

Department of Labor and Industries
 Apprenticeship Section
 PO Box 44530
 Olympia WA 98504-4530



Request for Revision of Standards

For L&I Staff Use Only	
Rc'd 6/6/2024 CC	<i>Teri Gardner 6-6-24</i>
Rc'd 5/8/2024 CC	<i>Teri Gardner 5-30-24</i>
L&I Apprenticeship Consultant	L&I Admin

TO: Washington State Apprenticeship & Training Council
 FROM: GRANT COUNTY PUD NO. 2 APPRENTICESHIP COMMITTEE #192

Please update our Standards of Apprenticeship to reflect the following changes:

- Additions shall be underlined (underlined).
- Deletions shall be struck through (~~struck through~~).
- See attached.

Form must be signed by Committee Chair and Secretary or Program's Authorized Signer

<input checked="" type="checkbox"/> Chair	Date	<input checked="" type="checkbox"/> Secretary	Date
<input type="checkbox"/> Authorized Signer	4/30/2024		4/30/2024
Print Name: Jacob Johnson		Print Name: John Bowkett	
Signature: <i>Jacob Johnson</i>		Signature: <i>John Bowkett</i>	

Approved By: Washington State Apprenticeship & Training Council
Signature of Secretary of the WSATC:
Date:

Attach additional sheets if necessary

Cover Page

<u>Occupational Objective(s):</u>	<u>SOC#</u>	<u>Term [WAC 296-05-015]</u>
ELECTRONICS TECHNICIAN	17-3023.0100	6000 HOURS
METER RELAY TECHNICIAN	49-9012.0100	6000 HOURS
POWER PLANT OPERATOR	51-8013.0100	6000 HOURS

VIII WORK PROCESSES:

B. Hydro Electrician

- 1. National, states and district codes 80
 - a. Knowledge of:
 - b. Application of:
- 2. Safety 280
 - a. Attend safety meetings
 - b. Safe clearance procedures
 - c. Inspection and use of safety equipment
 - (1) Understand and use "buddy" system
 - (2) Use of hot stick, grounding cables, glow plug, rubber blankets
 - d. First aid training
 - e. Emergency procedures
 - f. ESP
 - g. 3-way communication
 - h. Human performance principles
- 3. Hydro generator maintenance 1800-1880
 - a. Stator inspection, repair
 - b. Rotor inspection, repair
 - c. DC & solid state exciter and associated equipment
 - d. Surge cubicle
 - e. CO2 system
 - f. Permanent magnet generator (PMG) speed switches
 - g. Field rheostat & Field breaker
 - h. High pressure oil PUMP
 - i. motorized valves, louvers & associated controls
 - j. Farvel grease system
 - k. Governor cabinet controls
 - l. Governor oil pumps motors, starters, controls
 - m. Voltage regulator
 - n. Amplidyne Power System Stabilizer
 - ~~o. Relays and check-out procedures~~
 - ~~p. Neutral ground device~~
 - ~~q. Current transformers, potential transformers~~
 - ~~r. General maintenance - overhaul - repair work~~
 - ~~s. Bearing insulation system & oil head insulation system~~
 - ~~t. PEC and Quincy Chute equipment~~
- 4. Generator breaker maintenance 280

(13.8 kV type SF6)	
a. Auxiliary circuits	
b. Breaker overhaul	
c. Routine maintenance	
5. Main 230 KV power transformers	240
a. Auxiliary devices - Buckholtz relay, level indicators, temperature indicators, etc.	
b. Deluge system - controls, pony motors, etc.	
c. Transformer overhaul	
d. Oil sampling, gas sampling, oil dielectric test combustible gas analysis	
e. Bushing maintenance/replacement	
f. Transformer oil cooling system	
g. Nitrogen blanket system	
6. ISO - Phase bus - high voltage cable	40
7. Transmission take off devices	120
a. Towers - structures	
b. Disconnect switches - grounding devices	
c. HV - current and potential transformers, capacitors, lightning arresters.	
8. Diesel generators and auxiliary controls	80
9. 230 kV SF6 breakers	280
a. Breaker auxiliaries	
b. Breaker overhaul	
c. SF6 gas trailer	
d. Routine maintenance	
e. CT and PT repair in switchyard	
10. Heating ventilation and air conditioning (HVAC)	280
a. Ventilation systems, fan motors, controls, belt drives	
b. Air conditioners	
c. Heat pumps	
11. DC power distribution	120
a. Station batteries - auxiliary battery banks	
b. DC bus system - DC switches, DC breakers	
c. Battery chargers	
d. DC emergency lighting	
e. UPS Power Supply	
12. Lighting circuits	240
a. Outdoor lighting circuits	
b. Florescent lighting	
c. Incandescent lighting	
d. Hi pressure sodium lighting	
13. Crane maintenance and repair	160
a. Gantry cranes	
(1) Power feed system	
(2) Control Circuits	
(3) Electrical drive systems	
b. Bridge cranes	
(1) Power feed system	
(2) Control circuits	
(3) Electrical drive system	
14. Elevators	140
a. Drive system components	

