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**PSSP DBC**

# **PSSP Distribution Component**



August 2020

## **Training and development student guide**

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# Course introduction

Welcome to the **PSSP Distribution Component** course.

Approximate time required to complete this training is **3 – 3.5 hours**.

## Audience

All workers who require PSSP DBC Authorization for working on the Distribution portion of the BC Hydro Power System.

## Prerequisites

Category 2 and Category 3 courses

## Course goal

This course is the Functional Component (DBC) training required for authorization to work on the Distribution portion of the Power System.

At the end of this training, participants will understand how operating orders fit into the day-to-day work that BC Hydro line crews perform. They'll also learn how to identify and locate specific operating orders that pertain to tasks involved with verbal communication, field activities and administration.

The information learned in this course will have an impact on your safety and that of the people you work with. Questions and activities throughout the course will get you thinking to ensure you're confident in your knowledge of how to find and use operating orders in your work.

## Course objectives

At the end of this course, you will be able to:

- State what operating orders are and why they are important.
- Explain why verbal communication protocols are important.
- Identify the established procedures for verbal communication.
- Identify how to locate operating orders through SafeHub, Hydroweb, SIS and the contractor extranet.
- Explain how operating orders pertain to a worker's job.
- Identify how operating orders pertain to administrative tasks.
- State the importance of local information and where to find it.

## Course topics

- Operating Orders
- Verbal communication
- Field activities
- Administration
- Local information

## Completion requirements

At the end of the course you will complete an exam to demonstrate your understanding of the information taught in this course.

# Safety first

BC Hydro has a number of programs in place to ensure your safety and the safety of others on the job. Being aware of and following the three programs mentioned here will allow you to stay safe while working in substations.

The **Safety Stop** helps to create a consistent process for addressing and resolving safety concerns, questions and rule violations – one that encourages employees to speak up any time they feel unsafe.



The **SafeStart**® program highlights four major safety problems: rushing, frustration, fatigue and complacency.



When we find ourselves in just one of those states, we can make critical errors, like not keeping our eyes and mind on our task; putting ourselves in the line of fire; or not having adequate balance, traction or grip.

The **Life Saving Rules** are a series of nine rules intended to provide guidance on a variety of situations you may encounter in your work.



These safety programs and others are meant to ensure worker safety. It's important to always keep all aspects of safety in mind as you perform your work.

Let's look at the nine **Life Saving Rules** BC Hydro has in place.

1. Maintain your limits of approach.
2. Ensure there's a Safety Protection Guarantee (SPG) or Lockout in place and check that it's appropriate for your work.
3. Test for hazardous energy.
4. Ensure that Worker Protection Grounding/Bonding is applied.
5. Protect yourself from falling when working at height.
6. Prevent harmful exposure to known carcinogens, toxins and biohazards.
7. Don't work while under the influence of alcohol or drugs.
8. Adjust your driving to the weather and road conditions.
9. Maintain a safe atmosphere in a confined space and ensure you can be rescued.



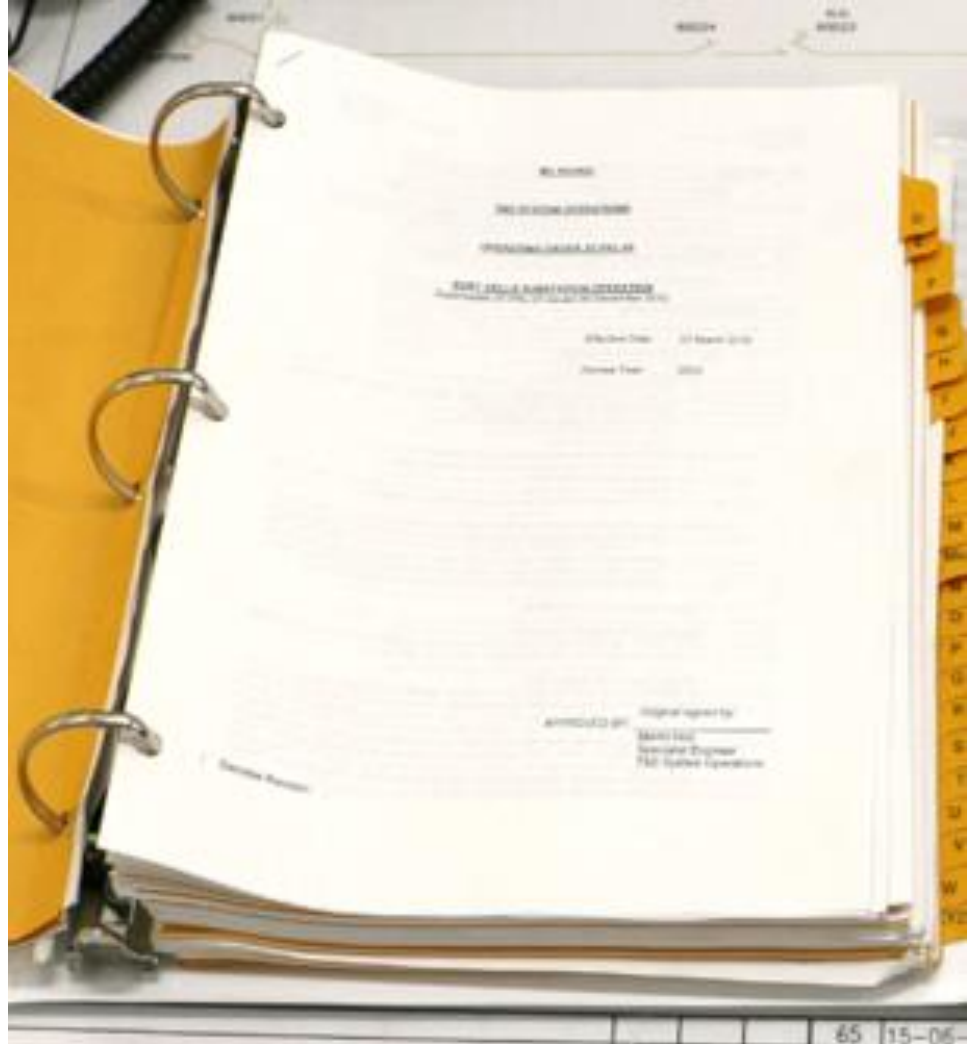
# Section 1: Operating orders

## Objective

This section provides an introduction to operating orders and explains their importance. Take a moment to review the objectives for this section.

When you're finished this section, you'll be able to:

- State what operating orders are and why they are important.



# What are operating orders?

Before we start our first lesson, let's take a moment to consider what exactly operating orders are.

Operating orders are BC Hydro management's standing instructions to BC Hydro employees and contractors that provide information and define policies and procedures for the BC Hydro power system.

Operating orders provide workers with accurate information necessary for the safe and consistent operation of the power system and for compliance with regulations.

They provide information for handling disagreements with Fraser Valley Operations (FVO).

