

H. Hold Off Permit

Distribution OIC may require IGS breaker re-closing disabled and tagged, Plant automation placed in manual and tagged, N.O. tie switches confirmed open and tagged; and breaker (local and remote controls) tagged "Do not Operate" until released by the interfacing OIC.

A Condition Guarantee or Hold Off Permit issued to the Distribution OIC is not a form of personal protection but a guarantee that the tagged devices will remain in the desired state until such time as the applicable permit is surrendered.

SECTION 600: ATTACHING AND DETACHING FACILITIES

601 Preventing Inadvertent Attachment

Compliance with the Isolated Operations LO/TO Work Standard is required on all operational IGS sites or facilities. A Work Permit is required for all work on an operational IGS site.

No Work Permit, No Work.

When new construction is approaching the point where it will be attached to an existing IGS, a tag may be installed on the open section of the machine, process or equipment to prevent inadvertent attachment. The tag can be installed as part of the Group LO/TO, or alternatively as part of the Worker LO/TO Isolation consistent with Work Permits.

When new construction is physically close to an existing IGS system and is separated only by an isolating device, a lock and tag must be installed on the open device. The lock and tag can be installed as part of the Group LO/TO, or alternatively as part of the Worker LO/TO Isolation.

602 Attachment/Detachment Procedure

When attaching or detaching facilities from existing machines, equipment or processes, the Employee-in-Charge must:

1. Receive permission from the IGS Operator to attach or detach facilities by issue of a Work Permit and Isolation prior to the associated planned activities.
2. Provide the appropriate IGS Operator with suitable written documentation (e.g., final inspection or commissioning and acceptance report stating “*Approved to put in service*”).
3. Provide the IGS Operator with a current interim SLD and facility Isolation Diagrams, verified and approved by the Employee-in-Charge.
4. Identify the machine, equipment, or process conditions required to complete the work, and request permission from the IGS Operator to establish those conditions under a Work Permit and Isolation, if required.
5. Release the permits after completing the work.
6. The IGS Operator will provide a current interim SLD to the Distribution OIC advising of work plans for placing new facilities in service, or disconnecting and removing existing facilities from service, prior to the planned activity.

603 Attachment in Stages

When a project requires attachment 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 IGS Operator and attached to the Work Permit.

Before each segment is attached, the IGS Operator must be provided with interim isolation diagrams for each stage verified and approved by the Employee-in-Charge for use

in Isolations relating to attachment, operation and maintenance of that segment.

SECTION 700: OPERATING INTERFACE POINTS

701 Location of Operating Interface Points

Operating interface points are located on the distribution, telecom or industrial system apparatus electrically or mechanically closest to the IGS as possible (Ex: unit breaker, unit transformer, station auxiliary transformer, gas valve on supply building) and are indicated on all IGS Operating SLD's

702 Joint Operating Procedures/Agreements

Wherever there is a direct interconnection to the distribution, telecom or industrial 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, IGS Operator, etc.).



Interconnection and Operating Agreements

703 Operator-in-Charge/IGS Operator Interface Procedures

1. The IGS Operator 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. Under most operating conditions, if the interface point is identified concurrently on both an IGS Isolation and a Guarantee of Isolation or Permit under the jurisdiction of another operator, it must be double-locked and tagged by both operating groups.
3. The Operating Authority under which jurisdiction work is being done will take the lead role in coordinating and administering worker protection with the interfacing Operating Authority. PSWS and LO/TO combined will be used to create the required safe work conditions.
 - For work on IGS facilities involving both sides of an IGS interface point, the IGS Operator will request and secure a Condition Guarantee from the DOIC (or Isolation from Industrial or Telecom interface points) and include that guarantee in the Isolation Order and Isolation issued to the EIC.
 - For work on distribution facilities requiring Isolation from an IGS facility the DOIC will request a Condition Guarantee from the IGS Operator of the facility. The IGS Operator, or EIC if permitted, will issue a Condition Guarantee to the DOIC using PSWS methods and forms to establish the required conditions. The DOIC will issue a GOI to the distribution worker.

