PSSP DBC

PSSP Distribution Component

January 2019

Training and development student guide

BC Hydro
Power smart

British Columbia Hydro and Power Authority
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Burnaby, B.C.
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This course was developed by BC Hydro Learning, Development and Trades Training.

Table of contents

Your notes

Course introduction

Welcome to the **PSSP Distribution Component** course. This course was developed by BC Hydro Learning, Development and Trades Training.

Approximate time required to complete this training is **60 minutes**.

Audience

All workers who require authorization to PSSP category 2 or WPP category A so they can access to BC Hydro Power System facilities.

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 the use of operating orders in the day-to-day work BC Hydro line crews perform.

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

- 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.

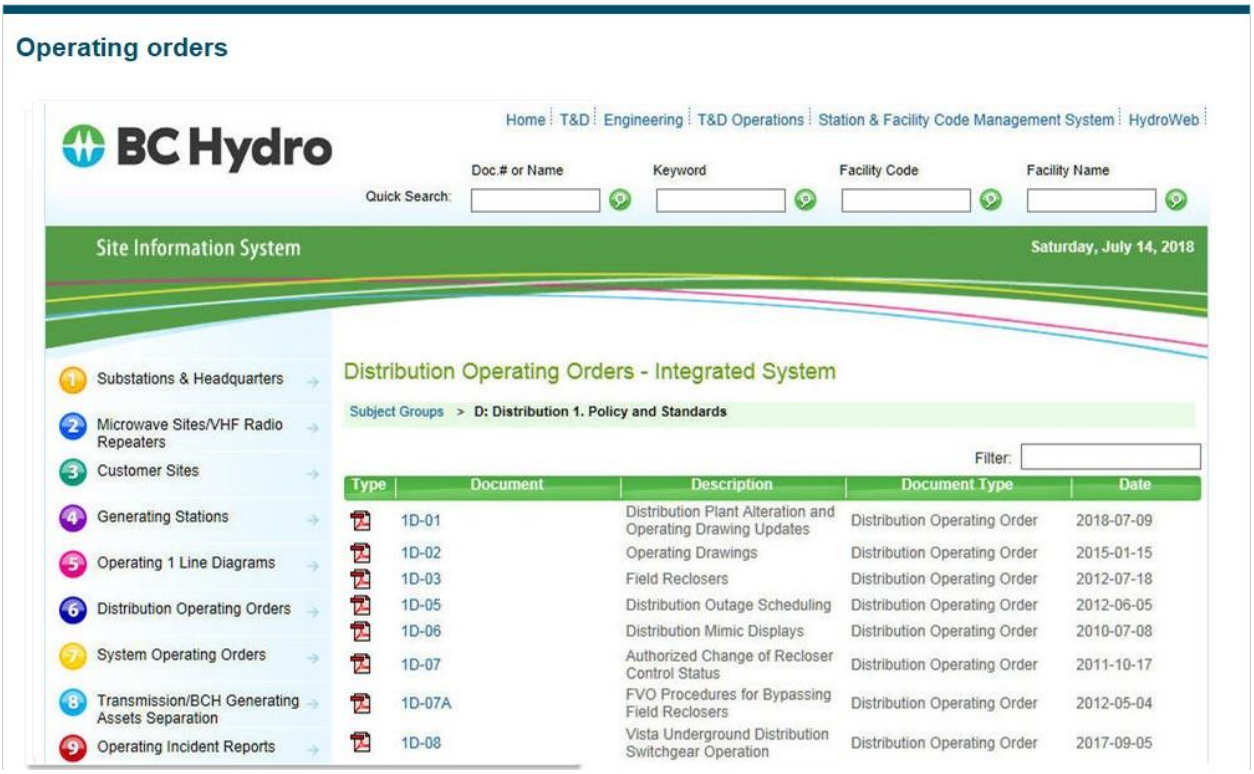
Your notes

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 operators and field workers regarding electric system operation. They stress the safe, consistent operation of the power system and provide information for handling disagreements with the FVO.

You can find all the operating orders on **SafeHub, Hydroweb, Site Information System** and the **contractor extranet**.