**Operating orders**

Home | T&D | Engineering | T&D Operations | Station & Facility Code Management System | HydroWeb

Quick Search:  Doc. # or Name  Keyword  Facility Code  Facility Name

Site Information System Saturday, July 14, 2018

**Distribution Operating Orders - Integrated System**

Subject Groups > D: Distribution 1. Policy and Standards

Filter:

Type	Document	Description	Document Type	Date
	1D-01	Distribution Plant Alteration and Operating Drawing Updates	Distribution Operating Order	2018-07-09
	1D-02	Operating Drawings	Distribution Operating Order	2015-01-15
	1D-03	Field Reclosers	Distribution Operating Order	2012-07-18
	1D-05	Distribution Outage Scheduling	Distribution Operating Order	2012-06-05
	1D-06	Distribution Mimic Displays	Distribution Operating Order	2010-07-08
	1D-07	Authorized Change of Recloser Control Status	Distribution Operating Order	2011-10-17
	1D-07A	FVO Procedures for Bypassing Field Reclosers	Distribution Operating Order	2012-05-04
	1D-08	Vista Underground Distribution Switchgear Operation	Distribution Operating Order	2017-09-05

**Operating orders**

Home | T&D | Engineering | T&D Operations | Station & Facility Code Management System | HydroWeb

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	1D-07A	FVO Procedures for Bypassing Field Reclosers	Distribution Operating Order	2012-05-04
	1D-08	Vista Underground Distribution Switchgear Operation	Distribution Operating Order	2017-09-05

Operating orders can be found on:

- **SafeHub**
- **Site Information System (SIS)**
- **Contractor extranet**

## What if you don't have access to SIS?

Depending on the type of work you are doing, you may not have access to SIS.

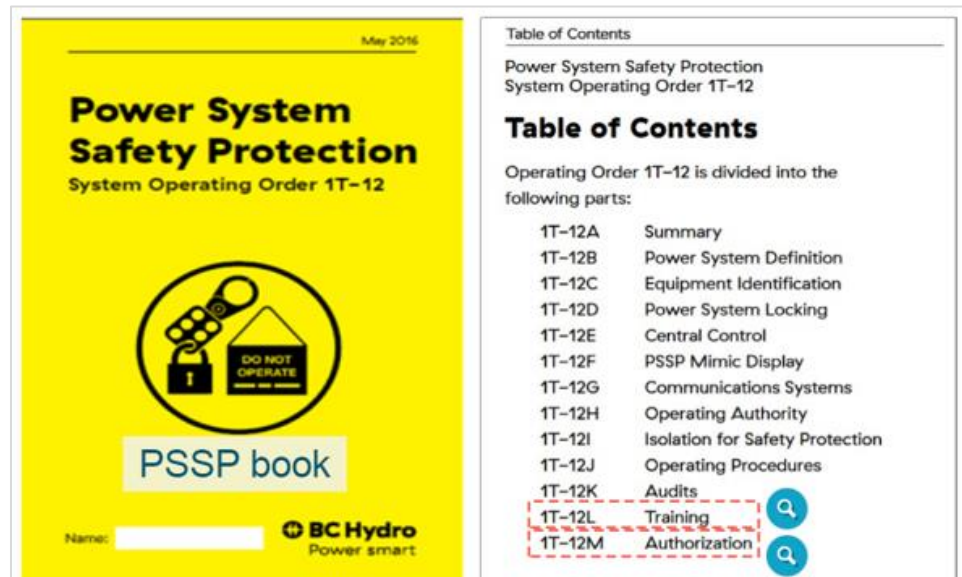
Talk to your manager or BC Hydro Contract Representative if you have any issues accessing operating orders that you need to complete your work.

## DBC training

For DBC training, you'll use operating orders to **understand, confirm** and **complete** training and authorization requirements.

## Operating order 1T-12

Operating order **1T-12** is one of the main operating orders used for distribution. It's important to be familiar with the information you'll find in it, including training and authorization requirements.



Operating order 1T-12 is actually a series of operating orders that specify requirements for the consistent application of safety protection on BC Hydro's transmission and distribution power systems. We refer to 1T-12 as the **PSSP book**.

Within 1T-12, **part L** defines PSSP training requirements and **part M** defines PSSP authorization requirements. These two parts specify the rules you'll follow for DBC training.

## 1T-12L training

**1T-12L** covers PSSP rules that outline the training requirements for all employees and contractors who access or work on the power system.

Training

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Power System Safety Protection  
System Operating Order

### 1T-12L—Training

**1.0 General**

Personnel required to have access, switch, or to work on the power system, must be trained and authorized in PSSP and relevant sections of the SPR as specified in this operating order. Updates will be provided when changes are made to PSSP operating orders. PSSP training is in addition to other required skills, work procedures, or safety training. Exceptions to authorization are detailed in 1T-12M 4.3.

**2.0 Training**

PSSP authorization consists of a System Component, a Functional Component and local information training. The training level will be dependent on the category of PSSP authorization required for each worker.

**2.1 SYSTEM COMPONENT**

The System Component training requirements are detailed in Modules 1A, 1B, 2, 3, 4, 5, and 6 of this operating order. The PSSP Web-Based Training package includes a review

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SOO 1T-12L

## 1T-12M authorization

**1T-12M** covers PSSP rules that outline the principles, processes and procedures used by authorizing managers to authorize workers to access or work on the power system.

Authorization

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Power System Safety Protection  
System Operating Order

### 1T-12M—Authorization

**1.0 General**

All employees and contractors working on, or in the vicinity of, the BC Hydro power system are required to have Power System Safety Protection System Component training and, as appropriate, Distribution Component (DBC), Stations Component (STC), Non-Integrated Area (NIA) and/or Transmission Component (TxC), plus Local Information training. In addition, they must be authorized in the PSSP Manager database by a BC Hydro Authorizing Manager.

This order details the principles, processes and procedures for Authorizing Managers.

The list of Authorizing Managers can be found on the PSSP Website.

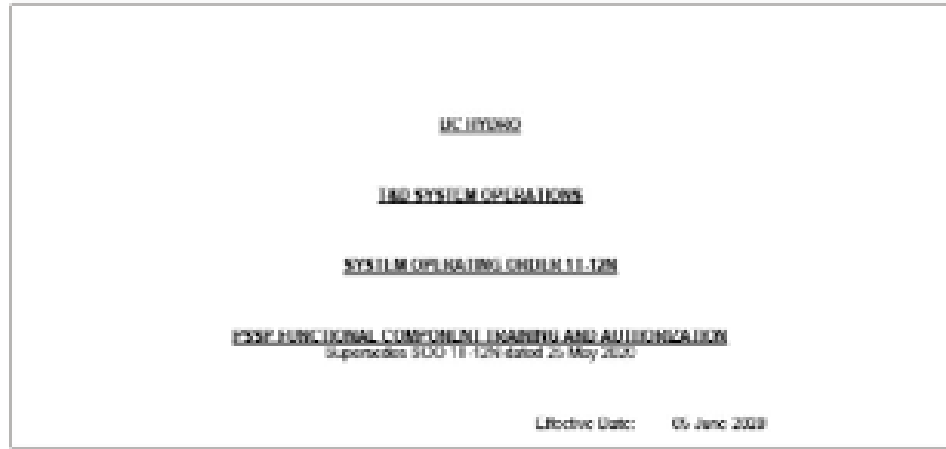
Lists of Authorizing Managers and authorized workers can also be accessed via:

- PSSP web page (<http://w3/pssp/index.shtml>)
- PSSP Manager ([http://fvbctwebsvc1/PSSP\\_Mgr/](http://fvbctwebsvc1/PSSP_Mgr/))

SOO 1T-12M
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## Operating order 1T-12N

**1T-12N** is an operating order that covers important information about PSSP functional component requirements and authorization.



