



SPRINGFIELD UTILITY BOARD

Job Description

TITLE: Journeyman Substation/Metering Technician
REPORTS TO: Substation and Metering Manager
and Electric Foreman

STATUS: Non-exempt / Union - IBEW
RANGE: Contract

POSITION SUMMARY: The Journeyman Substation/Metering Technician installs, tests, maintains and repairs substation apparatus including: power transformers, load tap changers, voltage regulators, transmission and distribution circuit breakers, line sectionalizers, reclosers and their attendant control and relay protection schemes. Duties include: a) installing switchyard steel, insulators, tubular bus and disconnect switch assemblies; b) produces switch orders, clearances and assists in outage restoration; c) tests, calibrates and repairs electromechanical and electronic watt hour meters, demand meters, combination watt/var meters and all equipment related to the installation of those meters such as installing, testing and maintaining instrument transformers (current and potential) and their wiring assemblies connected to switch and meter circuits; and d) investigates meter tampering and current diversion as required ensuring that all power from SUB's system is measured. Performs other duties as assigned.

MAJOR RESPONSIBILITIES

Essential Functions

1. Supports and models behavior to promote the Mission and Core Values of SUB to staff and customers.
2. Develops and maintains professionalism and effective teamwork in the performance of job duties.
3. Maintains reliable and predictable attendance.
4. Demonstrates knowledge of and complies with working rules, safety practices, NESC regulations and SUB policies, including the appropriate use of PPE and group tailboards.
5. Exercises and demonstrates good judgment and skills to respond to unusual and hazardous circumstances, especially in emergency situations.
6. Openly and effectively collaborates and communicates with co-workers to identify and solve problems and to coordinate resources.
7. Installs, maintains, tests, reads, programs, calibrates and repairs watt-hour and watt/var-hour combination meters, demand registers, and instrument transformers (current and potential), including the associated meter circuit wiring for:
 - a. Single-phase meters, both self-contained and Instrument transformer rated
 - b. Poly-phase meters, both self-contained and Instrument transformer rated
 - c. Net meters

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8. Installs, programs and maintains Automated Meter Reading (AMR), Advanced Metering Infrastructure (AMI) and other communication-based metering programs.
9. Demonstrates knowledge and skills to perform the following functions:
 - a. Investigates meter tampering
 - b. Determines the presence of current diversion
 - c. Installs and maintains metering totalizers and other pulse operating equipment
 - d. Calculates pulse ratios, rates and values
 - e. Maintains and processes meter inventory, meter records and meter paperwork
 - f. Repairs and maintains instruments, fixtures, tools and wiring projects as assigned
 - g. Investigates power quality and billing issues
 - h. Interacts with computers for meter programming, testing, and investigations
 - i. Respectful customer interactions and relationships
 - j. Interprets and applies SUB's and industry metering standards and requirements
 - k. Identifies transformer connections
 - l. Checks voltage
10. Demonstrates knowledge of local and state metering codes and the application of such codes and standard practices.
11. Ensures that all installations are correctly wired according to metering codes and standards to secure the accuracy of revenue metering.
12. Participates in the planning and coordination of projects with supervisor, engineering, line crews and contractors as assigned.
13. Develops and maintains good public relations with SUB's customers, contractors, city inspectors, suppliers and other contacts.
14. Maintain a valid Oregon Driver's License and maintains a good driving and safety record.
15. Installs, maintains, tests, troubleshoots and repairs:
 - a. Power transformers
 - b. Load tap changers and voltage regulator
 - c. Transmission and distribution circuit breakers
 - d. Line sectionalizers and reclosers
 - e. Potential and current transformers
 - f. Overcurrent and differential relays, including electromechanical and microprocessor based
 - g. SCADA equipment and communications
 - h. Station metering
 - i. Control panels and associated wiring
 - j. High voltage switches and disconnects
 - k. Station DC supply (battery and charger)
 - l. Station structures (steel, aluminum bus, insulators, etc)
 - m. Station ground mat and equipment ground connections
 - n. Distribution transformers (not installation)
16. Comprehends and interprets engineering produced drawings and wiring diagrams as well as generates as-built prints.

