

B O N N E V I L L E
P O W E R A D M I N I S T R A T I O N



RULES OF CONDUCT HANDBOOK

Procedures, Permits for Energized
Access, and Clearance Certifications

October 2022



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1. PURPOSE

The Rules of Conduct Handbook (ROCH) is a process document that governs access and movement within BPA energized facilities, as well as procedures required to obtain and renew permits and Clearance Certifications. The ROCH is established by BPA Policy 620-2, *Access to BPA Energized Facilities*.

2. CHANGE CONTROL PROCESS

Changes can be proposed to the Rules of Conduct Handbook at any time. Provide the page number, section, and problem statement with your change proposal and submit it to subops@bpa.gov for inclusion onto the quarterly committee meeting agenda. The Rules of Conduct Handbook Review Team is chaired by the Substation Operations Group Supervisor and consists of representatives from the following organizations:

- Safety – NF
- Contracting – NSS
- Personnel Security – NNP
- Physical Security – NNT
- Construction and Maintenance Services – TFH
- Supplemental Labor Management Office – NSP
- Security Governance and Oversight – TTB

The Review Team will discuss proposals, verify that the changes will comply with applicable compliance requirements and move them onto the final step in the approval process.

3. DEFINITIONS

Alarm Monitoring Station (AMS)

Monitors all security alarm and video feeds at NERC CIP sites. AMS phone number is 360-418-2470.

Clearance Certification

A certification which allows a person to hold or issue Clearances and Hold Orders on BPA normally energized equipment for the performance of work.

Contracting Officer's Representative (COR)	Responsible for submitting required documentation to TOZ on behalf of the Non-Supplemental Labor contractor.
Contractor Full Time Equivalent (CFTE)	Contractors managed through the Supplemental Labor Management Office (SLMO).
Energized Access	Permission to enter energized facilities unescorted granted to persons that have met the permitting process requirements. Entry into energized facilities is considered restricted access. Only the Substation Operations Group (TOZ) can grant energized access.
Energized Facilities	BPA substations, including substation control houses, all buildings included as part of the substation perimeter or contained within the substation and the high voltage switchyard having energized equipment connected to the high voltage power system.
Energized Facilities Access Request and Lost or Damaged Key Report BPA F 6500.11e (Energized Facilities Access Request)	Form submitted for BFTE and CFTE personnel as part of the permitting process to request energized access and an energized facility key.
Energized Facility Key (EFK)	A hard key that provides access to Non-NERC CIP energized areas. Per NERC CIP Standard 3-8, the energized facility key allows energized access to "low" sites. The EFK may only be issued to and used by individuals with a permit for energized access.

Energized Facility
Non-CFTE Attestation
Application (Attestation
Application)

Application form submitted by
Non-CFTE suppliers, affirming
through signature that the
submitted contractor employee
meets the regulatory requirements
for the permit type requested.

Escort

A permitted person providing
escorted access and movement
for a non-permitted person within
a BPA energized facility whose
permit is appropriate to the level of
work or supervision of work to be
performed by the non-permitted
person.

Escort (5:1) Ratio

A ratio limiting the maximum
number of non-permitted persons
to be escorted to five (5) visitors at
a time in an Energized Facility,
switchyard, or NERC CIP physical
security perimeter (PSP).

Exam Administrator

A person authorized by the
Substation Operations Group
Supervisor to administer a written
permit exam.

Exam Proctor

A person authorized by an exam
administrator to assist in the
administration of a written permit
exam to ensure the integrity of the
test environment.

ID Badge/
Proximity Card

- DOE/BPA (photo)
identification badge issued for
the purpose of accessing BPA
facilities.
- Proximity card issued by BPA
for the purpose of access into
facilities with electronic access
controls.

Minimum Approach Distance (MAD)	Minimum distance required between energized conductors or equipment and workers, that must be maintained as identified in the Accident Prevention Manual (APM) and the Contractor Safety and Health Requirements.
NERC CIP Site	A building which contains Critical Cyber Assets as defined by NERC. At NERC CIP substations these are the control house and relay house. The substation switchyard is not a NERC CIP Site.
NERC CIP Training	Annual security awareness training required for unescorted access into energized facilities.
Non-Contractor Full Time Equivalent (Non-CFTE)	A Non-Supplemental Labor contractor working under a contract which requires adherence to the Contractor Safety and Health Requirements for Prime and Subcontractors.
Normally Energized	High voltage power system equipment is considered “normally energized” if it is energized or could be energized by closing an isolating device.
North American Electric Reliability Corporation (NERC)	A not-for-profit international regulatory authority whose mission is to assure the effective and efficient reduction of risks to the reliability and security of the power grid.

Permit Cycle	Begins the first month of the odd year (01/01/xxxx). The length of time a permit is valid as defined in the Rules Of Conduct Handbook, Section 4.6.
Permit For Energized Access (permit)	A level of permission granted to persons that have met the requirements to enter energized facilities unescorted. The two permit levels are: Substation Entry Permit (SEP) Electrical Worker Permit (EWP)
Physical Security Perimeter (PSP)	The physical border surrounding locations, in which BES cyber assets, BES cyber systems, or electronic access control or monitoring systems reside, contained within a NERC CIP Site and for which access is controlled.
Qualified Electrical Worker (QEW)	A person knowledgeable in the construction and operation of electric power generation, transmission, and distribution equipment involved, along with the associated hazards. To be considered a QEW, a person must have completed an approved apprenticeship or training program with demonstrated experience and competency in their respective craft as determined by management, and the training required by DOL/OSHA 1910.269 (a)(2)(ii). Only a QEW with an Electrical Worker Permit (EWP) is authorized to wear a yellow hard hat.

Substation Electrical Hazard Awareness Tour (SEHAT or Substation Tour)

A guided tour of an energized substation conducted by a Chief Substation Operator or their designee. Substation tours are required for BFTE & CFTE for the completion of the permitting process.

4. GENERAL PERMIT INFORMATION

Permits are required for unescorted access to BPA energized facilities. Permits will only be issued to those persons who have a business need to enter energized facilities as determined by the person's manager (Approving Official), Contracting Officer or by contractual requirements. A person applying for a permit for energized access must meet the minimum requirements as defined in this document.

There are two permit levels to ensure alignment with OSHA regulation 1910.269(a)(2)(i) and (a)(2)(ii) requirements:

- Substation Entry Permit (SEP)
- Electrical Worker Permit (EWP)

The following sections are separated by employee type, as follows:

- See **Section 5** for Bonneville Full Time Equivalent (BFTE) employees & Contractor Full Time Equivalent (CFTE) requirements.
- See **Section 6** for Prime and Subcontractor (Non-CFTE) requirements.

4.1 Obtaining a New Permit

To obtain a new permit, the applicant must meet the minimum requirements and complete all items listed in Sections 5 or 6, depending on employment type, for the appropriate permit. Each applicant will have 120 days to complete the identified requirements to obtain a permit for energized access.

- See **Section 5** for the BFTE/CFTE permitting process.
- See **Section 6** for the Non-CFTE permitting process.

4.2 Renewing an Existing Permit

For BFTE and CFTE, to renew a permit, the applicant must take and pass the necessary permit exam during the identified renewal cycle. **When renewing a permit, the submittal of the Energized Facilities Access Request (BPA F 6500.11e) is NOT required.**

For Non-CFTE, a new Attestation Application shall be submitted in accordance with the renewal cycle.

Renewals occur between March 1st and May 31st of odd-numbered years regardless of the date the original permit was issued.

4.3 Revoking an Existing Permit

Revocation of a permit may occur when an individual demonstrates at-risk behavior while entering, performing work or exiting an energized facility, or on the right of way. BPA Management maintains the right to revoke a permit in consultation with the Substation Operations Supervisor.

Causes for permit revocation include, but are not limited to:

- Demonstrated lack of skill or knowledge required for the issued permit.
- Failure to follow established safety rules, procedures or safe work practices, as identified in the APM, CSHRPS, ROCH, accepted Safety Plan, or State/Federal Occupational Health law.
- Breach of BPA security policy or established NERC CIP entry procedures, as outlined in the ROCH.
- Individual under investigation by Federal OSHA or state OSHA-equivalent, or a BPA appointed Incident Assessment Team (IAT).

It is the Manager/COR's responsibility to notify the Substation Operations group that an individual they are responsible for needs their permit revoked. A phone call or brief email will suffice as an initial notification, but a formal email notification which details the at-risk behaviors that led to this action must follow within 24 hours. This formal notification will be the basis of the mitigation plan that the Manager/COR must carry out, prior to the energized access being reinstated.

For situations where an individual is under investigation by Federal OSHA or state OSHA-equivalent, or a BPA appointed Incident Assessment Team (IAT), a member of the Safety Organization Leadership Team will notify the Substation Operations Group by email that an individual needs their permit revoked.

4.3.1 Revoking a Permit BFTE/CFTE:

If energized access was revoked for cause, the manager of the employee or Contract worker will assess the cause of the incident or

performance that led to the revocation, and will execute a mitigation plan to correct identified performance concerns.