Remember, functional component training is only **one** of three components of your PSSP training.

1T-12N provides an overview of all the types of training required for PSSP authorization, including:

- System component training
- Functional component training
- Local information training

You must complete all three training requirements to receive PSSP authorization to access or work on the power system.

Let's cover each of these in more detail.

# PSSP training requirements

## System component training

**System component training** – including PSSP CAT 2, 3, 4 and 5 – walks you through the PSSP book and introduces you to the power system.

System component training covers general safety rules and procedures that apply to all work on or around the power system.

It's a prerequisite for receiving authorization to access and/or work on or in proximity to the power system.

## Functional component training

**Functional component training** is this PSSP DBC course. It outlines additional requirements specific to the BC Hydro distribution portion of the power system.

Functional component training outlines additional requirements for the BC Hydro power system, including appropriate safety and operating procedures for the specific function of the power system.

## Local information training

**Local information training** provides you with the information you need to work safely within specific distribution headquarters.

Local information training covers site-specific safety issues, requirements and procedures, such as:

- Specific hazards within the headquarters
- Local information boundaries
- Emergency contact numbers
- Key contacts for headquarters
- VHF/UHF radio systems information
- Distribution operating orders
- Special precautions

## Reviewing operating order 1T-12N

You must review 1T-12N to determine and complete your DBC training requirements.



### 1T-12N PSSP responsibilities

1T-12N defines responsibilities for workers.

- First, you must follow all safety rules and safe work practices.
- You will also need to understand, follow and work only within the limits of your DBC authorization.
- And of course, you have to understand and review your functional component, including this course.
- Finally, you must understand and review local information.

### Manager responsibilities

These are the manager responsibilities:

- Ensure that their employees and contractors complete and understand the training for the system component, the applicable functional component(s) and local information; and ensure that authorized workers understand the limits of their authorization.
- Regularly review the list of authorized workers under their direction and ensure that their authorizations are current and accurate for the type of work being undertaken.



## Worker responsibilities

These are the responsibilities for the workers – including employees and contractors:

- Follow all safety rules (PSSP and SPR) and safe work practices.
- Understand the limits of their system component authorization and work only within those limits.
- Review and understand the functional component and the local information.

The list of authorized workers can be accessed on the **PSSP website** via the **BC Hydro intranet**.

## 1T-12N and your responsibilities

Your DBC responsibilities include understanding and completing the requirements in **Appendices 1** and **3** of **1T-12N**.

S00 1T-12N  
Effective Date: 07 June 2020  
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**APPENDIX 1 – TRAINING COMPONENT FORM**

Name: \_\_\_\_\_ Employee: \_\_\_\_\_  
Date (year/month): \_\_\_\_\_ Phone #: \_\_\_\_\_  
ID#: \_\_\_\_\_ Address: \_\_\_\_\_  
Occupation: \_\_\_\_\_  
System Component PSSP Training: 1A, 1B, 1C, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12 Empty Date: \_\_\_\_\_  
Limits of Approach Authorization Category: 1, 2, 3, 4 Empty Date: \_\_\_\_\_  
Authorized to Switch: Yes \_\_\_\_\_ No \_\_\_\_\_

**Provide the following information with this training:**

1	How to use the Local Information: <ul style="list-style-type: none"> <li>• Location of tender, if applicable</li> <li>• General overview of tender, if applicable</li> <li>• Requirement to constantly monitor, if applicable</li> </ul>
2	Local Component summary (review samples): <ul style="list-style-type: none"> <li>• Location, address, OPA certificate</li> <li>• Communication options</li> <li>• Emergency &amp; non-emergency numbers</li> <li>• Special instructions (lock gates, sign status tag)</li> <li>• Hazards and Precautions (section may also be completed in Special Procedures section)</li> </ul>
3	One-line Diagrams (review samples, detail dependent on type of worker)
4	Operating Orders (review samples, detail dependent on type of worker)
5	Communication Inference Operating Orders
6	Special Procedures <ul style="list-style-type: none"> <li>• Highlight importance of Special Procedures page for all workers for all workers</li> </ul>
7	Emergency Response <ul style="list-style-type: none"> <li>• DRP contingency plan (review samples)</li> <li>• Emergency equipment (review how equipment is shown on call contingency plan drawing)</li> <li>• Substation fire (reference procedure, review dependent on type of worker)</li> </ul>
8	Precaution Information (review dependent on type of worker)
9	Local Information (review Samples sheet, if applicable (night requirement to sign))
10	Personal Injured - Some station areas use lockout procedures (i.e. cranes, worktable, etc.)
11	Multi-employer boundaries
12	Review OCA based on Appendix 2 associated with the Functional Component authorization

The items above were explained to me (Trainee Signature): \_\_\_\_\_  
Functional Component PSSP Trainer: \_\_\_\_\_  
Worker Authorized to Category: 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12  
Functional Component Authorization: Station, Transmission, Distribution, Control Grid  
Index or DC Station Specific Authorization: CRG, ODR, CDR, MFT, MRU  
Local Restrictions: \_\_\_\_\_

S00 1T-12N  
Effective Date: 07 June 2020  
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**APPENDIX 3 – LIST OF SYSTEM OPERATING ORDERS REQUIRED BY COMPONENT**

Components  
S = Station; T = Transmission line; D = Distribution line; NA = Non-energized area