SECTION 800: PROCEDURAL TOOLS

801 Isolation Diagrams

A. General

Workers performing an Isolation and/or receiving Work Permits in an IGS are required to use, for reference, approved and up-to-date Isolation Diagrams. Isolation diagrams include:

- All substation and line apparatus, each identified by its unique number;
- Operating interface points, as identified by the Operating Authority; and
- Schematics for fuel, air, hydraulic systems, etc.
- All electrical systems and electrical apparatus

B. Revisions

1. Verified and approved interim Isolation Diagrams (i.e., checked, dated and signed by the Employee-in-Charge) must be provided to the IGS Operator whenever modifications are made to the IGS systems.

2. The IGS Operator may accept verbal notification of a change to an Isolation Diagram from an Employee-in-Charge if:
 - The change is minor and easily understood (e.g., a change to a valve number); and
 - The Employee-in-Charge provides the IGS Operator with a verified and approved interim Isolation Diagram as soon as practicable.
 - The IGS Operator notes the change on the existing Isolation Diagram drawing and communicates the change to other IGS personnel who may fill the role of IGS Operator and any EIC or worker who holds or requests a Work Permit on related facilities.

The IGS Operator has the discretion to deny the verbal notification and request a verified and approved interim Isolation Diagram before accepting the change.
3. Interim and revised Isolation Diagrams must be authorized by the appropriate IGS Operator.
4. The IGS Operator must obtain approval from the applicable Operating Authority to change an operating interface point.

802 Work Permit and Isolation Requests

Work Permit and Isolation requests must include the following information:

- The machine, equipment or process affected and the work location;
- If an Isolation is required, the type of Isolation;
- The dates and times the Work Permit and Isolation (s) are required and the anticipated duration of the work;
- The estimated time needed to release and return to normal 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);and
- The name of the Requestor and, if different, the Permit Holder.

An IGS Work Access Request form will be used for this purpose for all planned work. See Appendix A.

803 IGS Work Permit and Isolation Forms

A. General

Using the information on the Work Access Request form, the IGS Operator will schedule the work and prepare the required Work Permit and Isolation using the IGS Work Permit and Isolation forms with the following information:

- A unique reference number;
- The dates and times the required IGS system conditions will be in effect;
- The Isolation Order points and sequence to be used to create those conditions;
- The Isolation Order sequence to be used to return the system to normal, if required; and
- Permit issuance and release documentation.

For a sample Work Permit and Isolation forms, see Appendix B and C respectively.

Note: Where Worker LO/TO isolation is involved, the “Do Not Operate” tag may serve as the Isolation form for single isolation point Isolation only. See Section 804.

B. Numbering Isolation Steps

1. The IGS Operator must assign each Isolation Order step a unique number. That number cannot be repeated on the same Isolation Order.
2. Isolation Order step numbers must be sequential (i.e., in numerical order).

3. Isolation steps may be added to an existing Isolation Order by using alphabetical suffixes to preserve the existing sequence (e.g., 36A, 36B, 36C, etc.).

804 “Do Not Operate” Tags

All tags placed on isolation devices must be associated with a specific Isolation. Only standard ATCO Electric “Do Not Operate” tags may be used.

The following information must be legibly recorded on the tag:

- The identifying number of the machines, equipment and processes being worked on;
- The identifying number of the device to which the tag is applied;
- The reason for the Isolation or condition;
- If the tag is being used as an Isolation Order, the isolation step;
- The person requesting the Isolation (usually the Permit and Isolation Holder);
- The full name of the worker applying the tag;
- The time and date of the Isolation; and
- The reference number (e.g. 12345).

For a sample tag, see Appendix D.

805 Transfer of Authority

1. The IGS Operator must transfer operating authority whenever he/she cannot:
 - Maintain scheduled communication with permit holders; and/or
 - Provide the dedicated time and attention required to monitor and operate the IGS effectively.

2. All transfers of authority for the IGS Operator must be recorded in the IGS Operator logbook. The record of scheduled transfers of authority is found on the IGS facility shift or standby schedule, as posted on the Isolated Operations website.
3. The outgoing IGS Operator must record and communicate to the new IGS Operator any outstanding permits or known work being done and abnormal IGS conditions at the time of the transfer.
4. All workers on an IGS site must know who the site IGS Operator is at all times.
5. Unscheduled transfer of IGSO authority must be communicated to all EICs and Workers holding a permit and the communication must be logged in the log book.