4.3.2 Revoking a Permit Non-CFTE:

If energized access was revoked for cause, the Contractor will assess the cause of the incident or performance that led to the revocation, provide these findings in writing to the Contracting Officer, and will execute a mitigation plan to correct identified performance concerns.

4.4 Reinstating a Permit

If a permit was held during the current permit cycle, and the current NERC CIP training has been completed, the permit can be reinstated by the submittal of an Energized Facilities Access Request (BPA F 6500.11e) for BFTE/CFTE or an Attestation Application for Non-CFTE.

If a permit was held within one permit cycle of the current permit cycle, the completion of the APM safe workplace training and substation tour requirements may be waived (BFTE/CFTE only) by the Substation Operations Group Supervisor.

If a permit has NOT been held within one permit cycle of the current permit cycle, the person must meet the requirements for a new permit.

If the permit was revoked due to an individual demonstrated at-risk behavior, a mitigation plan must be carried out to ensure that the specific at-risk behaviors resulting in the revocation have been corrected. This mitigation plan must be specific to the demonstrated at-risk behavior of the individual and may include discussion, retraining, testing, or review of appropriate materials to prevent recurrence. Whatever method that the Manager/COR decides is best to correct the behavior must be identified along with the date it was completed as part of the mitigation plan. Upon completion of the plan, an email notification containing all of this information will be sent to the TOZ Supervisor which will be used as a formal record within the individuals permitting file. The Manager/COR must then initiate the reinstatement of the individual by submitting an Energized Facilities Access Request (BPA F 6500.11e) for BFTE/CFTE or an Attestation Application for Non-CFTE.

In instances where an individual is under investigation by Federal OSHA or state OSHA-equivalent, or a BPA appointed Incident Assessment Team (IAT), the approval to reinstate an individual will come from the Safety Organization. Once approval is received, the

Manager/COR must then initiate the reinstatement of the individual by submitting an Energized Facilities Access Request (BPA F 6500.11e) for BFTE/CFTE or an Attestation Application for Non-CFTE.

4.5 Changing a Permit Level

All requests for permit level changes require the submission of an Energized Facilities Access Request (BPA F 6500.11e) for BFTE/CFTE or an Attestation Application for Non-CFTE. Requests must be received and approved by the Substation Operations Group. The permit holder will be notified once the request has been approved.

For BFTE and CFTE, the application requests can be completed electronically and submitted for approval:

- When changing from the EWP to the SEP, an SEP exam is not required if requested within the current permit cycle, however the applicant must complete and submit a new Energized Facilities Access Request (BPA F 6500.11e).
- When changing from the SEP to the EWP, the applicant must complete and submit a new Energized Facilities Access Request (BPA F 6500.11e) and meet the permit requirements listed in Section 5.

For Non-CFTE, resubmit an Attestation Application, selecting “change permit type” to the COR via DocuSign. See Section 6 for process requirements.

4.6 Permit Cycles

Permits must be renewed on a two-year cycle. All permits expire on May 31st of odd numbered calendar years regardless of the date of issue. There are two exceptions to the two year cycle:

- Section 4.6.1 Students Requiring Permits
- Section 4.6.2 Craft Apprentices and Trainees

4.6.1 Students Requiring Permits

Students may be issued a Substation Entry Permit. Permits for students requiring unescorted access to energized facilities will be granted once permit requirements have been met and for the duration of their appointment, not to exceed three months. The end date of their temporary assignment requiring the permit must be listed on the Energized Facilities Access Request (BPA F 6500.11e). Substation Entry Permits will not be granted if the Assignment End Date is not provided on the application.

The permit will expire on the end date listed on the Application or three months from the time of the permit approval, whichever comes first. Substation Entry Permits for students may be renewed as necessary for additional three month periods with the submittal of an Energized Facilities Access Request (BPA F 6500.11e) for each extension.

The manager of the student program must approve the applications for all students requesting a permit.

Students will not be issued an energized facility key.

4.6.2 Craft Apprentices and Trainees

Craft apprentice and trainee permits will remain valid for the duration of their training programs.

NOTE: BPA employees who transfer to a trainee program and currently hold an Electrical Worker Permit and Clearance Certification may retain the Electrical Worker Permit during the trainee program; however the Clearance Certification will be removed. A new Energized Facilities Access Request (BPA F 6500.11e) is required when requesting a Clearance Certification at the completion of a training program and a Clearance Certification is a job requirement.

4.7 NERC Critical Infrastructure Protection (NERC CIP) Access Requirements

NERC CIP 004 requires a quarterly review of personnel having access to NERC CIP sites and a review of personnel changes for those persons at the time of the notification.

4.7.1 Quarterly Access Verification (QAV)

During the last month of each quarter (March, June, September & December) performance managers and CORs will receive a list of their assigned personnel who have energized access. The performance managers and CORs must review the list and determine if their assigned personnel have a continued need for energized access.

Failure to respond by the required date will result in revocation of the person's permit.

4.7.2 Access Review of Personnel Changes

All personnel changes for persons with energized access must be reviewed to determine if there is a continued need for energized access.

4.7.2.1 Change in Employment Status

Any change in employment status of BPA employees (BFTE), supplemental labor (CFTE), or Non-CFTE who have been granted energized access (i.e. due to retirement, resignation, termination for cause, end of contract, reassignment, etc.) must have their electronic/energized access revoked within 24 hours of the effective date and the energized facility key collected. **Failure to meet this requirement will result in a self-report by BPA to WECC of the violation of this requirement.**

In order for BPA to accomplish access revocation within the 24 hour requirement, report the action to the Access Revocation Team by calling 503-230-2625 or email at Revoke@bpa.gov with the information listed below. In addition, the Substation Operations Group, (TOZ), shall be notified by email at subops@bpa.gov. For all contract labor workers the Supplemental Labor office shall also be notified at SupplementalLabor@bpa.gov as well as the COR. Provide the following information:

- The name of the person
- The date/time of the action
- The type of change (separation, retirement, etc.)
- The company the person was employed by

Worker Type	Responsible Party	Notifications
Federal Employees (BFTE)	BPA Manager	Preferred: Revoke@bpa.gov subops@bpa.gov Alternate: 503-230-2625
Supplemental Labor Contractors (CFTE)	COR/BPA Manager	Preferred: Revoke@bpa.gov subops@bpa.gov SupplementalLabor@bpa.gov Alternate: 503-230-2625
Non-Supplemental Labor Contractors (Non-CFTE)	Prime Contractor Assigned COR	Preferred: Revoke@bpa.gov subops@bpa.gov SupplementalLabor@bpa.gov and the COR Alternate: 503-230-2625

Notification is to be done as soon as the employment status change is known, but no later than 4 hours after the change in employment status is effective. The Access Revocation Team may be contacted any time 24/7.

4.7.2.2 Change in Position

For BFTE and CFTE, if a person's role changes, Substation Operations Group must review the access change. Substation Operations Group will automatically approve continued energized access for the following HRMIS actions:

- Reorganizations
- Craft specific promotions
- Craft specific details
- Realignment
- Duty location changes

The Substation Operations Group will contact the gaining manager for the following HRMIS actions:

- Competitive promotions
- Temporary promotions
- CFTE to BFTE conversions
- Student conversions
- Details
- Reassignments
- Change to lower grades

The gaining manager has 7 calendar days from the time they are contacted by the Substation Operations Group to respond regarding the person's need for energized access. If the person will need to retain energized access, the gaining manager must submit a new Energized Facilities Access Request (BPA F 6500.11e) to the Substation Operations Group.

If the gaining manager fails to respond within the 7 calendar day period, the person's energized access will be revoked. The person's energized access may be reinstated by following the process outlined in Section 4.4 "Reinstating a Permit."

For extended absence lasting longer than 90 calendar days, the Substation Operations Group will revoke the person's energized access upon notification from the manager or COR. Submission of an Energized Facilities Access Request (BPA F 6500.11e) is required for reinstatement.

All suspension actions will result in removal of energized access for the duration of the suspension. If the person is in possession of an energized facility key, follow the process outlined in Section 8.1.5 "Return of Energized Facility Key."

For Non-CFTE, if a person's position changes a new Attestation Application is required.

5 BFTE & CFTE PERMITS FOR ENERGIZED ACCESS

A permit for energized access is required for unescorted access to an energized facility. The person's qualifications and the work to be performed determine permit level. Two types of permits are available; Substation Entry Permit and Electrical Worker Permit.

5.1 BFTE & CFTE Substation Entry Permit (SEP)

A Substation Entry Permit allows unescorted access into, out of and movement within energized facilities to perform predefined work by persons who have received appropriate instructions and training, and have demonstrated a level of understanding necessary to safely move about within energized facilities.

A Substation Entry Permit holder must:

- Possess a need to perform duties in or around energized facilities.
- Be trained in, and familiar with, the safety-related work practices, safety procedures, and other safety requirements that pertain to his or her job assignments.

- Have direct, on-site supervision of a person holding an Electrical Worker Permit acting as a Safety Watcher when performing any work involving the possibility of inadvertent contact with high voltage parts or the violation of MAD.