S00	Title	Component	BOC	Contractor	CRG	CDG	CRU	CRS
1T-12	T&D Job Life Cycle Safety System - Overview	S, T, D	X	X				
1T-12A	T&D Job Life Cycle Safety System - Change Request Submittal	S, T, D	X	X				X
1T-12B	T&D Job Life Cycle Safety System - Control Room Job	S, T, D	X	X				X
1T-12C	T&D Job Life Cycle Safety System - Status of Equipment to Service Stage	S, T, D	X	X				X
1T-12D	Switching Procedures	S, T, D	X	X				X
1T-12E	Backfeed From Voltage Transformers (CV or PFI)	S, T	X	X				X
1T-12F	Work on a De-Energized Transmission Line That is Parallel to Energized Line	S, T	X	X				X
1T-12G	Isolation Points and Live Call	S, T, D, NA	X	X				X
1T-12H	Safety Responsibilities in BC Values (Transmission and Station Projects)	S, T	X	X				X
1T-12I	Safety Responsibilities and Operating Authority Assignments to OCA	S, T, D	X	X	X	X	X	X
1T-12J	Roles and Responsibilities of FNO and T and Station	S, T, D	X	X	X	X	X	X
1T-12K	General Authorization for Phase System Service Operation	S, T, D	X	X	X	X	X	X
1T-12L	HydroQual Activity, Access and Safety and C&I Reporting Requirements for Attending and Non-Attending Power System Substations and Generating Stations	S, D	X	X	X	X	X	X
1T-12M	Live Line Permit: Awareness of No Reserve Permit and Caution Tag	S, T, D, NA	X	X	X	X	X	X
1T-12N	Station Service Isolation	S, T	X	X	X	X	X	X
1T-12O	Change Scheduling and Coordination	S, T	X	X	X	X	X	X
1T-12P	Distribution Substation Near Worker (See Restraining Policy CR 17 and Station)	S, D, NA	X	X				X
1T-12Q	Acceptance Procedures for Transmission Projects	T	X	X	X	X	X	X
1T-12R	Commissioning Procedures for Station, Transmission and Generating Projects	S, T	X	X	X	X	X	X
1T-12S	Public Safety and Incident Response	S, T	X	X	X	X	X	X
1T-12T	Transmission Line Plant Attention System	T	X	X	X	X	X	X
1T-12U	Substation Procedures with Electronic Controls	S, NA	X					X

## Appendix 1

Appendix 1 is called the **Training Component Form** and acts as a checklist for your DBC training.

If you are taking this training online, Appendix 1 will be automatically completed and you will be entered into the PSSP database once you have passed the DBC exam.

If you are taking this training with a PSSP trainer, you are responsible for filling in this form and submitting it to your manager.

## Appendix 3

Completing Appendix 3 is part of your DBC training.

It lists the operating orders that you are responsible for reviewing and understanding, based on your training category.

In the 1T-12N PDF, you'll be able to find your relevant operating order(s) by selecting the links in Appendix 3.

If you have any issues locating operating orders in Appendix 3, contact your manager or BC Hydro Contract representative.

## Section 2: Verbal communication

This section provides an introduction to the protocols around verbal communication and why they are important.

Take a moment to review the objectives for this section.

### Objectives

When you're finished this section, you'll be able to:

- Explain why verbal communication protocols are important.
- Identify the established procedures for verbal communication.



## Introduction to verbal communication



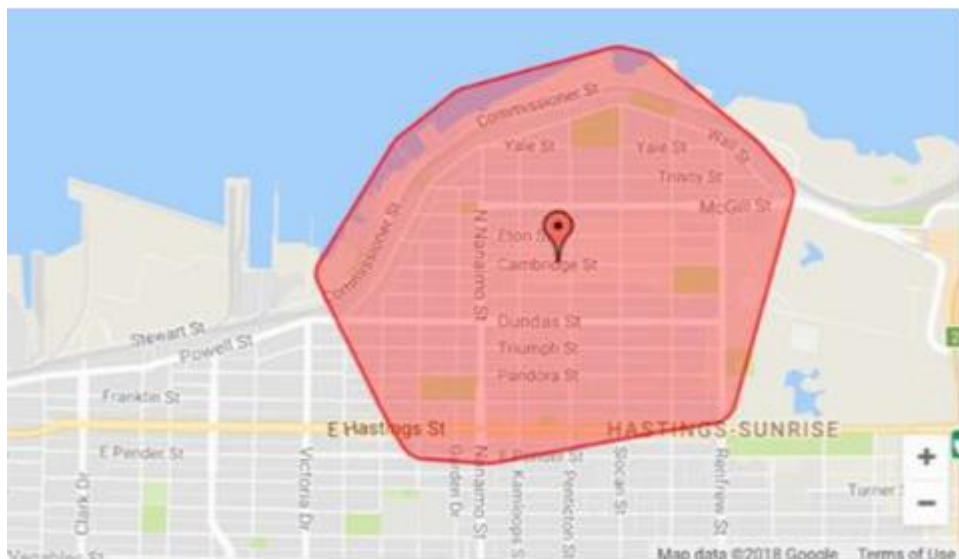
Following the proper verbal communication protocols is very important.

As you can probably imagine, even a simple mistake can cause major problems. For example, imagine that you receive a verbal request to open and tag switch **480352**, but you accidentally transpose the numbers in the switch designation as **483052**. That could lead to you working on the wrong switch. It's a simple and understandable mistake that could result in an unplanned outage for customers.

480352



483052



Communication protocols are created to help ensure these types of errors are minimized by making sure everyone is clear on what's meant to happen, where and when.

## Verbal communication – procedures

Obviously, clear and accurate verbal communication with the control centre is very important.

To help you through this communication, six procedures have been established and outlined in operating order **1T-13**, titled “Roles And Responsibilities of the Person In Charge and Field Workers.”

This section will provide a brief explanation of each procedure. You should also be sure to review the operating order for full details.



### “Roles And Responsibilities of the Person In Charge and Field Workers”

#### Identification

The established procedure for **identification** is that the person answering the call identifies the desk, such as Load or Grid, and states their name at the start of all conversations – for example, “Load desk5B, Jim speaking.”

#### Direction

The established procedure for giving **direction** is that the Person in Charge – commonly called the PIC – leads all operational conversations. If they sense that you, the worker in the field, are unsure of the instructions, operators should stop and deal with the concern. They must take charge of the situation and clearly communicate the instructions.

### Task focused

There is also an established procedure to ensure that conversations **focus on one subject at a time**.

### Precise terminology

The established procedure of **precise terminology** is there to remind everybody that they must use approved terminology and definitions at all times.

### Repeat back

The **repeat-back** established procedure states that when verbal directions – such as switching orders, safety protection guarantees (SPGs) and permits – are given by the PIC, the field worker receiving them must repeat them back, word for word, to ensure accuracy. The PIC then acknowledges the accuracy of the repeat-back in accordance with safety practice regulations, PSSP and applicable operating orders.

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The protocol for this procedure is documented in **SPR 508** and operating order **1T-21**.

### Full disclosure

The **full disclosure** established procedure refers to information that may affect the safety of field workers, the safety and reliability of the system, or both. It states that this type of information must be openly shared and discussed.

## Established procedures at work

Now that you know what the established procedures are, let's take a look at them in action. First, let's listen to a good call between a power line technician, or PLT, and the Fraser Valley Office (FVO). Here is the transcript:

**i** **PIC:** Load 1, Rob speaking.

**PLT:** Hey, Rob. It's Asher calling from Tumbler 52 Overhead.

**PIC:** Oh, hey, Asher, how're you doing?

**i** **PLT:** Oh, pretty good. I've been dispatched to do switching to isolate this piece of downed overhead here. I understand you have a couple of switching steps for me.

