

Substation – General Safety Rules SWP-150

1.0 Purpose

To establish rules and guidelines, for all workers, to safely enter and work in Yukon Energy Corporation (YEC) substations.

2.0 Minimum mandatory personal protective equipment (PPE)

Also see SWP-151 – Substation PPE

2.1 The following PPE must be worn to enter any YEC substation:

- Safety headwear; Type 2, Class E;
- Arc rated flame retardant (ARFR) clothing; minimum HRC 2/ATPV8;
- Safety footwear with dielectric rating; and,
- Safety eyewear with side shields.



2.2 Other PPE that may be required:

- Hi-visibility PPE (must be ARFR);
- Hearing protection;
- Gloves;
- High voltage rubber gloves.

3.0 General substation requirements

3.1 All workers entering YEC substations are required to complete YEC Substation Awareness training; and, keep the training current (valid for 3 years).

3.2 Equivalent training may be accepted by the YEC H&S department; providing the worker can provide documentation to support the equivalency of training presented (valid training certificate, course syllabus or table of contents etc.). See Appendix C – Accepted Equivalent Substation Training.

3.3 The training requirement is not required for the following:

- Workers that are required to gather substation information only (e.g., photos, equipment information); no other work is performed.
- Workers that require a site visit as part of the YEC procurement process; no other work is performed.
- YEC Joint Health and Safety representatives conducting inspections.

In the circumstances above, the workers must:

- Review all YEC substation practices and procedures;
- Wear the minimum required PPE for substation entry;
- Complete/participate in a JSA/Tailboard;
- Receive a substation orientation; and,
- Be accompanied by a qualified YEC designate.

3.4 Emergency response in a substation.

- Emergency responders refers to police, fire, ambulance (paramedic) or advanced first aid attendant¹ (medical first responder, OFA 3 etc.).
- Emergency responders do not require substation training when attending an emergency at a YEC energized substation.
- Emergency responders may only enter a YEC substation under the direction of a YEC designate.
- YEC designate must:
 - not allow first responders in the substation unless it is safe to do so;
 - communicate the substation hazards to first responders;
 - identify the area(s) the first responders are permitted to access; and,
 - check in/out with SCC.

3.6 All workers require a documented substation orientation, by a qualified YEC designate, for each substation entered.

See Appendix A – Substation Orientation form.

3.7 Permission is required to enter any YEC substation.

All workers are required to check in/out with the System Control Center (SCC) Operator-in-charge (OIC).

See Appendix B – YEC check in/out protocol.

3.8 All contractor workers are required to complete the YEC Health and Safety; and, Environmental orientations prior to starting work at YEC. The orientations are online format and can be accessed at the following link:

<https://youryukon.com/orientation/>

3.9 All persons working alone are required to check-in with the SCC OIC; and, contact the SCC OIC every two (2) hours after the original check-in.

¹ Advanced first aid attendants are those that have attended an adequate training course; typically 70-120 hours in duration; depending on the jurisdiction.

Substation – General safety rules

This check-in procedure must continue until the worker has completed their work; or, is leaving the substation.

For clarity –

- More than 1 worker on site; workers are not working on the same task or in the same immediate area – **'CHECK-IN' IS REQUIRED.**
- More than 1 worker on site; all are working on the same task or in the same immediate area – 'person-check' is not required while the criteria is met.

- 3.10 Person-In-Charge (PIC) - If more than one worker is required to work in the same substation, one of the workers must be designated as the (utility) Person-In-Charge.
- 3.11 Observe limits of approach at all times when in a substation. See the following:
- Alberta Electrical Utility Code (AEUC); and,
 - Yukon OHS Regulations; Part 9 – Electrical Safety
- 3.12 If the substation voltage is unknown; or, you are uncertain, contact YEC OIC, Project Manager, or H&S department.
- 3.13 Stay clear of, and do not disturb installed grounds.
- 3.14 All workers are required to complete a JSA/Tailboard prior to starting work in a YEC substation. The JSA must include first aid and rescue plans.