Substation Entry Permit holders may escort a non-permitted person for work up to the qualifications of the Substation Entry Permit holder. For any work that may affect the operation or protection of the power system or substation, consultation must first take place with the holder of an Electrical Worker Permit.

5.1.1 BFTE & CFTE SEP Minimum Requirements

To obtain a Substation Entry Permit, the following requirements must be met:

- Energized Facilities Access Request (BPA F 6500.11e)
- SLMO approval (CFTE only)
- Knowledge and understanding of the ROCH
- Knowledge and understanding of APM safety rules
- Knowledge and understanding of the Switching and Clearance Procedure sections listed in Section 5.3.3 of the ROCH
- Passing Substation Entry Permit Exam
- Substation Electrical Hazard Awareness Tour
- NERC CIP training (current year)
- Personnel Risk Assessment completion

5.1.2 BFTE & CFTE Process to Obtain a SEP

The process must begin with the submittal of an Energized Facilities Access Request (BPA F 6500.11e) to the Substation Operations Group. The electronic form is located on the Substation Operations SharePoint site or BPA Connection Page - Forms 6500.11e Energized Facilities Access Request Application.

When each person, or their Manager/COR, receives email confirmation from the Substation Operations Group, the individual may proceed with scheduling an exam through an approved exam administrator. **An exam taken before confirmation is received will be voided.**

The person is responsible for ensuring they have completed the following items, and the Substation Operations Group is responsible for verifying:

- Passing permit exam
- Substation Tour – taken with a Chief Substation Operator or their designated Substation Operator. The person conducting

the tour will submit the required tour form to the Substation Operations Group.

- NERC CIP training – available online through the BPA Homepage or in hardcopy form for persons without network access.
- Personnel Risk Assessment completion
- SLMO approval for CFTE

Once all requirements have been met, the Substation Entry Permit will be granted and electronic access to energized facilities will be granted upon completion of the permit process.

For access to energized facilities without electronic access controls, permitted persons must request an energized facility key. Refer to Rules of Conduct Handbook Section 8.1.1 “Requesting a New Energized Facility Key” for further instruction.

5.2 BFTE & CFTE Electrical Worker Permit (EWP)

This permit allows unescorted access into, out of and movement within energized facilities for the performance or supervision of work on the high voltage power system by fully trained and experienced qualified electrical workers.

It is the responsibility of the Manager or COR signing the Energized Facilities Access Request (BPA F 6500.11e) to demonstrate that a prospective Electrical Worker Permit holder possess the following:

- Need: Has a business need to perform, supervise/manage functions on or around energized facilities.
- Knowledge: Understands hazards inherent and precautions required for working safely on a high voltage power system as demonstrated by one of the following:
 - Related electrical theory and qualification as a journeyman or higher in one of the high voltage electrical crafts such as Electrician, Lineman, Substation Operator, or Craftsman.
 - Rating of GS-9 or higher in one of the classifications, including Field or District Engineer, Commissioning and Testing field Engineer and Technician or Laboratories and Field Service Engineer or equivalent positions.
- Experience: One year minimum in a position that meets the minimum requirements for an Electrical Worker Permit on BPA or equivalent high voltage power system.

Electrical Worker Permit holders may escort without predefined restrictions.

5.2.1 BFTE & CFTE EWP Minimum Requirements

To obtain an Electrical Worker Permit, the following requirements must be met:

- Energized Facilities Access Request (BPA F 6500.11e)
- SLMO approval (CFTE only)
- Knowledge and understanding of the ROCH
- Knowledge and understanding of APM safety rules
- Knowledge and understanding of the Switching and Clearance Procedure
- Passing Electrical Worker Permit exam
- Substation Electrical Hazard Awareness Tour
- APM Safe Workplace Training
- NERC CIP training (current year)
- Personnel Risk Assessment completion

5.2.2 BFTE & CFTE Process to Obtain an EWP

The process must begin with the submittal of an Energized Facilities Access Request (BPA F 6500.11e) to the Substation Operations Group. The electronic form is located on the Substation Operations SharePoint site or BPA Connection Page – Forms: 6500.11e Energized Access Application.

When the person, or the Manager/COR, receives an email confirmation from the Substation Operations Group, they may proceed with scheduling an exam through an approved exam administrator. **An exam taken before confirmation is received will be voided.**

The person is responsible for ensuring they have completed the following items and the Substation Operations Group is responsible for verifying:

- Passing permit exam
- Substation Tour – taken with a Chief Substation Operator or their designated Substation Operator. The person administering the tour will submit the required tour form to the Substation Operations Group.
- APM Safe Workplace Training – in person class that occurs once per quarter. Registration for the class is done through HRMIS.

- NERC CIP training – available online through the BPA Homepage or in hardcopy form for persons without network access.
- Personnel Risk Assessment completion
- SLMO approval for CFTE

Once all requirements have been met, the Electrical Worker Permit will be granted and electronic energized access will be granted upon completion of the permit process.

Electrical apprentices and craftsmen trainees who have not previously qualified in one of the electrical crafts or classifications will not be issued an Electrical Worker Permit or Clearance Certification until completion of their training.

For access to energized facilities without electronic access controls, permitted persons must request an energized facility key. Refer to Rules of Conduct Handbook Section 8.1.1 “Requesting a New Energized Facility Key” for further instruction.

5.3 BFTE & CFTE Permit Exams

All BFTE and CFTE requesting a permit must pass an open book exam for the appropriate permit level before the permit will be granted. The Substation Operations Group Supervisor is responsible for the development and administration of all exams required for permits.

5.3.1 Permit Exam Requirements

The permit exam requirements in this section outline the requirements for the exam process.

The following requirements apply to all persons taking a permit exam:

- All written exams must be administered and graded by exam administrators designated by the Substation Operations Group Supervisor.
- Reference material allowed during the open book exams are the APM, ROCH and Switching and Clearance Procedure (OB #2).
- All persons requesting a permit will have two opportunities to take and pass the permit exam. Failure of two exams will result in the failure to obtain and/or maintain the permit for energized access.
- Failure of two exams in a calendar year will result in failure to obtain any permit for the remainder of the calendar year.

- 80% of questions must be answered correctly to be considered passing. Incorrectly answering any part of a question constitutes an incorrect answer for that question.
- Upon failure of an initial exam, a second opportunity (retake) may be given no earlier than 14 calendar days from the date of the first failure.
- **Upon failure of a second exam, a person’s current permit will be revoked.**

5.3.1.2 Permit Exam Requirements – When Condition of Employment

When a permit for energized access is a condition of employment for BFTE, an employee is eligible for a third (final) opportunity to take and pass an exam.

Refer to the Substation Operations SharePoint site for the Permits for *“Energized Access and Clearance Certification Examination Requirements”* for detailed information regarding the process for the third exam.

5.3.2 Permit Exam Administration

The Substation Operations Group Supervisor may delegate the administration of the written exams to approved exam administrators. The list of approved exam administrators is available on the Substation Operations Group SharePoint site.

- First written exams may be administered by any approved exam administrator.
- A second written exam (retake) shall only be administered by a Chief Substation Operator, Control Center Manager, or Substation Operations Group staff member designated as an approved exam administrator.
- Third written exams may only be administered by the Substation Operations Group.

If a person fails to follow the exam administrator’s instructions, or if the exam administrator witnesses any portion of the testing policy being violated (i.e., cheating, photographing the exam, etc.) during the exam, the exam will be counted as a failure.

If an exam is administered prior to the person being eligible to take the exam, the exam will be considered void.

5.3.3 BFTE & CFTE Knowledge Requirements:

Substation Entry Permit knowledge requirements for BPA employees (BFTE) and Supplemental Labor contractors (CFTE) include:

Knowledge and understanding of the following:

- All Accident Prevention Manual (APM) rules,
- All of the Rules of Conduct Handbook (ROCH),
- The following sections of the Switching and Clearance Procedure:

Switching and Clearance Procedure section

I – NERC Certified System Operator

II – Communications

III – Trouble Reporting

VIII – Work Permits

IX – Low Voltage Circuits, Equipment and Energy Storage Systems

X.8 – Tagging for Work Permits

X.9 – Tagging for De-energized Low Voltage Circuits

XI. – Color Addendum

Glossary of Special Terms and Phrases

Electrical Worker Permit (EWP) Requirements for BPA employees (BFTE) and Supplemental Labor contractors (CFTE)

Knowledge and understanding of the following:

- All Accident Prevention Manual (APM) rules,
- All of the Rules of Conduct Handbook (ROCH) rules,
- Entire Switching and Clearance Procedure

6 NON-CFTE PERMITS FOR ENERGIZED ACCESS

For Non-CFTE, if the COR determines a permit is appropriate to complete the scope of work awarded, a permit for energized access is required for unescorted access to an energized facility. Two types of permits are available: Substation Entry Permit and Electrical Worker Permit.

6.1 Non-CFTE Substation Entry Permit (SEP)

The Substation Entry Permit allows unescorted access into, out of and movement within energized facilities to perform predefined work by persons who have received appropriate instructions and training, and have demonstrated a level of understanding necessary to safely move about within energized facilities.