Lesson 1: Verbal communication

Purpose:

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

Objectives:

When you're finished the lesson, you'll be able to:

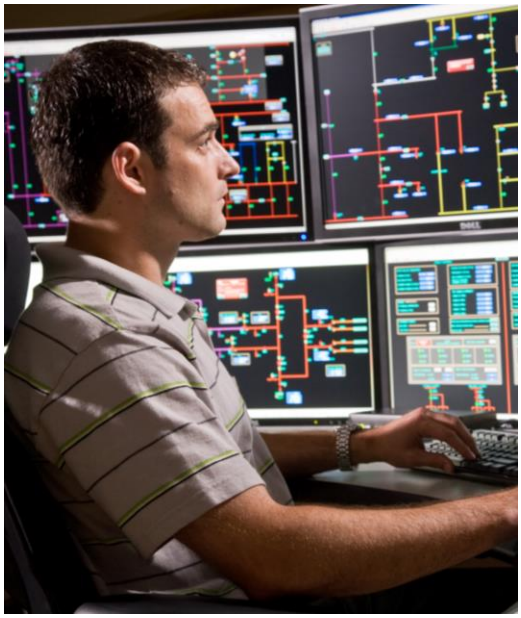
- Explain why verbal communication protocols are important.
- Identify the established procedures for verbal communication.

Topics:

- Verbal communication
- Safety stop
- Communication procedures

Introduction to verbal communication

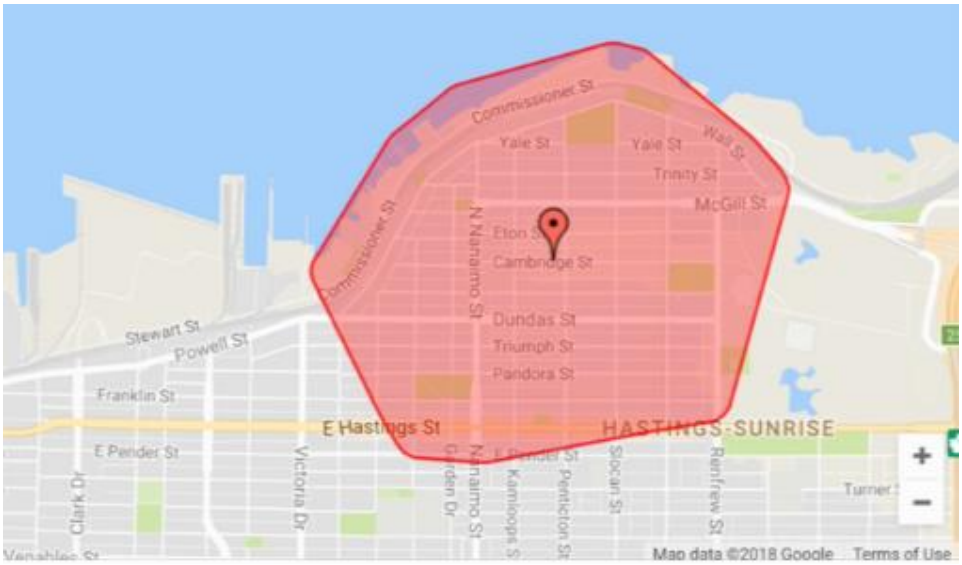
Following the proper verbal communication protocols is very important.



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.

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.

480352 → **483052**



In order 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 – there's also something called the "**safety stop**."

It's important because:

- We need a consistent way to stop the work immediately, in real time, if you have any questions about safety or violations of safety rules.
- Safety concerns and questions often don't get escalated in a consistent manner, which leads to less effective job planning.

Communication procedures

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

To help guide you through this communication, six procedures have been established and are outlined in operating order 1T–13, titled "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 desk, 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 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, or 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.

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.

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

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. Here is the transcript:

PIC: Load 1, Rob speaking.

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

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

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.

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.

The key procedures in this part of the call (identified with an "i" on the left margin) include:

1. Identification
2. Task focused
3. Direction

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."

PIC: That's all correct.

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

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

PLT: Thanks, bye.

Note: The key procedures in this part of the call (identified with an "i" on the left margin) include:

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

The next conversation you'll hear is an example of communication **not** following procedures. Pay close attention to the repeat back on this section of the transcript for this call.

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 this call?

Answer:

- 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.

The repeat back was incorrect and wasn't corrected. Although the PIC stated switch 5199, the PLT misheard and said 5990 and the PIC didn't catch the mistake.

Lesson 2: Field activities

Now let's move on to lesson 2, field activities.