806 Record Keeping

1. For all permitted EIC Administered Group LO/TO and Worker LO/TO Isolations, all Isolation Orders and tags used as Isolation Orders must be forwarded to the appropriate IGS Operator as soon as possible. The IGS Operator must maintain the following records for a minimum of three years:
 - Transfers of Authority;
 - All Work Permits and associated tailboards;
 - All Isolation Orders used to issue permits, including tags used as isolation orders;
 - Documentation of any investigations regarding tagging or unauthorized operation of IGS devices or apparatus; and
 - Log books documenting:
 - All Work Permit information, including reference numbers;
 - All Isolation information for Group and Worker LO/TO Isolations; 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), a worker 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 IGS Operator as soon as possible.

The IGS Operator will review the action and take the necessary steps to restore the IGS to normal operation.

902 Inadvertent Operation of Apparatus

If a worker inadvertently operates any component of an IGS facility, the worker must NOT attempt to correct the

error, but immediately notify the appropriate IGS Operator.

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

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

APPENDIX A –IGS Work Access Request form



Work Access Request - Isolated Operations

Request to IGS Operator: In Person Via Phone Via Email
(see schedule for current Operator)

IGS Operator Name and Phone Number: _____

Time/Date of Request	TIME (24h)	DAY	MONTH	YEAR
	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
Time/Date of Work Commencement	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
Time/Date of Work Completion	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>

Worksite Location: _____

Employee in Charge: _____

Other Employees on Site: _____

Isolation Required: N/A WA EIC Group

Scope of Work

Comments / Changes to System Status

Revised Nov 1, 2009

APPENDIX B – IGS Work Permit form



032-492

(Write Isolation # here) (Write Remote Permit # here)