A Substation Entry Permit holder must:

- Possess a need to perform duties in or around energized facilities.
- Be trained in, and familiar with, the safety-related work practices, safety procedures, and other safety requirements that pertain to his or her job assignments.
- Have direct, on-site supervision of a person holding an Electrical Worker Permit acting as a Safety Watcher when performing any work involving the possibility of inadvertent contact with high voltage parts or the violation of MAD.

Substation Entry Permit holders may escort a non-permitted person for work up to the qualifications of the Substation Entry Permit holder. For any work that may affect the operation or protection of the power system or substation, consultation must first take place with the holder of an Electrical Worker Permit.

6.1.1 Non-CFTE Minimum Substation Entry Requirements

To obtain a Substation Entry Permit, the following requirements must be met:

- Signed Attestation Application verifying the following:
 - Knowledge and understanding of the ROCH
 - Knowledge and understanding of the applicable sections of the Contractor Safety and Health Requirements for Prime and Subcontractors (CSHRPS)
- Acknowledge having viewed the BPA Substation Safety & Security video
- NERC CIP training (current year)
- Personnel Risk Assessment completion

6.1.2 Non-CFTE Process to Obtain a Substation Entry Permit (SEP)

To obtain a Substation Entry Permit, the application process will be facilitated electronically. The process must begin with the Non-CFTE personnel viewing the BPA Substation Safety & Security video, outlining appropriate process and controls for entry into, work in, and exiting an energized facility. A link to the video will be included in the application envelope emailed to the Contractor. The Contractor is responsible to distribute the link to the appropriate Non-CFTE personnel prior to submitting the application. The Contractor will completely fill out the application and attest to the appropriate qualifications of the Non-CFTE personnel. Once completed, the envelope will automatically be routed to the COR and Substation Operations for completion. The COR will notify the Non-CFTE personnel once the permit has been approved.

6.2 Non-CFTE Electrical Worker Permit (EWP)

This permit allows unescorted access into, out of, and movement within energized facilities for the performance or supervision of work on the high voltage power system by fully trained and experienced qualified electrical workers, as defined by OSHA.

A Non-CFTE Electrical Worker Permit holder must:

- Need to perform, supervise/manage functions on or around energized facilities.
- Understand hazards inherent and precautions required for working safely on a high voltage power system.
- Experience: One year minimum in a position that meets the minimum requirements for an Electrical Worker Permit on BPA or equivalent high voltage power system.

Electrical Worker Permit holders may escort without predefined restrictions. Upon successful approval of an Electrical Worker Permit, the personnel may act as a Safety Watcher.

6.2.1 Non-CFTE Minimum Electrical Worker Permit Requirements

To obtain an Electrical Worker Permit, the following requirements must be met:

- Signed Attestation Application verifying the following:
 - Knowledge and understanding of the ROCH
 - Knowledge and understanding of the applicable sections of the Contractor Safety and Health Requirements for Prime and Subcontractors (CSHRPS)
 - Acknowledgement having viewed the BPA Substation Safety & Security video
- NERC CIP training (current year)
- Personnel Risk Assessment completion

6.2.2 Non-CFTE Process to Obtain an Electrical Worker Permit

To obtain an Electrical Worker Permit, the application process will be facilitated electronically. The process must begin with the Non-CFTE personnel viewing the BPA Substation Safety & Security video, outlining appropriate process and controls for entry into, work in, and exiting an energized facility. A link to the video will be included in the application envelope emailed to the Contractor. The Contractor is responsible to distribute the link to the appropriate Non-CFTE personnel prior to submitting the application. The Contractor will completely fill out the application and attest to the appropriate qualifications of the Non-CFTE personnel. Once completed, the

envelope will automatically be routed to the COR and Substation Operations for completion. The COR will notify the Non-CFTE personnel once the permit has been approved.

7 METHODS OF ENERGIZED ACCESS

Physical access to a substation may be gained through a hard key or electronic access. To obtain either type of access, the person must possess a permit for energized access.

7.1 Electronic Energized Access

Electronic access to energized facilities will be added to the ID badge and proximity card for persons having completed the permit process. Only the Substation Operations Group has the authority to add energized access to the badge and card.

ID badges and proximity cards must have personalized PIN codes assigned to them in order for the cards to work at energized facility card readers at NERC CIP sites. If the PIN is missing from an ID or proximity card, contact AMS for instructions on how to assign a PIN. Non-CFTE should contact their COR to facilitate this process.

7.2 Energized Access Keys

An Energized Access Key provides access to an energized facility. They are to only be issued when the permitting requirements have been met for energized access.

There are three types of Energized Access Keys:

- Alternate Access Key (AAK)
- Energized Facility Key (EFK)
- Site Specific Key (SSK)

7.2.1 Alternate Access Keys

An alternate access key grants access to a NERC CIP site with electronic access controls in the event of an electronic access system failure which prevents workers and AMS security personnel from operating the door electronically.

For information on accessing a NERC CIP site during a failure of the electronic access controls, refer to BPA Work Standard BPA-WS-2-4, Site Specific and Alternate Access to Substations.

7.2.2 Energized Facility Keys

An energized facility key (EFK) allows unescorted access into energized facilities which do not have electronic access. An EFK will

only be issued to persons possessing a permit. Only the Substation Operations Group, or a Chief Substation Operator with the approval of the Substation Operations Group, shall issue a replacement EFK.

Persons needing access to energized facilities which do not have electronic access controls must request an EFK through the process identified in Rules of Conduct Handbook Section 8.1.1.

7.2.3 Site Specific Keys

A site specific key allows access into a specific energized facility and is issued through the local Chief Substation Operator. Site specific energized locks are installed on facilities which **do not** have electronic access controls. Refer to BPA Work Standard BPA-WS-2-4, Site Specific and Alternate Access to Substations.

8 ENERGIZED ACCESS KEY REQUIREMENTS

Access to an energized facility through the use of an energized access key by a person without appropriate authorization is considered unauthorized, and is a violation of the energized access key requirements.

8.1 Energized Facility Key (EFK)

The energized facility key is BPA property and is to be used for official business only. It is to be protected from being lost or stolen, and must be reported immediately to the Substation Operations Group if either situation occurs.

An energized facility key:

- Shall not be duplicated.
- Shall not be loaned or used by anyone other than to whom it is issued.

The key must be returned to the Substation Operations Group within 7 calendar days of the key holder no longer requiring access, or immediately if the individual's energized access has been removed and they no longer have authorization to access BPA energized facilities.

The Chief Substation Operator, Supplemental Labor Office (for CFTE) and the Contracting Officer's Representative (for Non-CFTE) have delegated authority to accept a key on behalf of the Substation Operations Group to fulfill the energized facility key requirement. The delegated authority accepting possession of the energized facility key will immediately notify the Substation Operations Group that they are

in possession of the key. Failure to collect the EFK when energized access has been removed may result in a self-report violation.

8.1.1 Requesting a New Energized Facility Key

For BFTE and CFTE, the energized facility key portion of the Energized Facilities Access Request (BPA F 6500.11e) shall be completed with required signatures of either the permit holder's manager or an official designated by Substation Operations Group and submitted to the Substation Operations Group.

For Non-CFTE, the Contractor shall submit an Attestation Application to the COR.

8.1.2 Damaged Energized Facility Key

For BFTE and CFTE, the energized facility key portion of the Energized Facilities Access Request (BPA F 6500.11e) shall be completed with required signatures and submitted with the damaged key to the Substation Operations Group. If a replacement key is required, select the "New Key" box in addition to the "Damaged Key" box. The form shall be signed by the permit holder's manager or official designated by Substation Operations Group, and submitted to the Substation Operations Group. Once the replacement key request has been submitted, send damaged key to Substation Operations.

For Non-CFTE, the Contractor shall return the damaged key to the COR (COR to send damaged key to Substation Operations) and resubmit an Attestation Application to the COR requesting a new key.

8.1.3 Lost Energized Facility Key

A lost key must be reported immediately to the Substation Operations Group. To report a key as lost, the following forms must be completed and submitted to the Substation Operations Group and the Physical Security Group:

- Energized Facilities Access Request (BPA F 6500.11e) (BFTE/CFTE)
- Attestation Application (Non-CFTE)
- Property Loss Report (form 4420.12e)
- Security Incident Report (form 5632.01e)

BFTE and CFTE: If a replacement key is required, an Energized Facilities Access Request (BPA F 6500.11e) shall be completed by selecting the "Lost Key" and "New Key Request" boxes. The form shall be approved by the permit holder's manager or designated official and submitted to the Substation Operations Group. If a

replacement key is required, select the “New Key” box in addition to the “Lost Key” box.

Non-CFTE: If a replacement key is required, an Attestation Application is required selecting the “Lost Key” and “New Key Request” boxes. The form shall be submitted to the COR for processing.

A replacement key will not be issued sooner than 5 calendar days from the time the completed Energized Facilities Access Request or Attestation Application, the Property Loss Report and Security Incident Report is received by the Substation Operations Group.