4.0 Substation safety requirements

- 4.1 **STOP – LOOK – LISTEN** – As you approach a substation, look for broken ground straps, broken grounds, damage to fencing, broken insulators, damage to conductors/buss work; or abnormal sounds.
If there is reason to suspect the integrity of any of the substation equipment immediately suspend activities, do not enter the substation (or exit the substation if already inside) and contact the SCC OIC.
- 4.2 Prior to unlocking the gate, take the back of your bare hand and quickly and lightly rub it across the fence. If you feel a tingle, do not enter the substation and immediately report the problem to your YEC supervisor.
- 4.3 Upon arrival at a substation, contact the person-in-charge (if required). Inform them of your scope of work.
- 4.4 Before beginning work on equipment verify that it is isolated and grounded.
- 4.5 Visually check equipment before starting work on/around it. Check for broken risers, broken porcelain etc.
- 4.6 Install barricades or flagging tape to identify safe work areas; and, keep workers out of areas where no work is required.


Substation – General safety rules

- 4.7 Be aware of mechanical dangers in substations. If you don't know what it does - don't stick your hand/arm in it (e.g., motorized airbrake wheel, etc.).
- 4.8 When there are vehicles or mobile equipment in the substation, ensure you can be seen by vehicle operators.
- 4.9 Before climbing onto a vehicle ensure limits of approach and grounding practices are being observed.
- 4.10 Tools and equipment used in substations should be made of non-conductive material (where practical).
- 4.11 Use of metal ladders or other stepping devices in YEC substations is prohibited. See YEC SWP-045; Use of Portable Ladders.
- 4.12 Do not carry anything over your shoulders; and, keep arms below shoulder level when working around energized equipment
- 4.13 Get help when carrying awkward or long items.
- 4.14 Do not rush or cut corners when working in a substation.
- 4.15 Do not get distracted by mobile phone – turn it off; leave it in truck; avoid being tempted to answer it when performing your work.
- 4.16 Know where phones, radios, fire extinguishers, and first aid kits are located in a substation.
- 4.17 Lock gate(s) when:
 - Substation is unattended;
 - Gate is not in close proximity of your work area; or,
 - Gate is not in line-of-sight of your work area.

5.0 Reference documents

- SWP-151; Substation PPE
- SWP-152; Substation Hazards and Equipment
- SWP-007; Traveling In Remote Location or Working Alone
- Alberta Electrical Utility Code
- Yukon OHS Regulations; Part 9

Appendix A – Substation Orientation form

 <p>Yukon energy</p>	<p>FORWARD ORIGINAL TO H&S</p> <p>File# 2340-02-06</p>														
<p>Substation Orientation</p> <p>Substation designation:</p> <p>Worker Name:</p> <p>Worker's company name:</p> <p>YEC Designate :</p> <p>Date:</p>															
<p>(Highest) Substation Voltage Limit if Approach (as per AETC)</p> <p style="text-align: center;">kV mm</p>															
<p>Worker has received site orientation for the following substation items/areas</p> <table border="1" style="width:100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 70%;">Has worker attended YEC Substation Awareness training?</th> <th style="width: 30%;">Worker Initial</th> </tr> </thead> <tbody> <tr> <td>Minimum PPE requirements: Class E Hard hat; safety footwear/dielectric ratings; safety glasses with side shields; FR clothing - HRC 2/ATPV 8</td> <td></td> </tr> <tr> <td>YEC check-in requirements: SCC phone number(s)</td> <td></td> </tr> <tr> <td>1st aid kit location:</td> <td></td> </tr> <tr> <td>Eye wash station location:</td> <td></td> </tr> <tr> <td>Fire extinguisher(s) location:</td> <td></td> </tr> <tr> <td>Fire alarm location:</td> <td></td> </tr> </tbody> </table>		Has worker attended YEC Substation Awareness training?	Worker Initial	Minimum PPE requirements: Class E Hard hat; safety footwear/dielectric ratings; safety glasses with side shields; FR clothing - HRC 2/ATPV 8		YEC check-in requirements: SCC phone number(s)		1 st aid kit location:		Eye wash station location:		Fire extinguisher(s) location:		Fire alarm location:	
Has worker attended YEC Substation Awareness training?	Worker Initial														
Minimum PPE requirements: Class E Hard hat; safety footwear/dielectric ratings; safety glasses with side shields; FR clothing - HRC 2/ATPV 8															
YEC check-in requirements: SCC phone number(s)															
1 st aid kit location:															
Eye wash station location:															
Fire extinguisher(s) location:															
Fire alarm location:															
<p>Telephone/radio location:</p> <p>Emergency contacts</p> <p>Radio instruction</p> <p>Substation control room:</p> <p>Restricted areas</p>	<p>Worker Initial</p>														
<p>Site hazards (other work groups, restricted areas, vehicle set up, etc.)</p>															
<p>Discuss the following with the worker:</p> <table border="1" style="width:100%; border-collapse: collapse;"> <tbody> <tr> <td style="width: 60%;">Is/4 Tailboard requirements</td> <td style="width: 40%;"></td> </tr> <tr> <td>Step and Touch potential</td> <td></td> </tr> <tr> <td>(What to do if they observe broken/damaged) Substation grounds</td> <td></td> </tr> <tr> <td>Restricted tools and equipment</td> <td></td> </tr> </tbody> </table>		Is/4 Tailboard requirements		Step and Touch potential		(What to do if they observe broken/damaged) Substation grounds		Restricted tools and equipment							
Is/4 Tailboard requirements															
Step and Touch potential															
(What to do if they observe broken/damaged) Substation grounds															
Restricted tools and equipment															
<p>Comments/notes:</p>															
<p>Signature – YEC Designate</p>	<p>Signature – Worker/ Contractor</p>														