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

Objectives

When you're finished the lesson, you'll be able to:

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

Topics

- Commissioning
- Field activities
- Key operating orders

Commissioning

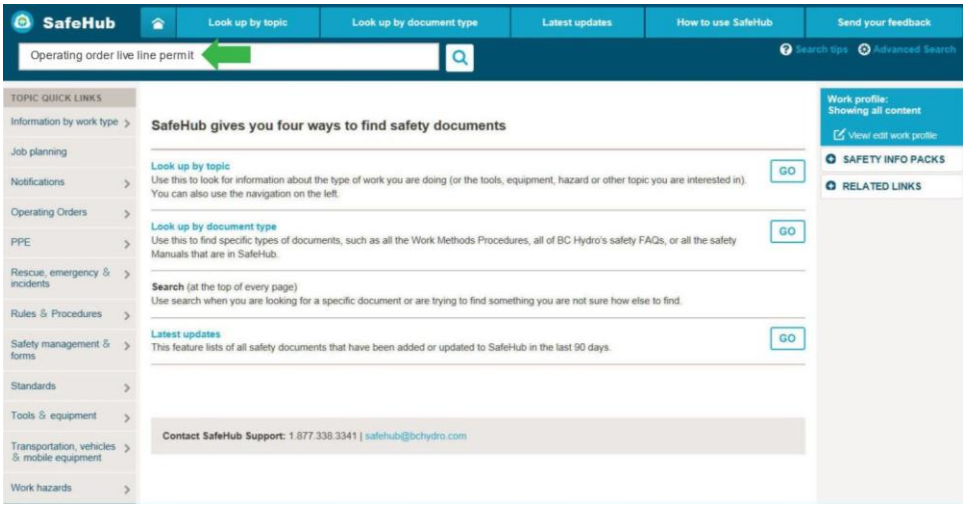
Denis and his crew are scheduled to install a new SCADA-controlled recloser on a 3-phase line, to improve system reliability. Denis knows he has the proper crew compliment, but he wants to be sure he has the appropriate work procedures. Specifically, he wants to check who is responsible for determining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

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

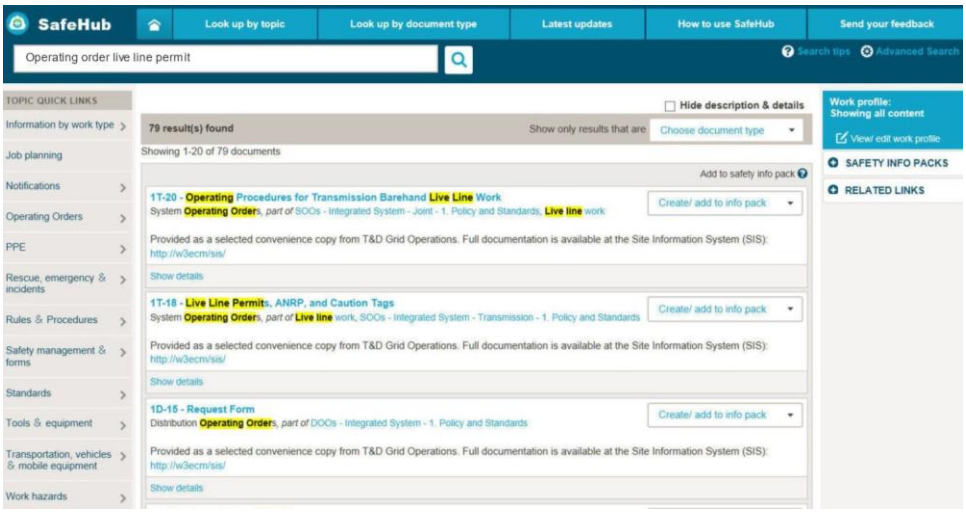
He has multiple options available, but since he can access **SafeHub** from any device – including his phone – he decides to use that.

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.

Denis 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.

2.0 LIVE LINE PERMITS

2.1 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.

2.2 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).

2.2.1 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.

2.3 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.

