ELECTRICAL UTILITY OPERATOR
(Time-Based)

APPENDIX A

O*NET CODE 51-8013.00

This training outline is a minimum standard for Work Processes and Related Instruction. Changes in technology and regulations may result in the need for additional on-the-job or classroom training.

WORK PROCESSES

	Approximate Hours
A. Safety & Workplace Orientation	**80**
1. Demonstrate understanding of workplace structure.	
2. Practice working safely around machinery, equipment, and throughout shopfloor.	
3. Demonstrate an understanding of electrical power.	
4. Understand safety needs particular to electricity, especially at high voltages.	
B. Bulk Electrical System (BES) Substations and Distribution	**2000-5000**
1. Demonstrate satisfactory knowledge of monitored/interconnected systems and how to obtain equipment readings as required per site policies and procedures.	
2. Safely perform electrical switching of plant/yard Power Circuit Breakers (PCBs), switchgear, auxiliary and support equipment, disconnects and switchers, load-break switches, and all associated equipment per policy and procedures.	
3. Recognize and diagnose abnormal operating conditions of the BES and determine the proper corrective actions per appropriate policies and procedures.	
C. Relaying and Metering	**200**
1. Recognize and accurately record protection and control relay diagnostic information.	
2. Demonstrate knowledge and ability to correctly reset tripped transmission and distribution system protection relays	

3. Accurately identify and record the appropriate readings from revenue metering (if applicable).

D. Generating Units and Facility Auxiliaries **300-3000**

1. Independently operate and monitor plant generation unit(s) in accordance with policies and procedures.
2. Independently operate and monitor high voltage (HV) cable system during normal and abnormal operating conditions at the power plant.
3. Independently operate generator auxiliary pumps/plant pumps during normal and abnormal operating conditions in accordance with policies and procedures.
4. Operate all air systems' air compressors during all modes of plant operations.
5. Demonstrate knowledge and ability to operate all plant emergency generators during abnormal operating conditions.
6. Demonstrate knowledge of proper function and identify when filters require flushing or cleaning.
7. Perform unit inspections for running, shutdown, or standby of units and ensure auxiliary equipment functions as designed.
8. Safely perform switching of units/auxiliary equipment.
9. Properly diagnose alarms when they sound; describe consequences of failure to respond.
10. Inspect day-to-day lighting in facility and inspect emergency lighting; Perform preventative maintenance (PM) and ensure reliability of lighting.
11. Identify and locate essential Motor Control Centers (MCCs) and switchgear equipment.

E. Control Room **500-2000**

1. Perform all general administrative functions during normal and abnormal operations.
2. Demonstrate the knowledge and ability to monitor and perform all reactive power monitoring and control as directed by the Transmission Owner/Generator Operator.
3. Demonstrate knowledge and ability to independently monitor the plant generating units and essential auxiliary support systems using Supervisory Control and Data Acquisition (SCADA) system, generator control system, and Automatic Generator Control (AGC) system.

4. Demonstrate an understanding of water/fuel management at respective site(s). Perform calculations and communicate results to appropriate personnel. Demonstrate an understanding of upper and lower water/fuel levels and understand the consequences of operating outside limits at respective site(s).
5. Schedule outages to minimize downtime for power availability, and to maximize efficiency.
6. Demonstrate an understanding of transmission line contingencies and Transmission line limits per site policies and procedures.

F. Contingency Protocol/Safety Procedures **300**

1. Perform plant operator's duties per Lock Out/Tag Out (LO/TO) procedure.
2. Demonstrate knowledge and proficiency to perform operator actions during blackout conditions; perform "Black Start" operations.
3. Demonstrate knowledge of emergency action plan. Independently perform emergency action plan (if necessary).
4. Demonstrate knowledge of proper response to environmental emergency. Respond using formal communication protocol (3-part communication), proper spill or emergency containment according to policies and procedures (if applicable).
5. Demonstrate knowledge of proper response to a fire condition. Respond to a fire condition (if necessary).
6. Demonstrate knowledge of terrorist threat identification, and procedure for contacting proper authorities.