**i** **PIC:** OK, Asher, just give me one sec here let me just pull it up on my screens here. OK, Asher, I've got this in front of me here, so if you're ready, I've got two verbal switching steps for you.

**PLT:** Yep, go ahead, Rob.

Markers in this part of the call (identified with an "i" on the left margin):

1. Identification
2. Task focused
3. Direction

**i** **PIC:** OK, Asher, so on Tumbler 52, step number one, at switch 10462, get you to open and tag "clearance"... OK. And step number two, 10463, get you to open and tag "clearance." And issue time on that is 08:13.

**PLT:** OK, Rob, I understand at 08:13, Tumbler 52, two verbal switching steps. Step one, 10462, open and tag "clearance," and step two, 10463, open and tag "clearance."

**i** **PIC:** That's all correct.

**PLT:** Good deal, Rob. I'll take care of that and give you a call.

**i** **PIC:** Thanks, Asher, I'll talk to you in a bit.

**PLT:** Thanks, bye.

Markers in this part of the call (identified with an "i" on the left margin):

1. Task focused
2. Repeating back
3. No full disclosure

## Think about it

You just heard an example of the proper way to communicate with the Fraser Valley Office (FVO). Now see if you can tell what's wrong with this snippet from another call. Here is the transcript:

**Operator:** OK, 25CB612 is open in the station, the parallel is broken. At switch 5199, that is the pothead DS. I'd like to open and tag Clearance, de-energizing to the open breaker please.

**PLT:** OK, I understand I can open 5990 and tag Clearance.

**Operator:** Yes please.

**PLT:** OK, I'll tag that Clearance and give you a call when that stuff is done.

**Operator:** OK, thank you Joe. Bye.

### Question

What was wrong with that call? Which of these is the error?

- The operator went off topic
- The PLT didn't use correct terminology
- The repeat back was incorrect and wasn't corrected
- The PLT wasn't in control of the call



## Section 3: Field activities

In this section, we'll examine how operating orders identify how to perform field activities such as commissioning, field switching and responding to emergencies.

Take a moment to review the objectives for this section.

### Objectives

When you're finished this section, you'll be able to:

- Explain how operating orders pertain to a worker's job.
- Identify how to locate operating orders through SafeHub, Hydroweb, SIS and the contractor extranet.



## Commissioning

Dennis and his crew are scheduled to install a new SCADA-controlled recloser on a 3-phase line, to improve system reliability. Dennis knows he has the proper crew complement, but he wants to be sure he has the appropriate work procedures. Specifically, he wants to check who is responsible for determining whether a Live Line Permit is required.

Dennis knows he can find the answer in the operating orders.

Let's examine the steps Dennis takes to find the answer to his question.

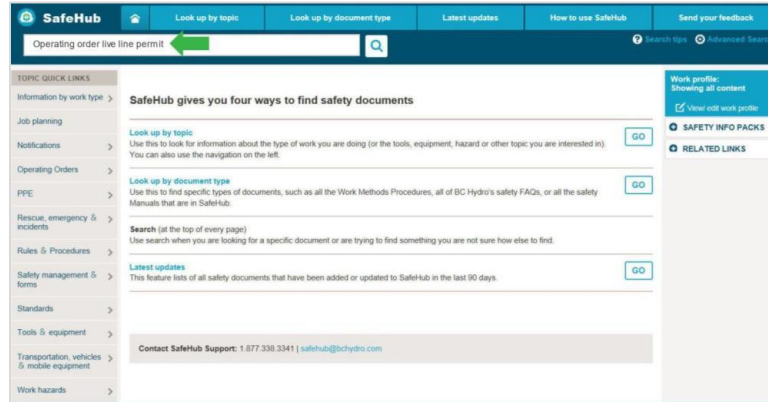


Dennis knows that he can find his answers in the operating orders, but isn't sure which one, so his first step is to go online and do a search.

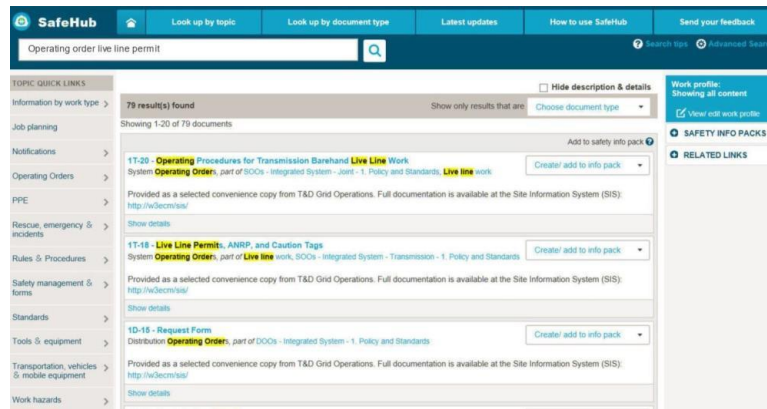
He has multiple options available, but since he can access SafeHub from any device – including his phone – he decides to use that.

**Here's a tip:** You may find multiple results when you do a SafeHub search, so you should review the results and determine if you need to access other operating orders to verify the content.

Dennis decides to search using the keywords “operating order” and “live line permit.”



When he has the search results, he notices **operating order 1T-18** looks like it might be a good place to start, since its title is “Live line permits, assurance of no reclose permits and caution tags.”



He opens the document and sees that **item 2.1** explains that the field worker performing the work holds sole responsibility for determining whether an LLP is required.

<p><b>2.0</b> <u>LIVE LINE PERMITS</u></p>	<p><b>2.1</b> Live Line Permits (LLPs) will only be used for live line work. When dealing with the control center, this can be referred to as a LLP or Live Line Permit. As defined in System Operating Order 1T-13, the field worker performing work holds sole responsibility in determining whether a LLP is required to support their intended work. In cases where the field worker is not sure if a LLP is required, they should consult their Safety Advocate, Trades Trainer or Manager.</p> <p><b>2.2</b> Before issuing an LLP, arrangements must be made to prevent re-energizing of the circuit or apparatus unless the circuit is de-energized. (NOTE: There is no requirement to block auto reclosing if feeder/line is de-energized).</p> <p style="padding-left: 20px;"><b>2.2.1</b> Where facilities exist, Live Line protection mode on substation feeder circuit breakers will also be placed in the “ON” position to enable low set instantaneous, fast trip protection. When in the Live Line protection mode, both the 1200 A phase and 1200 A ground instantaneous elements of the protection are enabled. With the Live Line protection mode enabled, any auto-reclosing associated with feeder protection will be disabled.</p> <p><b>2.3</b> If a circuit or apparatus on which a LLP is in effect is tripped by its own protective relaying, it will not be re-energized until the permit holder has been contacted.</p> <p><b>2.4</b> Section 2.5 does not apply to Barehand work. See OO 1T-30. When a LLP is in effect and a circuit or apparatus is de-energized by other than its own</p>
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# Field switching

Now that you've seen how it's done, let's give this one a try. We'll use the information provided in the scenario to locate the necessary operating order.