8.1.4 Stolen Energized Facility Key

A suspected stolen key shall be reported to the Substation Operations Group immediately. A Security Incident Report (BPA F 5632.01e) and Property Loss Report (form 4420.12e) shall be filled out and submitted to Security Services **and** the Substation Operations Group, within 24 hours. If a replacement key is required, BFTE and CFTE shall complete an Energized Facilities Access Request (BPA F 6500.11e) selecting the “Stolen Key” and “New Key Request” boxes. The form shall be signed by the permit holder’s manager or designated official and submitted to the Substation Operations Group.

For Non-CFTE, a suspected stolen key shall be reported to the COR. An Attestation Application shall be submitted and a Security Incident Report (BPA F 5632.01e) and Property Loss Report (form 4420.12e) shall be filled out and submitted to Security Services **and** the Substation Operations Group, within 24 hours.

Non-CFTE: If a replacement key is required, an Attestation Application is required selecting the “Stolen Key” and “New Key Request” boxes. The form shall be submitted to the COR for processing.

A replacement key will not be issued sooner than 5 calendar days from the time the completed Energized Facilities Access Request (BPA F 6500.11e) or Attestation Application and Security Incident Report is received by the Substation Operations Group.

8.1.5 Return of Energized Facility Key

When a permit is suspended, revoked or withdrawn, the permit holder must surrender the EFK to the Chief Substation Operator,

Supplemental Labor office, the COR, or return the energized facility key immediately to the Substation Operations Group.

8.1.6 Chief Substation Operator Issuance of Energized Facility Key

Chief Substation Operators may, after consultation with Substation Operations and, in an emergency, assign an energized facility key to a person who has met the necessary permitting requirements. Upon issuing an energized facility key the Chief Substation Operator will notify the Substation Operations Group of the transfer by submitting an Energized Facilities Access Request (BPA F 6500.11e). For the Non-CFTE, the individual will contact the COR to complete the Attestation Application. The Chief Substation Operator will provide a scanned copy of the completed EFK Responsibility document to the Substation Operations Group.

If replacing a damaged key, the Chief Substation Operator will retrieve and return the damaged key to the Substation Operations Group. If a previously presumed lost energized facility key is found, the Chief Substation Operator shall retrieve it and send it to the Substation Operations Group, identifying it as a previously lost key.

8.2 Site Specific Key

A Site Specific Key is BPA property and managed by the Chief Substation Operator. The key is to be used for official business only. The key shall be protected from loss or theft. If loss or theft occurs, it shall be reported immediately to the Chief Substation Operator.

The Chief Substation Operator maintains a key inventory for all facilities with Site Specific Key access within the district. The key is to be returned to the Chief Substation Operator when access is no longer required to the specific energized facility. The key cannot be duplicated. It shall never be loaned or used by anyone other than to whom it is issued.

9 SUBSTATION SECURITY

9.1 Responsible Party

Security of a substation is the responsibility of the person unlocking the entrance. Do not allow unauthorized persons to enter the substation. While unlocked, doors or gates must be physically attended at all times.

The last person out of an energized facility assumes the responsibility of making certain that all perimeter entrances and windows are closed and locked.

At NERC CIP sites, the first person who enters the facility must disarm the alarm panel. Each person with energized access must use their ID or proximity card and PIN prior to entry at the card reader and PIN pad. Tailgating is not allowed for entry or exit of an energized facility. Each person with energized access must present their ID or proximity card to the exit reader prior to exiting the facility.

Personnel who are authorized access but have lost, misplaced, or forgotten their ID or proximity card must call AMS at 360-418-2470 when they enter and exit a NERC CIP site to have AMS manually log the person in and out. At NERC CIP sites, personnel must verify that the alarm panel is armed prior to exit. Detailed instructions are posted at each NERC CIP site.

9.2 Substation Access Protocol

District phone numbers for District Substation Operations are listed in Appendix A of this document and on the Substation Information Directory posted at each substation.

When responding to trouble at any time, entry requires contacting the control center having jurisdiction. Contact numbers are posted on the Substation Control of Entry sign (Figure A) located on the substation entry door or gate.

Control of entry and exit to a facility under construction is the responsibility of the Construction and Maintenance Services Group, within Transmission Field Services or the Project Contractor until any portion of the station is released to System Operations. The name of the construction supervisor or the Test and Energization Engineer in charge is prominently posted in the control house and/or temporary project headquarters. Control of entry to a facility in which any part has been released to System Operations is the responsibility of the district Substation Operations. The Chief Substation Operator is responsible for posting “Substation Control of Entry” signs.

<p align="center">BONNEVILLE POWER ADMINISTRATION</p> <p align="center">[SUBSTATION NAME]</p> <p align="center">SUBSTATION CONTROL OF ENTRY</p> <p align="center">CONTACT PERSONNEL</p> <p>Contact the following personnel for information regarding entry to this substation, to report a fire, an injury incident in the substation, breach of security, unauthorized entry.</p> <p align="center">BPA MUNRO DISPATCHER > SPOKANE, WA</p> <p align="center">(509) 465-1820 (24 HOURS)</p> <p align="center">OR</p> <p align="center">(509) 465-1826 (24 HOURS)</p> <p>If uncertain of the station name, locate the name from the sign on perimeter fence or at the entrance to the station.</p>

Figure A

9.3 Entry, Exit and Work Performed Logging

9.3.1 All Energized Facilities

A Substation Operating Log is required at each substation. A Substation Security Log is required at NERC CIP substations and may be used at other substations. Each person entering an energized facility is required to sign in and sign out of the Substation Security Log or the Substation Operating Log if the Substation Security Log is not used.

The required information to enter into the log book, when signing in is:


- First and last name of each person entering
- Date and time of entry and departure
- Reason for entry
- Organization represented
- Escort's name if applicable
- Escort Location (checkbox, Yard, and/or PSP)

All work performed in a substation related to the operation and/or protection of the substation or power system is to be documented in the Substation Operating Log.

The person in charge of a crew may sign in and out all workers, including escorted individuals, listing each person's name with other required information stated above.

The following Instructions (Figure B) are located inside the front page of the Substation Operating Log and serves as a reminder of the required information that must be entered into the log.

BPA F5570.30
(08-18)
(Prior edition usable)



INSTRUCTIONS

THE FOLLOWING INFORMATION SHALL BE ENTERED IN THE SUBSTATION OPERATING LOG:

1. Name, organization represented, date, time of entry and departure, escort name (if applicable) and reason for **EACH** person entering. (This information shall be logged in the Substation Security Log, if one is provided.)
2. Work performed while in the substation, including adjustment or changes to equipment.
3. Routine and trouble switching in the sequence it was performed.
4. Switch Orders are logged exactly as they were written on the Switching Order form. All portions of the Switching Order form shall be logged by the switchman completing the Switching Order.
5. PCB operations, including reason for operation, time, and counter reading.
6. Automatic PCB operations:
 - Time of operation and counter reading.
 - Reason for operation.
 - Relay targets, abnormal meter readings, equipment temperatures and voltages.
 - Name, location and title of person(s) to whom the trouble is reported.
 - Weather conditions, if pertinent to the trouble.
7. Following equipment inspections, log the status: normal, problems found, and/or abnormal conditions found.
8. **ALL LOG ENTRIES ARE TO BE MADE IN INK. IF A MISTAKE IS MADE, IT IS TO BE LINED OUT AND INITIALED.**
9. **LOG THE FOLLOWING USING RED INK:**
 - **AUTOMATIC PCB OPERATIONS.**
 - **GROUND SWITCH OPERATIONS.**
 - **CLEARANCES AND HOLD ORDERS ISSUED BY OR RELEASED TO THE OPERATOR.**

Figure B

A Substation Entry sign (Figure C) posted at the entrance to a substation, states the responsibilities of each person entering a substation. These responsibilities are to be strictly followed.

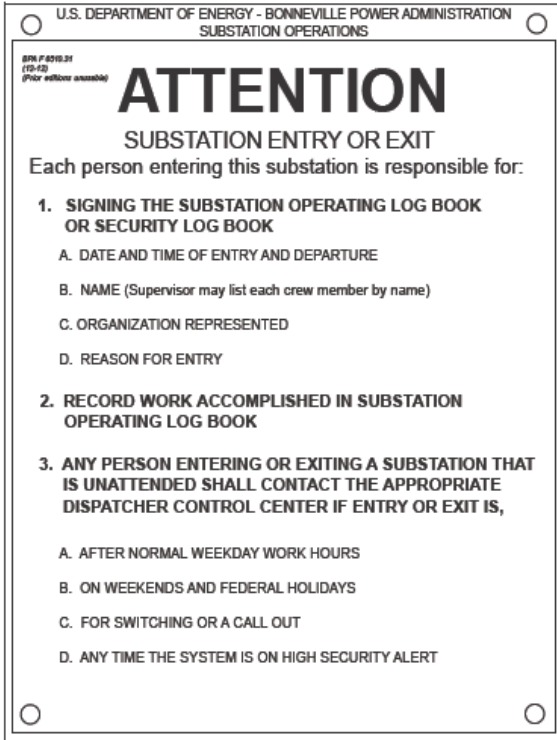


Figure C

9.3.2 NERC CIP Sites

At NERC CIP sites the Substation Security Log contains an Escort Location column to designate whether persons being escorted will be entering the Physical Security Perimeter (PSP) and/or Yard. The PSP is the building(s) containing critical cyber assets officially designated as the CIP Site.