G. Life Safety Systems **100**

1. Demonstrate ability to identify proper use of life safety system during emergency and normal/standby plant operations.
2. Demonstrate proper response to/identification of all applicable plant Evacuation alarms.

H. Communication **100**

1. Use all communication devices; employ proper 3-part communication to relay information to all entities.
2. Communicate all pertinent information to relief personnel at shift's end.

3. Use current North American Electric Reliability Corporation (NERC) Standard for 3-part communication.

Approximate Total Hours 8000

Note: OJT ranges reflect site-dependent differences to accommodate varied workplace emphases. Regardless of the distribution, each apprentice must complete 8000 hours of OJT.

Apprenticeship work processes are applicable only to training curricula for apprentices in approved programs. Apprenticeship work processes have no impact on classification determinations under Article 8 or 9 of the Labor Law. For guidance regarding classification for purposes of Article 8 or 9 of the Labor Law, please refer to https://dol.ny.gov/public-work-and-prevailing-wage

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APPENDIX B

RELATED INSTRUCTION

Safety & Health

1. Basic Industrial Safety *or* OSHA 10-Hour General Industry course
2. Trade Safety, including the following:
   a. Personal Protective Equipment (PPE)
   b. Lock-Out/Tag-Out (LO/TO)
   c. National Fire Prevention Association (NFPA) Arc Flash Training
   d. Fall Prevention
   e. Proper Lifting Techniques
   f. Confined Space Safety
   g. Right-to-Know/Safety Data Sheets (SDS)
3. First Aid – minimum 6.5 hours every 3 years
4. Sexual Harassment Prevention Training – must comply with section 201-g of the Labor Law

Trade Theory and Science

1. Elementary Blueprint Reading and Sketching
2. Blueprint Reading and Sketching for Electricians
3. Electrical Circuit Diagrams
4. Reading Specifications and Technical Manuals
5. Fundamentals of Electricity, Basic and Advanced
6. The Role of Hydroelectric in the Power System
7. Hydro Power Stations
8. Water Management
9. Hydro Turbines
10. Turbine Monitoring & Control
11. Hydro Generators
12. Generator Monitoring & Control
13. Plant Auxiliaries
14. Electrical Equipment Operation

15. Hydroelectric Plant Operation & Maintenance
16. Standard Switching Procedures and Practices
17. Power Plant Science
18. Rotating Plant Equipment (Pumps, Compressors, and Fans)
19. Non-Rotating Equipment (Valves, Heat Exchangers, and Filters & Strainers)
20. Troubleshooting Techniques
21. Motor Control Centers (MCCs) & Switchgear (15Kv and below)
22. Cooling & Lubrication
23. Generator Operations & Control
24. Line Grounding Methods
25. Mechanical Plant Systems
26. Monitoring & Control Communications
27. Instrumentation & Control
28. DC Motors & Generators
29. Transformer Theory
30. AC Generators
31. Supervisory Control and Data Acquisition (SCADA) Theory & Operation
32. Western Area Power Administration (WAPA) Power Plant Operations Course
33. Power Transmission (Transmission & Distribution Breakers and Switches, System Voltage Control, and System Frequency & Tie Line Control)
34. System Security
35. Unit Start and Stop
36. New York State Independent System Operator (NYISO) and Transmission System
37. Operator/Generator Operator Policies and Procedures
38. Abnormal Condition Operation
39. Power System Protection, Beginner and Advanced

Other Workplace Skillls

1. Data Splice Software for Recording Plant Parameters During Rounds

2. Writing and Communication Skills
3. Formal Communication Protocol, such as 3-part Communication

Other Related Courses as Necessary

A Minimum of 150 hours of Related Instruction is Required for Each Apprentice for Each of Four Years.

Appendix B topics are approved by New York State Education Department.