Sue's been given a pole replacement job that requires an SPG. Before she goes, she needs to know the maximum current a non-load break switch is capable of interrupting.



## Question

What key words would you use to search for the operating order?

It's a good idea to search with and without the hyphen for the fullest results in SafeHub.

The screenshot shows the SafeHub search interface. At the top, there is a search bar with the placeholder text "Type in keyword(s)". Below the search bar, there are several navigation tabs: "Look up by topic", "Look up by document type", "Latest updates", "How to use SafeHub", and "Send your feedback". On the left side, there is a "TOPIC QUICK LINKS" menu with categories like "Information by work type", "Job planning", "Notifications", "Operating Orders", "PPE", "Rescue, emergency & incidents", "Rules & Procedures", "Safety management & forms", "Standards", "Tools & equipment", "Transportation, vehicles & mobile equipment", and "Work hazards". The main content area displays "SafeHub gives you four ways to find safety documents" with options for "Look up by topic", "Look up by document type", "Search", and "Latest updates". A callout box with an information icon (i) contains the text: "Search for the relevant operating order by typing 'operating order' and 'non-load break switch' into the search field and then clicking Search." Below this, it says "Search with and without hyphen for fullest results in SafeHub."

## Answer

***“Operating order” and “non-load break switch.”***

## Question

Which operating order would you select?

The screenshot shows the SafeHub search interface. The search bar contains the text 'operating order non-load break switch'. The results page shows 5 results found. The first result is '2T-27 - Distribution Feeder switching using disconnect switches', which is highlighted in yellow. The second result is 'Section K - Protection and Switching', and the third is 'ES-64-C-03.01 Network Transformers & Street Vaults'. The fourth result is 'Section Y - Engineering Data'.

## Answer

**2T-27.**

This is the operating order that provides the answer to Sue's question.

### Loadbreak (LB) Switches

Loadbreak (LB) switches are three pole, gang operated devices that are typically used as feeder circuit tie points. They are equipped with an expulsion interrupter to extinguish the arc at rated (typically 400 A) loads.

These switches can be used to tie circuits supplied from the same source or between different substations, conditional to studies indicating the voltage and power angle differences between the sources is sufficiently low so as not to cause excessive MW/MVAR flows.

They can be safely operated to make and break line charging currents, parallel and loop currents, magnetizing currents and load currents up to full rating with the following restrictions:

- Overhead Line De-energizing - up to 160 km of line where the operating voltage is less than 29 kV (phase-phase)
- Cable De-energizing - up to 130 km of 1/0 cable or up to 50 km of 750 KCM cable

S&C switches have load make capability the same as their load break rating. Some Patton-Cooke switches also have load pickup ratings.

### Non-Load Break, Gang Operated Switches

Non-load break, three phase, gang operated air break (GOAB) switches are *not* equipped with expulsion interrupters to extinguish arcs. They are only capable of interrupting up to 15 A load current.

## Emergency response

Now that you've had a chance to try locating an operating order with hints, let's try doing it without any help.

You and your team pick up a live line and start a patrol. FVO calls and asks if you are en route and you tell them you are just past the SCADA recloser that tripped. Then the FVO asks if you think it is safe to try a reclose.

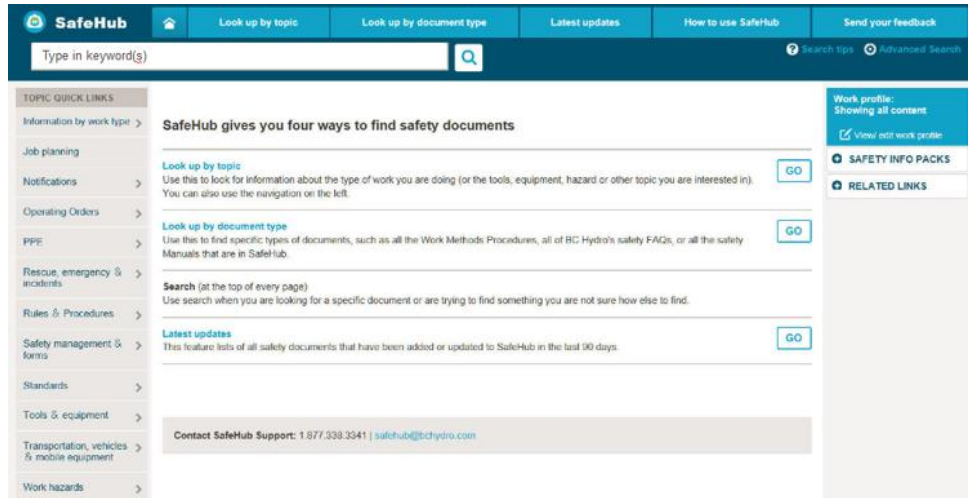
Here is the question you need to answer with the help of operating orders: **Is it safe to try a reclose?**

In order to answer the FVO's question, you need to review the applicable operating orders.



### Question

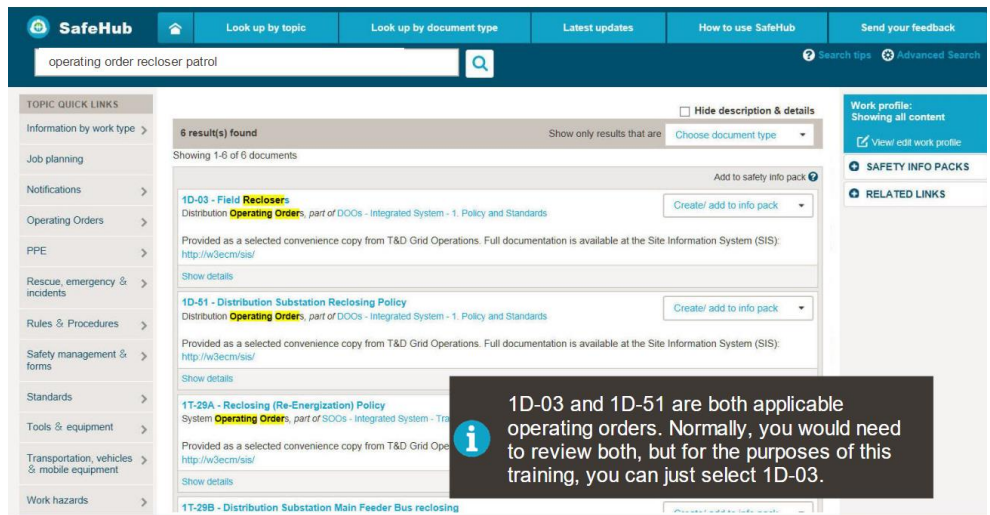
What keywords would you use in your search?