If the person(s) being escorted will not be entering the control house or relay house, then check the box under “Yard.” If they will be entering the control house or relay house, then check the box under “PSP.” If they will be entering the yard and control/relay house, then check both the “Yard” & “PSP” boxes.

9.4 Escorting

9.4.1 All Energized Facilities

Entry into, exit out of, and movement within an energized facility by a non-permitted person requires an escort. Escorts must hold a Permit which would allow them to perform work at or above the level of the work to be performed by the person(s) being escorted. Non-permitted persons require the continual physical accompaniment of the escort.

A ratio limiting the maximum number of non-permitted persons to be escorted to five (5) visitors at a time in an Energized Facility, switchyard, or NERC CIP physical security perimeter (PSP).

A permitted worker providing access and escorting duties is responsible for adherence of non-permitted persons to all applicable rules including, but not limited to:

- access to energized facilities
- escorting
- substation security
- applicable Accident Prevention Manual (APM) rules and procedures (BFTE and CFTE)
- Knowledge and understanding of the Contractor Safety and Health Requirements for Prime and Subcontractors (Non-CFTE)

If the persons being escorted will be entering within 15 feet of voltages up to 345 kV or 20 feet for voltages above 345 kV, on foot or in a vehicle, the escort shall provide each non-permitted person the following information for each substation in which they are being escorted:

- Procedure for identifying energized equipment in accordance with OSHA 1910.269 (a)(2)(i) and (a)(2)(ii)
- All voltages present in the yard and how to identify voltage level of specific equipment
- The Minimum Approach Distance for all voltages in the yard
- The hazards associated with violation of the Minimum Approach Distances

Non-permitted persons who are working continuously at the same location need only be given the above information on the first day. If their work at the location is interrupted for more than 5 calendar days the non-permitted person must be given the above information again by the escort on re-entry into the energized facility.

Contractors needing an escort for permit-related training or exam shall be provided an escort by the sponsoring work group or Contracting Officer's Representative.

Personnel providing escort shall be responsible for adherence to the requirements of all parts of Section 9.3 for all persons being escorted.

9.4.2 NERC CIP Sites

If personnel being escorted will be entering a control house or relay house at a NERC CIP site the person providing escort, in addition to fulfilling the requirements of Section 9.3, will be required to call AMS at 360-418-2470 and provide the following information on all personnel being escorted:

- Time of entry
- Escort Name
- Name of NERC CIP Site
- Where they will be entering; the PSP (control house, relay house) and/or Yard
- Is the person an employee (with energized access) or a visitor
- First and last name of each person being escorted
- Organization or Company of person being escorted
- Reason for entry
- Contact number for escort

Upon exiting the facility the escort will call AMS and provide the exit time for all personnel being escorted. Calling AMS is only required on the initial entry and final departure. Failure to accomplish the above procedure will violate BPA's Control of Entry rules and NERC CIP 006.

If personnel being escorted will not be entering a control house or relay house, contacting AMS is not required.

9.5 Unauthorized Entry, Breach of Security, Damage or Suspicious Object

Upon discovery of an indication of forced entry or other breaches of security through a door, window, gate, or hole cut in the perimeter fence, or any suspicious object found or damage or destruction of the facility that is a result of actual or suspected intentional human action:

- Withdraw to a safe location and call 911
- Notify the Control Center having jurisdiction. The Control Center number will be posted on a sign on the front door similar to Figure A in Section 9.2. Dittmer Control Center can be reached at 800-392-0816 Munro Control Center can be reached at 877-836-6632

- Contact AMS at 360-418-2470
- If contacted by the news media, refer them to Public Affairs at 503-230-5131

10. SUBSTATION ELECTRICAL HAZARD AWARENESS

10.1 Voltage Identification

All persons requiring unescorted access into, out of, and movement within energized facilities must possess the knowledge and skills necessary to distinguish energized parts from non-energized parts of the electrical equipment, nominal voltage of exposed parts and corresponding Minimum Approach Distances.

Some of the resources available for identifying voltages in energized facilities are:

- Station prints – one-line diagrams are found in the station print cabinet and are the first diagrams in the station prints.
- Mimic bus color codes – The mimic bus on the control panels is a representation of the layout of the equipment located in the switchyard. The color of the mimic bus indicates the nominal voltage of that equipment.

COLOR	NOMINAL VOLTAGES	COLOR	NOMINAL VOLTAGES
Orange	11.5 - 13.8 kV	Red	230 kV
Purple	34.5 kV	Red/Blue	287 kV
Green	69 kV	Red/Yellow	345 kV
Yellow	115 kV	Black	500 kV

Letter designations for voltage classifications:

- 230 kV, 287 kV, and 345 kV class – letter designation “A”
- 115 kV, 138 kV and 161 kV class – letter designation “B”
- 69 kV class and below – letter designation “L”
- 500 kV class and above – have no letter designation but uses numbers ranging from 4000 to 6999.

Number and size of insulators – The higher the nominal voltage, the more insulators that are required to keep the voltage from shorting to ground. The following are examples of some of the types of insulators used on the BPA system for different voltages:

Cap-and-Pin and Pin Insulators

Cap-and-pin insulators were used before the development of station post insulators. BPA does not use cap-and-pin insulators in new projects but many are still in service and are nearing end of life. Special solid-core station post replacements for cap-and-pin insulators may be used in the field, when standard station posts cannot be used.

- A single, non-stacking cap-and-pin insulator is used up to and including 46 kV.



33kV Pin Insulator

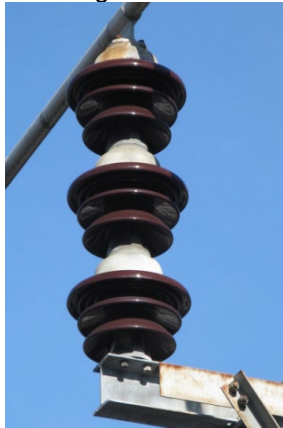


34.5kV Single Unit Cap & Pin

- For voltages 69 kV and above, cap-and-pin insulators are assembled in stacks to provide higher insulation levels.



230 kV Bus Support



115 kV Bus Support

Stacking Cap-and-Pin

These insulators are assembled in stacks for the required voltage rating. They are used for like-replacement and some expansion work of existing 115 kV, 230 kV, 287 kV, and 345 kV installations. They are stacked as follows:

- Two units for 69 kV
- Three units for 115 kV
- Five units for 230 kV
- Seven units for 345 kV

NOTE: Refer to BPA standard drawings for insulator dimensions.



115 kV Disconnect Support



230 kV Disconnect Support

Station Post Insulators

The three main components are the metal end-castings, the porcelain body, and the cementing media between the metal and the porcelain. Station post-type insulators are customarily classified in two groups:

- Non-stacking or single-unit designs from 7.5 kV to 230 kV
- Stacking units from 115kV and above

Outdoor Non-Stacking Post Type

These insulators are single-unit with threaded holes in the cap and base for cap screw mounting. Non-stacking post insulators are used in 12.5 kV through 230 kV installations.



34.5 kV Non-Stacking Post

Outdoor Stacking Post Type

These insulators are comprised of multiple sections bolted together into a stack. Insulators for use at 500 kV may have a BIL of 1550 kV or 1800 kV, depending upon the substation requirements.



**115 kV
Disconnect**

**230 kV Disconnect
Hinge End**



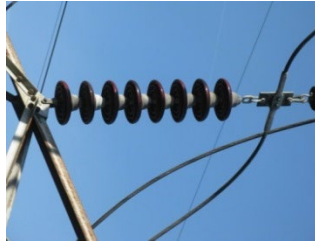
230 kV Disconnect

Strain Bus Insulators

The ANSI standard insulator most commonly used is the ball-and-socket-suspension type. The number of units used in a string is approximately proportional to the line-to-ground voltage times 10.



**230 kV Riser Bus
in Bridge**



115 kV Strain Bus



230 kV Line Dead End

10.2 Arc Flash Hazards

BPA Work Standard BPA-WS-11-6, Shock & Arc-Flash Hazard Assessment & PPE, defines work standards required for personnel protection from shock and arc-flash hazards. All permitted personnel shall be familiar with this work standard and adhere to the requirements defined therein.