2.4 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

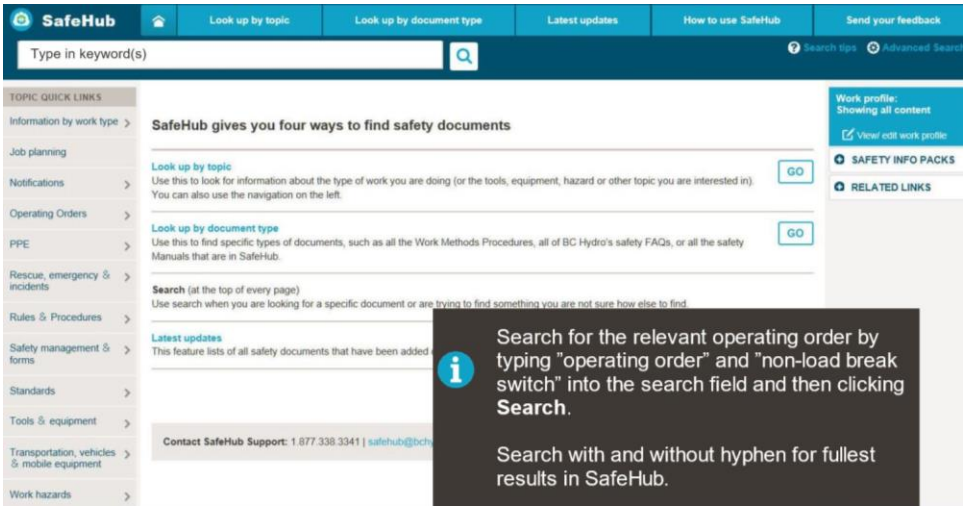
Field activities

Now that you’ve seen how it’s done, it’s time for you to give it a try. Use the information provided in this scenario (below) to locate the necessary operating order.

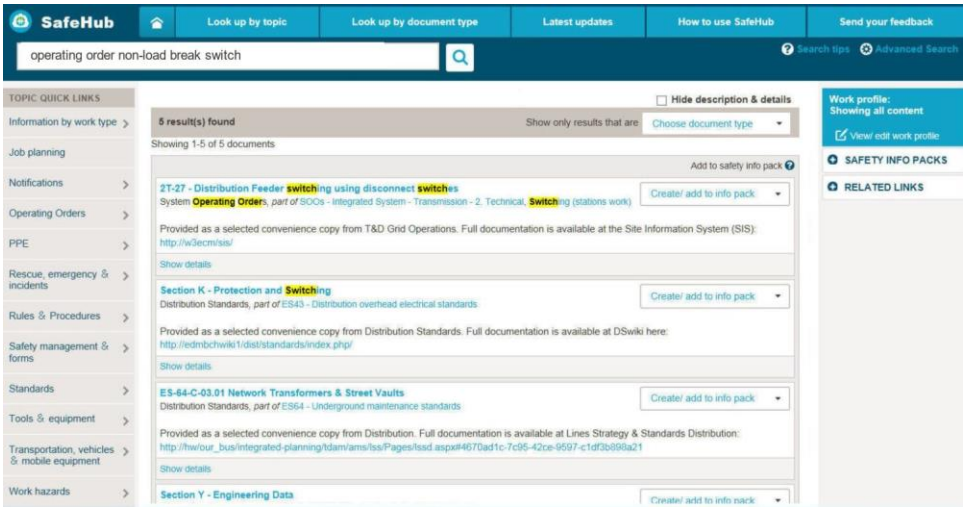
Scenario

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.

What words should Sue use for her search? Remember to search with and without the hyphen for the fullest results.



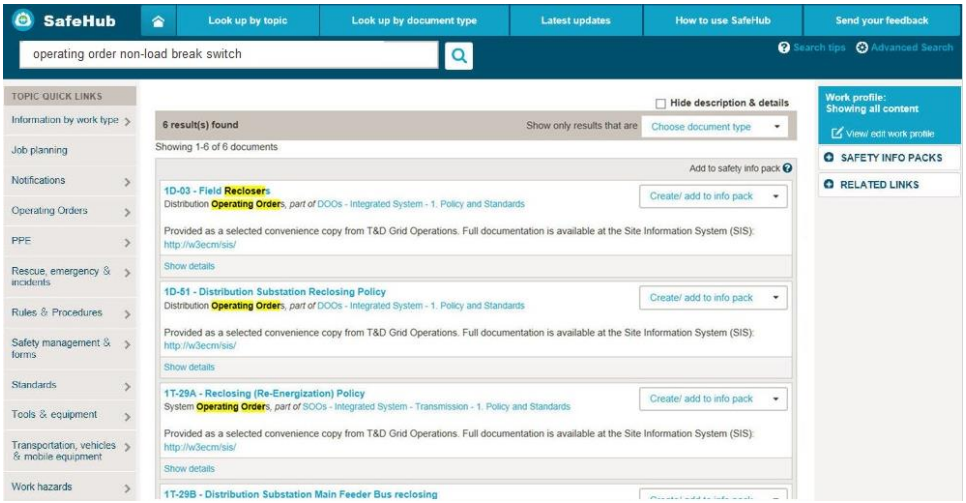
These operating orders are displayed.