Appendix B – YEC check in/out protocol.

Contact SCC OIC at one of the following numbers:

- 867 393 5355; or
- 867 393 5324.

Note – these lines are recorded.

Use the following (or similar) wording when checking in with SCC OIC:

WORKER -

This is [worker name] at [SUBSTATION NAME] informing [OIC name] at SCC, that I am checking into [SUBSTATION NAME] to [brief work description].

SCC OIC reply –

This is [OIC name] at SCC to [worker name] at [SUBSTATION NAME]; I understand that you are checking into [SUBSTATION NAME] to [brief work description]. Is that correct?

WORKER reply – *That is correct.*

Use the following (or similar) wording when checking out with SCC OIC:

WORKER –

This is [worker name] at [SUBSTATION NAME]; informing [OIC name] at SCC, that I have completed my work, all workers and equipment are in the clear, and I am checking out of [SUBSTATION NAME]; and, the gate is closed and locked.

SCC OIC reply –

This is [OIC name] at SCC to [worker name] at [SUBSTATION NAME]; I understand that you have completed your work, all workers and equipment are in the clear, and you are checking out of [SUBSTATION NAME]; and, the gate is closed and locked. Is that correct?

WORKER reply – *That is correct.*

Use the following (or similar) wording when checking in multiple workers on the same crew or job:

WORKER -

This is [worker name] at [SUBSTATION NAME] informing [OIC name] at SCC, that I am checking myself and [number of other workers] into [SUBSTATION NAME] to [brief work description].

SCC OIC reply –

This is [OIC name] at SCC to [worker name] at the [SUBSTATION NAME]; I understand that you [and number of other workers] are checking into [SUBSTATION NAME] to [brief work description]. Is that correct?

WORKER reply – *That is correct.*

Use the following (or similar) wording when checking out multiple workers on the same crew or job:

WORKER –

This is [worker name] at [SUBSTATION NAME]; informing [OIC name] at SCC, that I have completed my work, all workers and equipment are in the clear, and I [and number of other workers] are checking out of [SUBSTATION NAME]; and, the gate is closed and locked.

SCC OIC reply –

This is [OIC name] at SCC to [worker name] at [SUBSTATION NAME]; I understand that you have completed your work, all workers and equipment are in the clear, and you [and number of other workers] are checking out of [SUBSTATION NAME]; and, the gate is closed and locked. Is that correct?

WORKER reply – *That is correct.*

Appendix C – Accepted Equivalent Substation Training.

Currently, YEC accepts the following as equivalent training:

- AltaLink –
 - Utility Worker, Substations
 - Level 1 Utility Worker, Substations
 - Substation Orientation
- BC Hydro/PSSP
 - Cat 2, 3, 5
- Suncor
 - T&DS Substation Awareness, Level 1
- ATCO Electric
 - ATCO Electric Substation Orientation

Substation training not on this list should be forwarded to H&S for review.