1514.	b. Control circuits	
1514.	Fish facilities	180
	a. Fish ladder maintenance	
	b. Fish rearing facility	
	(1) Power distribution	
	(2) Control circuits	
	(3) Annunciation and alarm system	
	(4) Motor controlled valves	
	(5) Well pumps and control system <u>Control system</u>	
1615.	Station service system - and distribution	240
	a. Station service transformers - breakers	
	b. Distribution transformers	
	c. Metal clad switchgear	
	d. Molded case switchgear	
1716.	Spillway gates	80
	a. Control circuits	
	b. Drive system	
	c. Position indication loop	
	d. <u>Gate heaters</u>	
1817.	Motor repair - maintenance	240
	a. Pump/motor	
	b. Motor starters	
	c. Auxiliary AC motors	
	(1) Synchronous	
	(2) Induction	
	d. Auxiliary DC motors	
	e. Motor connections	
1918.	Control Room	140
	a. Annunciation	
	b. Switches & control circuits	
	c. <u>Control Systems</u>	
2019.	Wiring methods	120
	a. Cable trays	
	b. Conduit	
	(1) Threading	
	(2) Bending	
	(3) Wire pulling	
	c. Splices	
	d. Switch board wiring	
2120.	Brazing and soldering methods	60
	a. Electrical resistance brazing	
	b. Gas brazing	
	c. Soft solder methods	
	d. Silver solder methods	
2221.	Shop equipment	160
	a. Electrical small tool repair & maintenance	
	b. Repair & maintenance of major tools (welders, etc.)	
	c. Drop cords, welding leads, load centers	
	d. Miscellaneous shop work	
	e. Proper use of hand and power tools	

23 <u>22</u> . Test equipment use and care	160 <u>220</u>
a. V.O.M. meters	
b. Meggers	
c. DC hi pot	
d. Breaker hi current test set (multi amp)	
e. Breaker electronic trip test set (Westinghouse)	
f. Breaker travel curve test set	
g. Doble power factor test set	
h. Ductor	
i. Corona probe	
j. Hygrometer	
k. Halogen leak detector	
l. Ampmeter (in-line, clamp on)	
m. Voltmeter	
24 <u>23</u> . General	480
a. Read and interpret blueprints	
b. Read and interpret schematic diagrams	
c. Familiarity with print filing system	
d. Maintenance records <u>tracking</u> system	
e. Trouble report system	
f. Warehouse supply and requisition system	
g. Miscellaneous	
h. g. Forklift operation	
i. h. Boom truck operation	
j. i. Bucket truck/manlift operation	
	Total Hours: 6000
 C. Hydro Mechanic:	
1. Machine Shop Practices	
a. Lathes, grinders, drill press and milling machines.....	250 <u>350</u>
b. Hand operated tools.....	120
c. Correct use and care of measuring instruments.....	60
2. Safety Meetings	
a. Attendance at Safety meetings.....	36
b. Care and use of safety equipment.....	64
c. Acquisition of first aid training and refresher training.....	30
3. Blueprint Reading and Layout Work	
a. Construction from blueprints.....	200
b. Use of tools normally used in layout work.....	100
c. Fabrication and modification of machinery and equipment.....	300
4. Rigging	
a. Proper use and placement of hoisting equipment.....	500 <u>325</u>
b. Proper care of rigging equipment and safe rigging practices.....	250 <u>325</u>
c. Signaling/flagging for crane operations.....	100
5. Operation and Maintenance of Heavy Equipment	
a. Mobile cranes.....	450 <u>350</u>
b. Overhead/ <u>gantry cranes</u>	50 <u>100</u>
c. Gantry cranes <u>Boats</u>	50 <u>100</u>
d. Caterpillar tractor <u>Heavy equipment</u> and air compressors.....	80

6. Maintenance, and Repair, <u>and Alignment</u> of Rotating Equipment	
a. Turbines and generators.....	1500
b. Pumps and gear boxes.....	200
c. Maintenance and service of governor and oil pressure system.....	560 <u>160</u>
7. Maintenance and Repair of Non-Rotating Equipment	
a. Permanent Structures.....	280 <u>180</u>
b. Temporary Structures.....	80
c. Maintenance of or service on other areas such as earth fill, reservoir, boat dock area, etc.....	80 <u>120</u>
d. Floating bulkhead <u>Sandblast and paint</u>	40 <u>150</u>
e. <u>Concrete and grout</u>	<u>100</u>
8. Welding and Shop Construction	
a. Welding – stick rod.....	100 <u>120</u>
b. Welding and cutting, oxygen and acetylene, air arcing.....	80
c. Runner blade repair <u>Wire feed welding MIG</u>	290 <u>185</u>
d. Shop practice and test patterns, etc <u>TIG welding</u>	150 <u>185</u>
e. <u>Pipe/tube fitting, bending, and welding</u>	200
f. Carpentry.....	100

Total Hours: 6000