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17. Demonstrates competency and skills to perform all of the following duties:

- A. Testing distribution transformers
 - 1. TTR (Polarity)
 - 2. Megger

- B. Test transmission (substation class) transformers
 - 1. TTR
 - 2. Megger (10 kV)
 - 3. Power factor
 - 4. Operating parameters
 - 5. Wire schematic (control wiring)
 - 6. Overhaul tap changer

- C. Test circuit breakers
 - 1. Hi-pot
 - 2. SF6 alarm and lockout functions
 - 3. Micro-ohm
 - 4. Low voltage trip
 - 5. Motion analysis tester
 - 6. Megger
 - 7. Control wiring schematic
 - 8. Overhaul
 - 9. Trip test
 - 10. Current transformers
 - 11. Power factor (as needed)

- D. Test regulators and load tap changers
 - 1. TTR
 - 2. Control wiring
 - 3. Megger
 - 4. Compensation settings
 - 5. Winding resistance
 - 6. Power factor

- E. Oil sampling
 - 1. Acidity
 - 2. Color
 - 3. Di-electric
 - 4. Specific gravity
 - 5. Interfacial tension

- F. Test relays (electromechanical and microprocessor based), meters and reclosing control devices and SCADA devices.
 - 1. Cognitive appraisal of wiring schematics
 - 2. Installs, sets and utilizes windows based power simulating equipment; validates the performance of: Distance relays; Instantaneous and Time over current relays; Pressure relays; Automatic reclosing relays; Lockout relays and Differential relays both transformers and bus.

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G. Switching

1. Routine
 - a. Holds
 - b. Clearances
2. Emergency
3. Systems mapping
 - a. Line, bank, circuit breaker capacities
 - b. Voltage I.D.
 - c. System configuration – wye, delta and how they might impact the system
4. Dispatching (writing of switch orders)
5. Equipment – including regulator switching
6. Station switching
7. Switching with external utilities (BPA, EWEB)

H. Operation of equipment

1. Generator – 30 kw – 2.5 kw
2. Oil filter
3. Oil testing equipment – dielectric, acidity, color, interfacial, tension, specific gravity
4. Hi-pot
5. Relay test sets
6. Motion analysis tester
7. Micro ohm
8. Meggers (10kV - .5kV)
9. TTRWinding resistance
10. Power factor
11. Pipe bender – threader
12. Hand tools
13. Current transformer test set
14. SF6 gas cart (gas handling, filling, evacuation, vacuum pump)

18. Performs duties of station safety watcher for Crew and third-party contractors as needed.

Marginal Functions

19. Evaluation and testing of Personal Protective Equipment (PPE).
20. Demonstrates knowledge and skills to facilitate SUB's infrared inspections:
 - a. Accurately operates an infrared camera
 - b. Captures quality thermographic images
 - c. Creates thermography inspection reports
21. Demonstrates knowledge and skills to install and maintain SUB's fiber optic system:
 - a. Cutting and splicing
 - b. Testing
 - c. Repairing
 - d. Locates and fixes performance problems

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Given the dynamic and challenging environment of the utility industry and our mission to provide exceptional service to our internal and external customers, additional duties and responsibilities, other than those listed in this job description, may be assigned (contingent on labor agreement provisions, if applicable). Your supervisor will communicate these changes either formally or informally, verbally or in writing.

Attributes

SUB strives to promote a safe, positive and caring work environment. In addition to the above responsibilities, the following attributes are essential to be a successful employee at SUB:

- Being committed to SUB's Mission and Core Values
- Complying with safety practices and policies
- Being professional, honest, courteous and respectful to others in your conduct
- Being responsive to suggestions to improve performance
- Being flexible to adapt to a changing work environment
- Performing as a productive team member
- Being accountable for your own performance, behaviors and contributions
- Taking the initiative to accomplish your responsibilities to the best of your ability

These qualities in our employees ensure that working at SUB is motivating, fun and enjoyable while performing a valuable service to our utility and community

OTHERS SUPERVISED

- None

MINIMUM QUALIFICATIONS

Experience

- A minimum of three years experience as a Journeyman Station Wireman is preferred

Knowledge, Skills & Abilities

- Must have working knowledge of the listed Essential Functions, related work rules and safety practices
- Must have working knowledge of all related work rules and safety practices
- Proficient in Microsoft Word, Excel and Windows software

Education

- High school diploma or equivalent
- Successful completion of a recognized Journeyman Substation Wireman/Metering Technician apprenticeship program