WORK PERMIT – ISOLATED OPERATIONS

Date Required	End Date	Work Order #	Start Time	Contractor	Employee in Charge (EIC)	Submitted By							
Equipment Description				Unit number									
Scope of Work													
Isolation Required <input type="checkbox"/>	Conditional Release Required <input type="checkbox"/>	TYPE OF ISOLATION ADMINISTERED			PSSS REQUIREMENTS								
		WIA <input type="checkbox"/> EIC Group <input type="checkbox"/>			Hold Off Required <input type="checkbox"/>								
		IOS Group <input type="checkbox"/> Test & Operate <input type="checkbox"/>			Condition Guarantee Required <input type="checkbox"/>								
Isolation Points:													
<p>Have we considered all the energies and hazards?</p> <table border="0"> <tr> <td>Gravity Falling from a height Falling objects Fallen structures Rigging Spills/Releases</td> <td>Electricity Live apparatus Induction/Backfeed Ground gradients Frish potential Overlight</td> <td>Mechanical Equipment failure Piling objects Tension loads Moving parts Sharp objects</td> <td>Kinetic/Vehicular Traffic conditions Driving conditions Moving loads Noise Chronic >85 decibels Explosive Distraction levels</td> <td>Chemical Confined spaces Toxic or poisonous Acetic or caustic Flammable or explosive Pressure High pressure pipelines/vessels Compressed gases/liquids</td> <td>Fire Weld fires Flammable liquids Hot objects Ignition sources</td> <td>Body Mechanics Slips & trips Lifting/Awking strains Repetitive strains Improper body positioning Latent Energy Springs/mechanical Hydraulics</td> </tr> </table>							Gravity Falling from a height Falling objects Fallen structures Rigging Spills/Releases	Electricity Live apparatus Induction/Backfeed Ground gradients Frish potential Overlight	Mechanical Equipment failure Piling objects Tension loads Moving parts Sharp objects	Kinetic/Vehicular Traffic conditions Driving conditions Moving loads Noise Chronic >85 decibels Explosive Distraction levels	Chemical Confined spaces Toxic or poisonous Acetic or caustic Flammable or explosive Pressure High pressure pipelines/vessels Compressed gases/liquids	Fire Weld fires Flammable liquids Hot objects Ignition sources	Body Mechanics Slips & trips Lifting/Awking strains Repetitive strains Improper body positioning Latent Energy Springs/mechanical Hydraulics
Gravity Falling from a height Falling objects Fallen structures Rigging Spills/Releases	Electricity Live apparatus Induction/Backfeed Ground gradients Frish potential Overlight	Mechanical Equipment failure Piling objects Tension loads Moving parts Sharp objects	Kinetic/Vehicular Traffic conditions Driving conditions Moving loads Noise Chronic >85 decibels Explosive Distraction levels	Chemical Confined spaces Toxic or poisonous Acetic or caustic Flammable or explosive Pressure High pressure pipelines/vessels Compressed gases/liquids	Fire Weld fires Flammable liquids Hot objects Ignition sources	Body Mechanics Slips & trips Lifting/Awking strains Repetitive strains Improper body positioning Latent Energy Springs/mechanical Hydraulics							
<p>Have we considered?</p> <table border="0"> <tr> <td>Procedures PPOS & lock out tag out Isolation of equipment & lines Testing for isolation Adequate grounding Limits of approach Safe work procedures Confined space entry Emergency rescue plan</td> <td>Hardware/Equipment Inspection of vehicles/equp Inspection of tools & PPE Specialty equipment Maintenance of equipment Safe loads for rigging Warning devices Physical barriers</td> <td>Environment Locking UG utilities Weather & light conditions Congestion and restricted access Working space Adjacent facilities Animals/wildlife/livestock Housekeeping Location</td> <td>People Person in charge Qualification of personnel Communication Worker fatigue General public Customer requirements Timing Job Coordination with other work groups Work schedules</td> <td>Working Alone Contact information Who will be the contact? When will contact be made? Back up Procedure, if you fail to reach contact Satellite Phone Required Orientation Contractor Site</td> </tr> </table>							Procedures PPOS & lock out tag out Isolation of equipment & lines Testing for isolation Adequate grounding Limits of approach Safe work procedures Confined space entry Emergency rescue plan	Hardware/Equipment Inspection of vehicles/equp Inspection of tools & PPE Specialty equipment Maintenance of equipment Safe loads for rigging Warning devices Physical barriers	Environment Locking UG utilities Weather & light conditions Congestion and restricted access Working space Adjacent facilities Animals/wildlife/livestock Housekeeping Location	People Person in charge Qualification of personnel Communication Worker fatigue General public Customer requirements Timing Job Coordination with other work groups Work schedules	Working Alone Contact information Who will be the contact? When will contact be made? Back up Procedure, if you fail to reach contact Satellite Phone Required Orientation Contractor Site		
Procedures PPOS & lock out tag out Isolation of equipment & lines Testing for isolation Adequate grounding Limits of approach Safe work procedures Confined space entry Emergency rescue plan	Hardware/Equipment Inspection of vehicles/equp Inspection of tools & PPE Specialty equipment Maintenance of equipment Safe loads for rigging Warning devices Physical barriers	Environment Locking UG utilities Weather & light conditions Congestion and restricted access Working space Adjacent facilities Animals/wildlife/livestock Housekeeping Location	People Person in charge Qualification of personnel Communication Worker fatigue General public Customer requirements Timing Job Coordination with other work groups Work schedules	Working Alone Contact information Who will be the contact? When will contact be made? Back up Procedure, if you fail to reach contact Satellite Phone Required Orientation Contractor Site									
<p>Prime Contractor on Site? <input type="checkbox"/> Yes <input type="checkbox"/> No all applicable Trade's group Hazard Assessment? <input type="checkbox"/> Yes <input type="checkbox"/> No</p>													
1. What type of rescue/response may be required (confined space, medical aid, fire environmental release, etc.)?													
2. Identify who can act as incident commander in the rescue/response and location of rescue equipment?													
3. Who can provide first aid, identify location of first aid supplies & fire fighting equipment?													
4. Directions to the worksite and closest hospital or medical facility. (LSD, GPS, Range Roads, ...)													
5. Is ambulance service available to the worksite? If not how will you transport the injured?													
6. Do you have constant communication, Radio <input type="checkbox"/> , Cell <input type="checkbox"/> , Satellite <input type="checkbox"/> , Other <input type="checkbox"/>													
Additional Instruction to manage Hazards i.e. List working Grounds.													
IGS System Risk Assessment													
Contingency Response													
IGS WORK PERMIT prepared by				Initial	Date	Time							
						Remote Request Yes <input type="checkbox"/> No <input type="checkbox"/>							
AGREEMENT WITH OPERATIONS													
<i>The Issuing Authority understands the precautions outlined on this permit and considers it safe for the commencement of work as described in the Application.</i>													
Name	Initial	Date	Time	Remote Request									
<i>I, the Receiver, understand the scope of work and the precautions outlined on this permit form and I understand that all the equipment outlined has been checked to ensure these precautions are in place and that my crew will be made aware of the hazards and the precautions before continuing work.</i>													
Name	Initial	Date	Time	Remote Request									
Transfer													
Transferred to		Transferred from		Authorization	Date	Time							
Name	Initial	Name	Initial	Name	Initial								
Name	Initial	Name	Initial	Name	Initial								
Release of Permit													
Work complete? Yes <input type="checkbox"/> No <input type="checkbox"/>		If No please Specify:				Date work stopped or completed:							
Name	Initial	Date	Time										