10.3 Substation Electrical Hazard Cautions

If you do not hold an Electrical Worker Permit:

- Do not operate any switches, other than light switches, Attended/Unattended switches, NERC CIP pin pads, or other switches required for entering or exiting substation sites, without permission of a Qualified Electrical Worker. Light switches are normally toggle type wall switches. At some locations, control of the building interior lights may be an air circuit breaker (ACB) in an electrical panel. If the ACBs in the panel are not clearly labeled or there is a question as to the proper ACB to operate, do not attempt to operate any ACB. Attended/Unattended switches are normally a small toggle type switch on a panel and should be clearly labeled. If the toggle switch is not clearly identified, do not operate the switch.
- Do not touch or operate control switches. There are numerous buttons and switches in control houses and switchyards. Only qualified employees operate these control switches.
- Do not touch or reset relay targets, annunciator windows, or alarms. Relay targets, annunciator indications, and alarms help the substation operator and power system dispatcher to ascertain and analyze substation and power system trouble.
- Do not bump, jar, tamper with, or remove covers from relays or control equipment. Removal of relay and equipment covers is a task to be performed by those who operate and maintain them.
- Do not contact any bare conductor, terminal, bus, etc. No person shall contact any high voltage electrical parts unless this equipment has been properly isolated from the electrical system and grounded, as determined by a Qualified Electrical Worker.
- Do not throw or toss objects in or around substations or switchyards. Throwing or tossing objects in energized facilities including switchyards is not allowed at any time.
- Do not disturb or remove any tags. Tags are placed on controls and equipment to provide protection to workers and ensure proper operation of equipment. If a tag is found on the floor or on the ground, report it to a BPA Qualified Electrical Worker.

10.4 Substation Electrical Hazard Awareness Tour

For BFTE and CFTE, substation tours are required for all personnel when they are requesting their first permit of any type. Current permit holders applying for a different permit level do not need a tour. If a person did hold a permit in the past, but has not held one within one permit cycle, a tour is required.

Example 1: A person received a substation tour for a Substation Entry Permit. The requirements for upgrading to an Electrical Worker Permit would NOT include the completion of another substation tour.

Example 2: A person held a Substation Entry Permit but changed jobs in February 2018 and lost their permit. In April 2020 the same person applied for a Substation Entry Permit. Because they held a permit in the cycle that ended May 31, 2019, they do not need a new tour.

Substation Tours cover the following:

- Procedure for entering energized facilities with electronic access controls
- Requirements for signing in/out and logging work performed at an energized facility
- Control of entry and substation security responsibilities
- Control and relay panels and causes of accidental operations
- Clearance tags and other safety tags in the control house and switchyard
- Requirements for wearing hard hats and other required safety equipment
- Getting around the switchyard (sidewalks, cable tray restrictions, etc.)
- Explanation of barriers and guards in a switchyard
- How to identify the Minimum Approach Distance (MAD)
- Explanation of a reduced electrical clearance
- Requirements for operating a vehicle in a switchyard
- Rules governing electrically conductive materials in the control house and switchyard
- Identification of electrical, mechanical, and other known hazards in your work area
- Operation of light switches
- Procedure to follow, when the possibility of an explosive device is present
- Emergency procedures
- How to identify voltage levels in an energized facility

- Allowable limits of permit holder movement and activities within energized facilities
- Permit holder responsibilities
- Questions and answers

For Non-CFTE, substation hazard walkthroughs are required prior to starting work. The COR or project manager will coordinate the walkthrough with the Operator at the site kickoff, or the first day of on-site work. The Non-CFTE site superintendent is responsible for ensuring all personnel are aware of site hazards throughout the period of on-site work. New personnel introduced to the worksite after project kick off shall be appropriately instructed and informed by the site superintendent, prior to beginning work.

11 CLEARANCE CERTIFICATION

11.1 BFTE Clearance Certification

To issue or hold Clearances or Hold Orders on BPA normally energized equipment, personnel must hold a Clearance Certification for the current cycle.

Managers are responsible for ensuring only those employees who have a need, and have met the minimum requirements to be Clearance Certified take the annual Clearance Certification Exam.

The Clearance Certification cycle (year) begins March 1st and ends on the last day of February the following year.

Exams are scheduled and announced annually by the Substation Operations Group.

11.1.1 BFTE Clearance Certification Requirements

To become certified to take Clearances and Hold Orders the employee must:

- Submit the Energized Facilities Access Request (BPA F 6500.11e) application verifying the need for the Clearance Certification endorsement.
- Hold a valid Electrical Worker Permit, **or** be a fully qualified BPA System Dispatcher at the Assistant Dispatcher (II) or higher grade.
- Possess knowledge of BPA's Switching and Clearance Procedure and the safety rules sections of the Accident Prevention Manual (APM)
- Pass the Clearance Certification exam

Upon successful completion of the Clearance Certification exam, Clearance Certification will be uploaded to the employee's permit information on the permit directory.

11.1.2 BFTE Clearance Certification Exam Requirements

The following requirements apply to all persons taking a Clearance Certification exam:

- All exams must be completed through the Learning Nucleus exam module.
- A person will have two opportunities to take and pass the Clearance Certification Exam. Failure of two exams will result in the failure to obtain and/or maintain Clearance Certification.
- 80% of questions must be answered correctly to be considered passing. Incorrectly answering any part of a question constitutes an incorrect answer for that question.
- Upon failure of an initial exam, a second opportunity (retake) may be given no earlier than 14 calendar days from the date of the first failure.
- Upon failure of a second exam, the person's current Clearance Certification will be revoked.

When Clearance Certification is a condition of employment, an employee is eligible for a third (final) opportunity to take and pass an exam.

Refer to the Permits for Energized Access and Clearance Certification Examination Procedure for detailed information regarding the process for the third exam.

11.2 Non-CFTE Contractor Clearance Certification of Non-Government Contractors

Requirements to become certified to take Clearances and Hold Orders the individual must:

- Submit the signed Attestation Application verifying the business need for the Clearance Certification endorsement.
- Hold a valid Electrical Worker Permit
- Possess knowledge of BPA's Switching and Clearance Procedure and the Contractor Safety and Health Requirements for Prime and Subcontractors (CSHRPS)
- Attend an annual Contractor Clearance Certification class on the Switching and Clearance Procedure.
- Pass the Contractor Clearance Certification exam

Upon successful completion of the Non-CFTE Clearance Certification requirements, the Clearance Certification will be uploaded to the individual's permit information on the permit directory.

The Clearance Certification cycle (year) begins March 1st and ends on the last day of February the following year.

11.2.1 Non-CFTE Contractor Clearance Certification Exam Policy

Contractors will be given the opportunity to take the Contractor Clearance Certification exam in accordance with the Contractor Clearance Certification Exam Policy, following the Contractor Clearance Certification class. Contractors, who choose to not take the exam following the class session, will need to make arrangements with the Substation Operations Group or a District Chief Operator.

The following requirements apply to Non-CFTE persons taking a Clearance Certification exam:

- All exams must be administered and graded by exam administrators designated by the Substation Operations Group Supervisor
- Written exams must be proctored and are open book.
- A person will have two opportunities to take and pass the Clearance Certification Exam. Failure of two exams will result in the failure to obtain and/or maintain Clearance Certification.
- 80% of questions must be answered correctly to be considered passing. Incorrectly answering any part of a question constitutes an incorrect answer for that question.
- Upon failure of an initial exam, a second opportunity (retake) may be given no earlier than 14 calendar days from the date of the first failure.
- Upon failure of a second exam, the person's current Clearance Certification will be revoked.

Note: If a contractor fails the second exam, that contractor will not be allowed to apply for Clearance Certification for the remainder of that Contractor Clearance Certification cycle regardless of their work responsibilities. If the contractor has an existing Clearance Certification, it will be removed at the time the second exam is failed.

11.2.3 Non-CFTE Clearance Certified Contractors

The Contractor shall immediately notify the COR or SLMO when a contractor that holds a current Contractor Clearance Certification is

no longer employed by that Contractor. The COR or SLMO will notify the Substation Operations Group to remove the individual's Contractor Clearance Certification. If the individual is rehired by another Contractor performing work for BPA, the Contractor's Clearance Certification may be reinstated at the request of the Contractor, provided the request is made prior to the expiration of their current Clearance Certification. In the event of a need for energized access, a new Attestation Application is required.

11.3 Suspension of Clearance Certifications

Suspension of the Clearance Certification may occur when an individual demonstrates at-risk behavior while entering, performing work or exiting an energized facility, or on the right of way, BPA maintains the right to revoke or suspend Clearance Certification in consultation with management.

Causes for Clearance Certification suspension include, but are not limited to:

- Demonstrated lack of skill or knowledge required for the authorized Clearance Certification.
- Failure to follow established safety rules, procedures or safe work practices, as identified in the APM, CSHRPS, Switching and Clearance Procedure, accepted safety plan, or state/federal occupational health law.
- Breach of BPA security policy or established NERC CIP entry procedures, as outlined in the ROCH.
- Individual under investigation by Federal OSHA or state OSHA-equivalent, or a BPA appointed Incident Assessment Team (IAT).

It is the Manager/COR's responsibility to notify the Substation Operations group that an individual they are responsible for needs their Clearance Certification suspended. A phone call or brief email will suffice as an initial notification, but a formal email notification which details the at-risk behaviors that led to this action must follow within 24 hours. This formal notification will be the basis of the mitigation plan that the Manager/COR must carry out, prior to the Clearance Certification being reinstated.

For situations where an individual is under investigation by Federal OSHA or state OSHA-equivalent, or a BPA appointed Incident Assessment Team (IAT), a member of the Safety Organization Leadership Team will notify the Substation Operations Group by email if an individual needs their Clearance Certification suspended.