PHYSICAL AND MENTAL REQUIREMENTS

- **ALERTNESS & CONCENTRATION:** Maintains full alertness and concentration at all times while working on energized metering and substation conductors and equipment, even in inclement climatic conditions, at night and at the end of a 36 hour emergency shift (with no sleep and break only for meals).
- **ABILITY TO DEAL WITH STRESS:** Makes decisions quickly and calmly when working on energized metering wires and emergency conditions. Thinks and reacts quickly if accidents occur, especially those involving energized wires in a meter cabinet and energized conductors and/or substation outages. Interacts well with co-workers in stressful situations, especially when working with Journeyman Lineman or Journey Station Wireman.
- **VISION:**
 - Far Visual Acuity:** Assesses status of fixtures (i.e. wires, and devices) in meter enclosures and substations. Sees adequately to operate utility vehicles.
 - Near Visual Acuity:** Reads small print stamped on metal plates on transformers, other equipment name plate data and construction drawings.
 - Peripheral Vision:** Maintains full field of vision in all directions to assess proximity to energized wires to workers, and other equipment near energized wires.
 - Color Vision:** Judges red, green and yellow traffic lights adequately to operate utility vehicles on highways. Differentiates red and green control lights on switching equipment and color of underground utility locate paint.
 - Depth Perception:** Ensures that he/she or co-workers are not working too close to energized wires.
 - Night Vision:** Maintains the visual abilities listed above when working at night and in poor light and inclement weather condition.
- **HEARING:** Hears the spoken conversation well while working on the ground or roof of a building or top of a substation structure and a co-worker is working within 30 feet of each other despite heavy background noise from traffic, construction equipment, rain or wind and when visual signals cannot be used. Hears adequately to operate a two-way radio and telephone.
- **SPEECH:** Speaks loudly and clearly enough to be accurately understood when talking to a co-worker who is on the ground or on top of a roof or top of a substation structure working despite heavy background noise from traffic, construction equipment, rain or wind, and when visual signals cannot be used. Speaks clearly, communicating by two-way radio and telephone.
- **STANDING:** Stands on dirt, concrete, asphalt or solid floors for 20% of the work day.
- **SITTING:** Sits on a bench-style pickup seat one-half hour maximum at one time while driving to and from a job sites. Total sitting is two to six hours per shift.
- **WORKER MOBILITY:** Can change positions frequently.
- **WALKING:** Rarely walks one to two miles at a time on uneven ground. More common maximum distance walked is 1/4 to 1/2 mile. Total walking per shift is 30% - 60%.

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- **LIFTING/CARRYING:** 0-10 lbs. - Continuous; 11-20 lbs - Continuous; 21-50 lbs. - often worker carries boxes of metering or substation materials or equipment.
- **PUSHING/PULLING:** The 1 to 2 inch diameter electrical or communications cable which weighs 0.5 to 1 lbs per foot is pushed through a 2 or 3-inch conduit, often while bent over in a vault or ditch for up to 15 minutes at a time. This action is performed seldomly.
- **TWISTING:** Rotates head fully to both sides to observe equipment and co-workers while standing on the ground. Some twisting is required when lifting items to co-workers.
- **CLIMBING:** Climbs hills and walks over uneven ground while carrying equipment.
- **CRAWLING:** Not usually required.
- **ENVIRONMENTAL FACTORS:** Performs a variety of strenuous tasks outside with temperatures varying from below zero to over 100 degrees, sometimes in rainy, windy, snowy or icy conditions. Exposed to noise from traffic construction equipment near construction sites, jack hammers, and tamps, up to two hours per day. Hearing protection is provided. Exposures may include mineral spirits or denatured alcohol. The solvents are placed on a rag and utilized to clean or wipe current carrying contacts. Exposures may include creosote, pentachlorophenol or keminite. Exposed to 1,1,1-trichloroethane and perchloroethylene, used to clean cables before splicing when installing underground wires. Some mineral oils are used in transformers or other damaged equipment. Exposed to numerous types of pollen, depending on location, season or climatic conditions. Bee/wasp stings, animal bites or poison oak may also occur.
- **PRODUCTS AND MATERIALS:** Lumber, steel, wire and bolts.
- **MACHINES/TOOLS/EQUIPMENT:** Power tools, hand tools, electrical test equipment, trucks and computers.

Revised: June 1, 2016