DISTRIBUTION: White - Issuing Authority Canary - Permit Holder

Front page

Appendix C – IGS Isolation form



12345

Isolation - Isolated Operations

Worker Admin. EIC Group LO/TO IGSO Group LO/TO Test & Operate

Date	LOCK BOX #	Isolation Holder Lock #	WORK PERMIT #	Remote Permit #.							
EQUIPMENT ISOLATED											
	Isolation Order	Isolating Device	Lock Number	Time of Point Isolation	Status State	Tags Issued #	Hung by	Verified	Start Check	Removed by	
# 1											
# 2											
# 3											
#4											
#5											
#6											
#7											
#8											
#9											
#10											
ISSUE											
Prepared by	Initial	Date	Time	EIC / Designee with IGSO Consent Issuing Authority	Initial	Date	Time				
Issuing Authority IGSO	Initial	Date	Time	Guaranteed by (for altered or additional points)	Date	Time					
4) IGSO <input type="checkbox"/> Designer <input type="checkbox"/> EIC <input type="checkbox"/>											
Special Notes of Isolation or Removal of Isolation:											
Reviewed by: I have read this isolation and understand its limits and special conditions and agree to work within those limits											
Date	Time	Name	Initial								
Transfer											
Transferred to		Transferred from		Issuing Authority		Date	Time				
Name	Initial	Name	Initial	Name	Initial						
Name	Initial	Name	Initial	Name	Initial						
Name	Initial	Name	Initial	Name	Initial						
Conditional Release					Reissue						
CONDITIONAL RELEASE FOR				<input type="checkbox"/> Workers Notified or <input type="checkbox"/> N/A		HUNG by	Verified By	Hung Time	Verified Time		
<input type="checkbox"/> Testing <input type="checkbox"/> Normal Use <input type="checkbox"/> Emergency Use						Guar by	Initial				
DATE	TIME	POINTS			REISSUED by	Initial	Date	Time			
DATE	Time	Removed by	Initial		REISSUED by	Initial	Date	Time			
CONDITIONAL RELEASE FOR				<input type="checkbox"/> Workers Notified or <input type="checkbox"/> N/A		HUNG by	Verified By	Hung Time	Verified Time		
<input type="checkbox"/> Testing <input type="checkbox"/> Normal Use <input type="checkbox"/> Emergency Use						Guar by	Initial				
DATE	TIME	POINTS			REISSUED by	Initial	Date	Time			
DATE	Time	Removed by	Initial		REISSUED by	Initial	Date	Time			
Release											
All workers and materials under my charge have been removed, guards replaced and grounding devices removed. All apparatus is in the state it was found or as directed.											
Date	Time	Name	Initial								
Remarks											
Isolation has been released, all tags removed, all final checks complete, and equipment is available for service											
Date	Time	Name	Initial								

DISTRIBUTION: White - Issuing Authority Canary - Permit Holder

Front Page

APPENDIX D – 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 # () _____

REQUESTED OPENED BY:
(Permit Holder) _____

PERFORMED / CHECKED BY:
(Switchman) _____

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

REQUESTED CLOSED BY:
(Permit Holder) _____

PERFORMED / CHECKED BY:
(Switchman) _____

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

REFERENCE NUMBER _____

0205-0336-0499 REPROGRAPHICS