11.4 Reinstatement of Clearance Certifications

If the Clearance Certification was suspended due to an individual's demonstrated at-risk behavior, a mitigation plan must be carried out to ensure that the specific at-risk behaviors have been corrected. This mitigation plan must be specific to the demonstrated at-risk behavior of the individual and may include discussion, retraining, testing, or review of appropriate materials to prevent recurrence. Whatever method that the Manager/COR decides is best to correct the behavior must be identified along with the date it was completed as part of the mitigation plan. Upon completion of the plan, an email notification containing all of this information will be sent to the TOZ Supervisor which will be used as a formal record within the individuals permitting file. The Manager/COR must then initiate the reinstatement of the individual by submitting an Energized Facilities Access Request (BPA F 6500.11e) for BFTE/CFTE or an Attestation Application for Non-CFTE.

In instances where an individual is under investigation by Federal OSHA or state OSHA-equivalent, or a BPA appointed Incident Assessment Team (IAT), the approval to reinstate an individual will come from the Safety Organization. Once approval is received, the Manager/COR must then initiate the reinstatement of the individual by submitting an Energized Facilities Access Request (BPA F 6500.11e) for BFTE/CFTE or an Attestation Application for Non-CFTE.

All withdrawn Clearance Certifications will only be reinstated after the individual passes a new Clearance Certification exam.

APPENDIX A - CONTACTS

SUBSTATION OPERATIONS GROUP STAFF

Josh McEllrath, Substation Operations Group Supervisor	(360) 418-2585
Laura Stanger, Substation Operations Specialist	(360) 418-2644
Angela Black, Substation Operations Specialist	(503) 682-3268
Adam Ewert, Substation Operations Specialist	(458) 292-6750
Dave Pruitt, Substation Operations Specialist	(360) 418-8071
Eric Cobb, Substation Operations Specialist	(360) 563-3695
Justin Wimer Substation Operations Specialist	(360) 418-2415
Suzie Stone, Substation Operations Analyst	(360) 418-2524
Diane Chargualaf, TOZ Contractor	(360) 418-2273

SAFETY STAFF

Safety Organization main line – Vancouver	(360) 418-2397
Director of Field Safety	(360) 418-2865
Director of Construction Safety and Contract Oversight	(360) 418-8535
Director of Corporate Safety	(360) 418-2390
North Regional Safety Manager	(360) 418-2398
East Regional Safety Manager	(509) 822-4586
South Regional Safety Manager	(360) 418-2398
Eugene/Salem District Safety Specialist	(503) 304-5924
Olympia/Longview District Safety Specialist	(360) 418-2634
Tri-Cities District Safety Specialist	(509) 544-4705
Redmond/The Dalles District Safety Specialist	(541) 516-3228
Ross Complex Safety Specialist	(360) 418-2022
Snohomish/Covington District Safety Specialist	(425) 866-4050
Spokane/Wenatchee District Safety Specialist	(509) 468-3105
Kalispell/Idaho Falls District Safety Specialist	(406) 751-7814

CHIEF SUBSTATION OPERATORS

Alvey- Eugene District	(541) 988-7011	
Ashe-Tri-Cities District	(509) 546-5060	
Bell-Spokane District	(509) 468-3129	
Big Eddy-The Dalles District	(541) 296-5114	X134
Celilo-The Dalles District	(541) 296-3615	X386
Chemawa-Salem District	(503) 304-5912	
Covington-Covington District	(253) 638-3713	
Franklin-Tri-Cities District	(509) 542-5401	
Idaho Falls-Idaho Falls District	(208) 612-2111	
Kalispell-Kalispell District	(406) 751-7891	
Longview-Longview District	(360) 414-5611	
Malin-Redmond District	(541) 723-2325	
North Bend-Eugene District	(541) 751-4011	
McNary-Tri-Cities District	(541) 922-6812	
Olympia-Olympia District	(360) 570-4311	
Redmond-Redmond District	(541) 516-3211	
Ross-Longview District	(360) 418-2424	
Sickler-Wenatchee District	(509) 886-6015	
Snohomish-Snohomish District	(360) 563-3613	

APPENDIX B – SUMMARY OF CHANGES

Revision	Date Revised	Description of Changes Made	Reviewed-Approved By
1	10/10/2013	<ol style="list-style-type: none"> 1. Section 3 – Added NERC CIP Site, project contractor, AMS reference. 2. Section 7 – Chief Operators are delegated to accept Energized Facilities Keys on behalf of the Substation Operations Group. Implement 5 day waiting period before replacement key issued. 3. Section 8– Added requirement for permitted personnel not having possession of their ID badge or proximity card to call AMS to sign in and out of AMS monitored facilities. Added escorting section. 4. Reformatted. Updated project contractor requirements to know the Contract Safety and Health Requirements. Added references to various NERC CIP documents. 	J Vinson S Lovette
2	10/2014	<ol style="list-style-type: none"> 1. Section 4 – Updated Permit Application requirements. Clarified reinstatement process. Added Permit and Clearance Certification Examination Policy to document. 2. Section 4.1.1 - Eliminated. 3. Section 5 – Updated Permit holder conduct and minimum requirements. Added First Aid Card requirement for Project Contractors. Updated Permit Application requirements. 4. Section 7 – Removed 24 hour key return requirement. Added temporary key issuance process. 5. Section 9 – Added insulator types. 6. Section 11 – Removed Restricted Clearance Certification. 7. Removed references of late key return violating NERC CIP 004, R4. Updated Substation Tour requirements. 	J Vinson
3	4/2015	<ol style="list-style-type: none"> 1. Section 4 – Added NERC CIP 004 Access Requirements. 2. Section 8 – Removed requirement to call Control Center when escorting at NERC CIP Site. Added escort briefings on voltage identification. 3. Updated Substation Tour requirements. 	J Vinson
4	10/1/2015	<ol style="list-style-type: none"> 1. Section 2 – Added policy statement regarding training Supplemental Labor. 	J Vinson K Emerson

Revision	Date Revised	Description of Changes Made	Reviewed-Approved By
		<ol style="list-style-type: none"> 2. Section 4 – Updated time period for temporary appointment permits. 120 day Permit Process. Updated Access Verification. 3. Sections 5 – Changed process for obtaining or renewing Permits. 4. Appendix E – Added Memorandum regarding Safety Training for Qualified SLMO Managed Contract Workers Requiring Access to Energized Facilities. 	
5	11/15/2016	<ol style="list-style-type: none"> 1. Section 3 – added PSP. 2. Section 4 – Revised to reflect new security requirement mandated by NERC CIP 004, R5. 3. Section 5 – Added requirement for Arc Flash, Lead Awareness and Asbestos Awareness training. Removed requirement for completion of DOL approved apprenticeship and added Journeyman rating in a high voltage electrical craft. 4. Section 8 – Added requirement for personnel unfamiliar with a substation to call District Operations prior to entry for information on known hazards. Updated Security Log requirements. Added SECON 1 reference. 5. Section 12 – Eliminated. 6. Whole Document – Revised wording of employee types. Updated policies and procedures. 	J Vinson C Adams
6	6/15/2018	<ol style="list-style-type: none"> 1. Section 3 - Revised definitions to match current standards and policies. Added definitions for CFTE, COR, Test Administrator. 2. Section 5 - Permit Requirements table relocated from section 4. 3. Section 6 - Revised to match BPA-WS-2-4. 4. Section 11 - Revised to match Exam policy and administration rules 5. Corrected typos and grammar with assist from field users. Revised throughout for better clarity and brevity. Removed Green Cross symbol from handbook cover. Thanks to those of you who shared your findings! 	J Feeney K Emerson
7	7/20/2018	1. Reformatted	J Baker
8	9/25/19	1. Reviewed and made grammatically corrections.	L Stanger

Revision	Date Revised	Description of Changes Made	Reviewed-Approved By
		<ol style="list-style-type: none"> 2. Updated Substation Operating Log book Instructions. 3. Added "NOTE" to 4.5.2 Trainee section 	
9	9/28/21	<ol style="list-style-type: none"> 1. Reformatted and updated, realigned, grammatical corrections 2. Escort Ratio 5:1 - added to Definitions and Section 9.4.1 3. Added Section 2 - Change Control Process 4. Updated Section 4 - General Permit Information 5. Section 4 - Change from four permit levels to two: SEP and EWP 6. Section 5 – BFTE/CFTE Permit Section - Substation Safety information moved from Section 10 to Section 5 7. Section 6 – Added Non-CFTE Permit Section 	L Stanger
10	8/11/22	<ol style="list-style-type: none"> 1. Reviewed content Updated exam information Posting policy on TOZ SharePoint site 2. Updated Section 11.2 Non-CFTE's holding a Clearance Certification 3. Added Section 11.4 Reinstatement of Clearance Certifications 4. Updated Safety Staff contacts 	L Stanger

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**No job is so important and
no service so urgent that
we cannot take time to
perform our work safely.**

BONNEVILLE POWER ADMINISTRATION
Substation Operations Group

October 2022