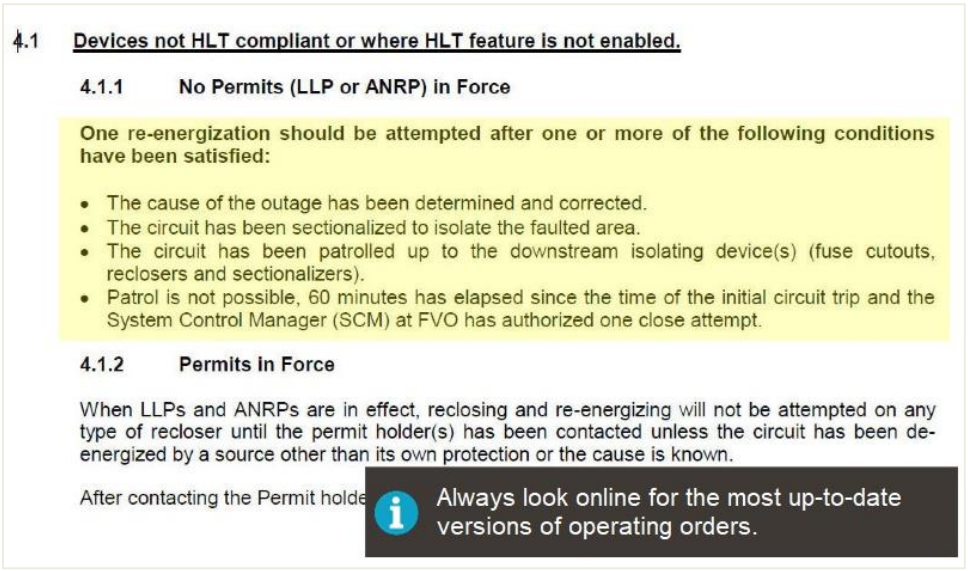
Emergency response

You and your team pick up a live line and start a patrol. FVO calls and asks if you are on 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**?



1D-03 and 1D-51 are both applicable operating orders and normally you would review both. For the training, we'll just use 1D-03.



This is 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.

Key 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.

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

Field switching | **Commissioning** | **Emergency response**

Key operating orders for field switching

Field switching | Commissioning | Emergency response

Operating order	Description
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.

Key operating orders for commissioning

Field switching | Commissioning | Emergency response

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

Key operating orders for emergency response

Field switching | Commissioning | Emergency response

Operating order	Description
6T-04 – Emergency Assistance for Field Workers	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.

Lesson 3: Administration

Now it’s time for lesson three, Administration.

Objectives

When you’re finished this lesson, you’ll be able to:

- Identify how operating orders pertain to administrative tasks.

Topics

Operating orders for:

- PA procedures in the field
- Operating drawings
- Station entry procedure
- Outage scheduling

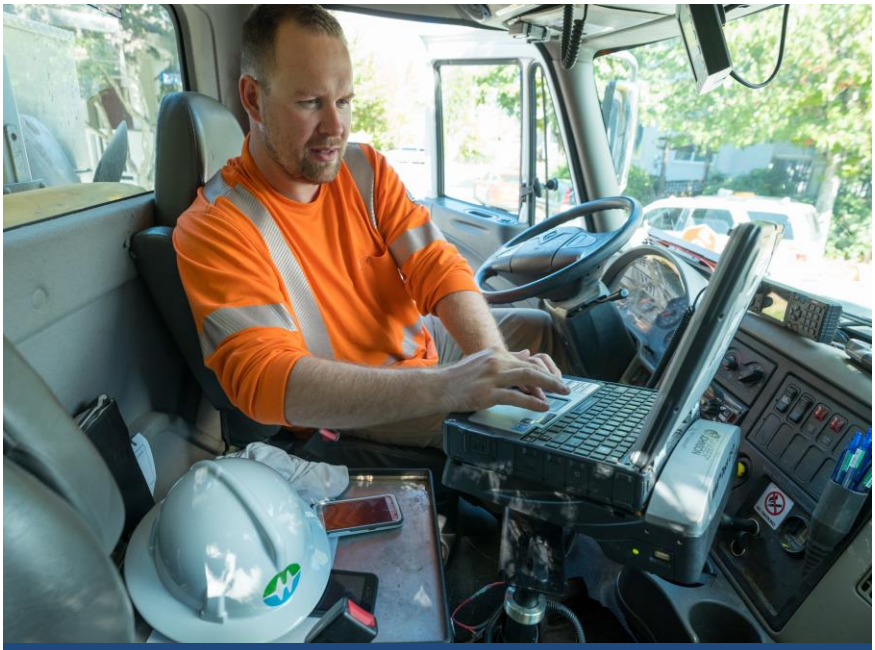
Operating orders: PA procedures in the field