### Answer

*Operating order recloser patrol*

#### Emergency response



**1D-03** and **1D-51** are both applicable operating orders. Normally you would need to review both, but for the purpose of this training we'll just look at **1D-03**.

#### 4.1 Devices not HLT compliant or where HLT feature is not enabled.

##### 4.1.1 No Permits (LLP or ANRP) in Force

One re-energization should be attempted after one or more of the following conditions have been satisfied:

- The cause of the outage has been determined and corrected.
- The circuit has been sectionalized to isolate the faulted area.
- The circuit has been patrolled up to the downstream isolating device(s) (fuse cutouts, reclosers and sectionalizers).
- Patrol is not possible, 60 minutes has elapsed since the time of the initial circuit trip and the System Control Manager (SCM) at FVO has authorized one close attempt.

##### 4.1.2 Permits In Force

When LLPs and ANRPs are in effect, reclosing and re-energizing will not be attempted on any type of recloser until the permit holder(s) has been contacted unless the circuit has been de-energized by a source other than its own protection or the cause is known.

After contacting the Permit holder



Always look online for the most up-to-date versions of operating orders.

Well done. You successfully found the correct operating order.

**Just a reminder:** if you don't have access to SafeHub for any reason, you can also find operating orders on Hydroweb, SIS and the contractor extranet.

It's also important to remember to always look online for the most up-to-date versions of operating orders. Don't rely on printed versions, since operating orders may be updated without notice.

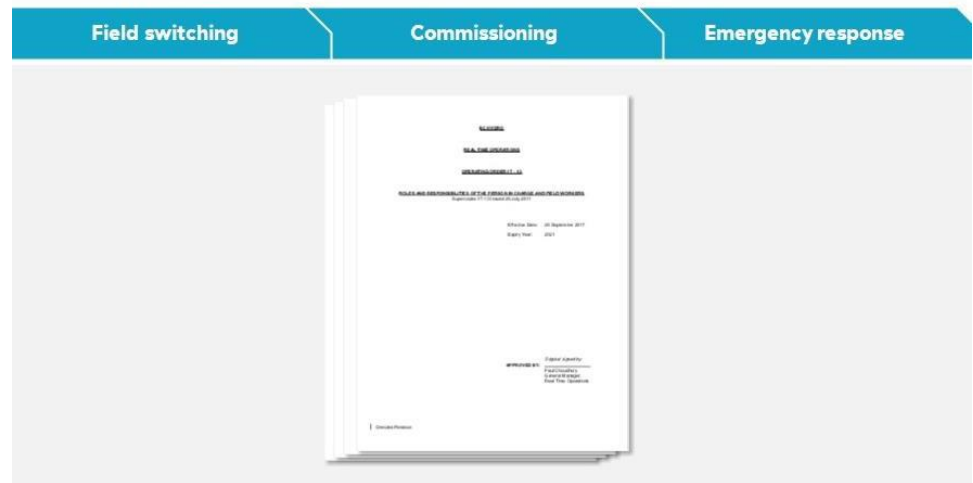


# Field activity operating orders

You've probably realized by now that there are a lot of operating orders. Don't worry – you're certainly not expected to remember them all or know all the numbers and titles by heart. But it might be helpful to know which operating orders exist for the most common field activities.

Over the next few slides we'll look at field activity to see some of the key operating orders for field activities.

Select each field activity to see some of the key operating orders.



## Key operating orders for field switching

Field switching	Commissioning	Emergency response
<b>Operating order</b>	<b>Description</b>	
1D-03 – Field reclosers	Describes the operations and criteria for blocking automatic reclosing on hydraulic, electronic and supervisory controlled electronic reclosers to facilitate Live Line Permits (LLPS) and Assurance of No Reclose Permits (ANRPS). A description of the three types of reclosers, their features and their control is also provided.	
1D-51 – Distribution Substation Feeder Reclosing Policy	Outlines the policy and procedures for manual, supervisory and automatic reclosing and re-energizing of a distribution circuit by a substation recloser or relay following a forced outage.	

Field switching	Commissioning	Emergency response
1T-06 – Switching Procedures And Equipment Not Ready For Service	Documents the requirements for the issuing and receipt of switching instructions from the Control Centre PIC to the authorized/qualified field worker performing the switching. It also documents the requirements for referencing the mimic display and SPG cards during switching and ensuring proper documentation of the status of isolated equipment when the SPG is returned.	
1T-11a – Operating Responsibility And Operating Authority Assignment To Desks	Defines the areas of Operating Responsibility and Operating Authority as they apply to the division of work at the BC Hydro Control Centre. It also lists the phone numbers for each operating desk.	

Field switching	Commissioning	Emergency response
1T-29A – Reclosing (Re-energization) Policy	Specifies the reclosing policy following an automatic tripout for the following equipment: <ul style="list-style-type: none"> <li>• transmission lines</li> <li>• generators</li> <li>• transformers and reactors</li> <li>• synchronous condensers</li> <li>• substation busses, including SF6 busses</li> </ul>	
1T-29B - Distribution Substation Main Feeder Bus Reclosing Policy (35 kV And Below)	Outlines the policy and procedures for manual, supervisory and automatic reclosing and re-energizing of a distribution circuit by a substation recloser or relay following a forced outage.	

Field switching	Commissioning	Emergency response
And Below)	and re-energizing of a distribution circuit by a substation recloser or relay following a forced outage.	
2T-27 – Distribution Feeder Switching Using Disconnect Switches	Describes the criteria used when making and breaking loops between distribution feeders, including the rules and recommendations for paralleling feeders between the same sources and different sources and the associated general switching procedures.	

Field switching	Commissioning	Emergency response
<p><b>Operating order</b></p> <p>1D-01 – Distribution Plant Alteration And Operating Drawing Updates – commissioning</p> <p>1T-02 series – T&amp;D Job Lifecycle Safety System – Overview</p> <p>1T-09 – Isolation Points and Line/Bus Cuts</p>		<p><b>Description</b></p> <p>Describes the procedures for adding or removing a high voltage plant on the BC Hydro distribution system in both Integrated and Non-Integrated Areas.</p> <p>Details the five stages of the T&amp;D Job Lifecycle Safety System.</p> <p>Provides instruction on the application of line/bus cuts as they pertain to high voltage isolation points used in the administration of PSSP.</p>

Field switching	Commissioning	Emergency response
<p><b>Operating order</b></p> <p>6T-04 – Emergency Response Procedures</p>		<p><b>Description</b></p> <p>Describes the emergency response procedures to be initiated by the PIC at the BC Hydro Control Centre when emergency assistance is requested by BC Hydro or contract field workers.</p>



## Section 4: Administration

In this section, we'll discuss the operating orders related to administration tasks.

Take a moment to review the objectives for this section.