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.

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

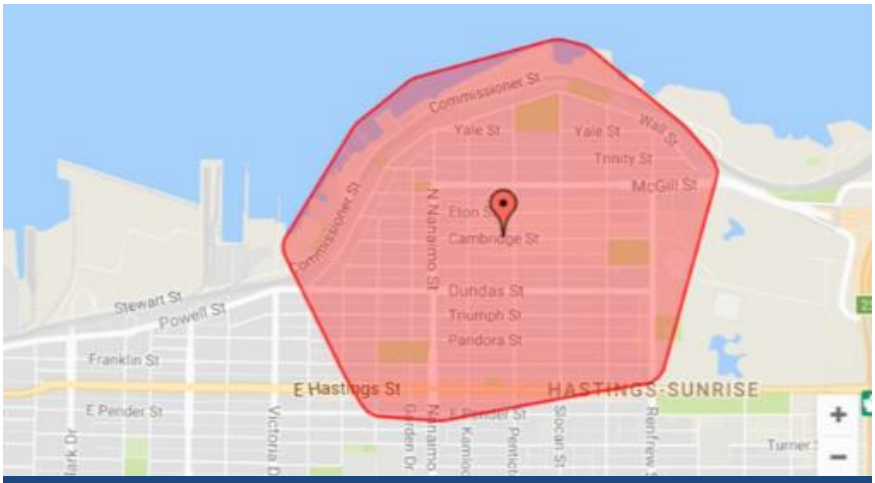
1D-02 – Operating Drawings identifies operating drawings and where you can find them. The chart is useful as an at-a-glance reference.

Operating orders: station entry procedure

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



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.

Lesson 4: Local information

Now on to the last lesson in the course: local information.

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

Objective:

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

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

Topics:

- Local information
- Why local information is important
- Finding local information

What local information is

What is considered local information?

- ☐ The 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.

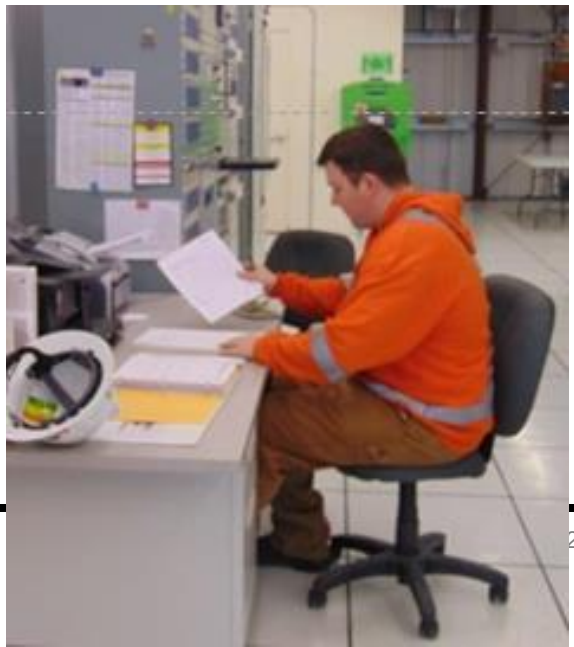
Don't forget – local information generally also includes:

- Contact information.
- Emergency contacts.
- Radio procedures.
- Specific precautions.
- Local information boundaries.

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?

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 like the special precautions and area-specific phone numbers you need, as well as the site-specific rules you need to know.

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.

But 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.

Binders

Bulletin board

SIS or Hydroweb

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 and 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.

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