### Objectives

When you're finished this section, you'll be able to:

- Identify how operating orders pertain to administrative tasks.



Just as there are specific operating orders that pertain to your various field activities, there are also operating orders that relate to your administrative tasks.

The next few pages will cover administrative tasks.

## Operating orders: PA procedures in the field



PA procedure in the field

See **1D-01 – Distribution Plant Alteration and Operating Drawing Updates** for information on the PA procedures in the field and the safety protection requirements for new plants that are covered by the plant alteration process.

## Operating orders: operating drawings



Operating drawings

**1D-02 – Operating Drawings** identifies operating drawings and where you can find them. The chart is useful as an at-a-glance reference.

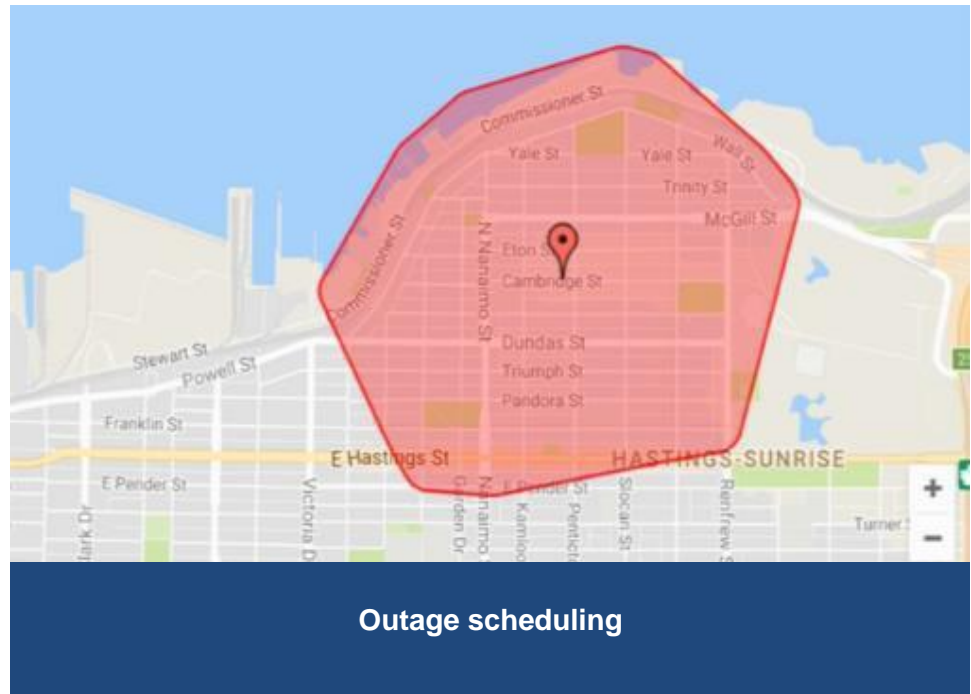
## Operating orders: station entry procedure



**1T-17 – Entry and Exit Reporting Requirements for Attended and Non-Attended Power System Subsystems and Generating Stations** provides the procedures for entering and exiting unattended stations, as well as security systems information.



## Operating orders: outage scheduling



**1T-02A – T&D Job Lifecycle Safety System – Outage Request Submittal Stage** is the first stage of the job lifecycle, where the PSSP-qualified outage requestor submits an outage request to the Outage Scheduling Office at the FVO.



## Section 5: Local information

In this last section, you'll be introduced to local information, where to find it and why it's important.

Take a moment to review the objectives for this section.

### Objectives

When you're finished this section, you'll be able to:

- State the importance of local information and where to find it.



## What local information is

### Question

Before we go any further, what do you think local information is?

Select everything you think would be considered local information from the list.

- Local area phone numbers
- The district office organization chart
- Communication protocols
- The site office's evacuation procedures
- Site-specific special precautions



### Answer

- *Local information **does** include local area phone numbers, district office organization chart, office's evacuation procedures and site-specific special precautions.*
- *Local information **does not** include communication protocols.*

And on top of the specific examples listed, local information generally also includes:

- Contact information
- Emergency contacts
- VHF/UHF Radio Systems Information
- Specific precautions
- Local information boundaries

Local information does not include communication protocols.

### Why it is important

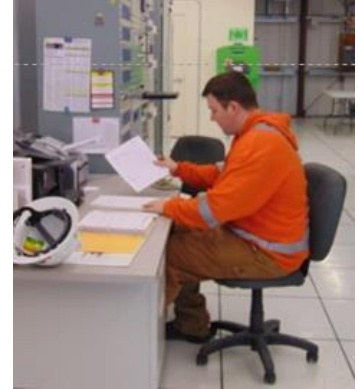
You may be wondering why local information is so important. After all, if you already know about operating orders and how they relate to the work you do, what difference does local information make?

Well, while those operating orders detail how to communicate, perform the work and complete administrative tasks, they do not cover anything specific to the area you're working in. They just can't, because each site is unique. That's where local information comes in.

It helps identify things you need to know, such as:

- Special precautions
- Area-specific phone numbers
- Site-specific rules

And, since each location is a bit different in its special precautions, it's really important that you look for what's particular about your specific location.

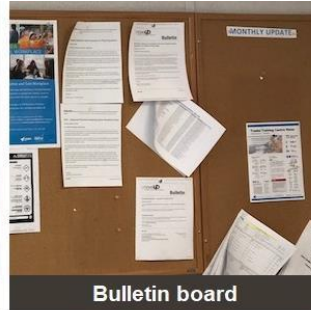


### Finding local information

Knowing what constitutes local information and why it's important isn't enough. You also have to know where to find this information so you can stay safe on the job.

Local information may be kept in a binder or posted on a bulletin board, but the most up-to-date version is found on SIS or Hydroweb.

The online version is updated by local headquarters as required. So even though it might be easier to check something that's pinned to a board, it's safer to check online for the **official and most up-to-date version**.



↑  
The most up-to-date version.

## Training requirements

One last thing before we wrap up: the training requirements you need to meet before you start working on a specific portion of the power system.

You need:

- System component training
- Functional component training
- Local information training
- Plus the authorization of your BC Hydro manager

Once you have these four things, you can work on the power system.



# Wrapping up

Congratulations – you’ve reached the end of the course. Take a moment to review what you’ve learned.

## You should now be able to:

- State what operating orders are and why they are important.
- Explain why verbal communication protocols are important.
- Identify the established procedures for verbal communication.
- Identify how to locate operating orders through SafeHub, Hydroweb, SIS and the contractor extranet.
- Explain how operating orders pertain to a worker’s job.
- Identify how operating orders pertain to administrative tasks.
- State the importance of local information and where to find it.

You can access a list of some of the key operating orders by selecting the **Resources** link in the upper right corner of your screen.

Remember, the best source for the most current operating orders is always online, so check **SafeHub**, **Hydroweb**, **SIS** or the **contractor extranet**.