



THE METROPOLITAN WATER DISTRICT
OF SOUTHERN CALIFORNIA

HYDROELECTRIC SPECIALIST II

Group-Section: Water System Operations - Various	FLSA Status: Non-Exempt Bargaining Unit: AFSCME	Classification: Operations and Maintenance Specialist Salary Grade: 48 Job #: T05
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JOB SUMMARY

Utilizes specialized skills, experience and knowledge in the practices, procedures, and methods of monitoring protective and control equipment condition and performance, including predictive and advanced diagnostic (non-destructive) testing; preventive and corrective maintenance; improving capacity and upgrading systems such as; pumps, turbines, generators, transformers, motors, high voltage overhead and underground electrical distribution systems; maintaining and providing technical assistance for establishing operating parameters of complex generation and power systems, including all related water and hydroelectric control systems and SCADA.

Specialized in a combination of electrical, mechanical or electronic skills, experience, and knowledge in the practices and procedures of, installing, commissioning, maintaining and operating complex power systems equipment for ongoing reliability and uninterrupted service.

OVERSIGHT

SUPERVISION:

Received:

Work is carried out with minimal supervision. Broad direction is given in terms of operations and maintenance objectives that may require the planning and coordination of other employees, time, and material resources. Limited detailed guidance and advice is available and the development or modification of work may be required.

Receives oversight from the Team, Unit, Section, Assistant Group, or Group Manager.

Given:

As a lead may exercise technical and/or functional direction over assigned staff.

Specific attention is given to on-the-job training, mentoring and development of Hydroelectric Specialist I, in order to attain specialized knowledge and skills to advance to Hydroelectric Specialist II.

JOB DUTIES

1. Performs high-level maintenance tasks and activities at hydroelectric plants, pumping plants, treatment plants and other facilities with high voltage electrical equipment to ensure ongoing water and power reliability.
2. Performs predictive, preventive and corrective maintenance associated with large motors, generators, protective relays, programmable logic controllers (PLC), power circuit breakers, variable frequency drives, as well as watt-hour metering and other metering, routers, communications, automation and control instrumentation.
3. Tests and/or monitors the capabilities, limits, serviceability, efficiency and effectiveness of equipment and processes relating to the power and water system using advanced computerized instrumentation.
4. Installs and/or commissions complex rotating machinery, hydraulic power, pneumatic, high voltage and controls systems, protective relays, watt-hour metering as well as auxiliary equipment associated with hydroelectric power, pump and water treatment plant systems to ensure conformance with established specifications.
5. Conducts performance and acceptance testing at hydroelectric plants, pump plants, and treatment plants to ensure optimal output to meet operational demands within prescribed operating limits of equipment and power systems.
6. Tests, calibrates, and maintains electro-mechanical, electronic, microprocessor and logic based protective relays to insure the effectiveness of system coordination.
7. Performs nondestructive testing such as; infrared thermal imaging, testing of insulating fluids; power factor insulation testing and power quality and quantity measurements for analysis as part of predictive maintenance to optimize equipment performance and life.
8. Assists engineering with the planning, coordination, design and installation of new system equipment or modification to existing system equipment.
9. Responds to nonscheduled outages, shutdowns or other emergency situations to minimize equipment downtime or interruption of service.
10. Assists with the development, planning and coordination of scheduled predictive, preventive and corrective maintenance.
11. Acts as a liaison for MWD with outside agencies and vendors such as; SCE, LADWP, DWR, and contractors to coordinate work, witness acceptance testing, and review reports, specifications and test data.
12. May be required to procure tools, materials, and equipment. Provides input into the development of the operation equipment budget items and specification for parts, labor and procedures.

EMPLOYMENT STANDARDS

MINIMUM QUALIFICATIONS

Education and Experience:

High school diploma or GED in addition to a minimum of 5 years experience in a journey level electrical or mechanical position of which two years is a combination of electrical, mechanical or electronic skills.

Experience and knowledge beyond journey level as demonstrated by practical application of techniques and practices specific to the operations, maintenance, and repair of hydroelectric plants, pump plants, treatment plants and other facilities. Skills necessary include predictive and diagnostic evaluation of complex utility pump and power equipment using analog and digital test equipment. Also requires advanced skills in installation and commissioning, utilizing predictive, preventive and corrective maintenance practices related to industrial/utility maintenance generally obtained through applicable training and experience.

Required Knowledge of: Any combination of electrical, mechanical or electronic theories and practices and their application in the operation and maintenance of large-scale electrical/mechanical systems and equipment related to hydroelectric plants, pump plants, treatment plants and other facilities. Applying methods, practices, and tools to insure reliable operations for the movement of water, generation of power, and optimization of electrical equipment demands within established limits and standards. Power systems analysis and troubleshooting methods, including determination of failure causes, diagnostic analysis through failure mode, root cause analysis, other non-destructive and electrical testing for the purpose of determining serviceability, and safety practices, clearance procedures and regulations for operating mechanical and electrical equipment, high voltage systems, hazardous materials, and associated tools and equipment.

Required Skills and Abilities to: Understand and interpret electrical and mechanical engineering data and complex schematic diagrams necessary to implement predictive, preventive, corrective and improvement activities, interpret complex instructions, manuals, operating and maintenance procedures and specifications related to hydroelectric plants, pump plants, treatment plants and other facilities. Utilize and maintain tools and diagnostic equipment to test and monitor equipment condition as well as repair, install, and replace equipment necessary to meet water and electrical generation demand and/or capacity. High-level skills and expertise using traditional analog and precision digital instruments to ensure critical measurements and alignments as part of diagnostic and predictive maintenance, including laser alignment equipment, analog and digital micrometers, calipers, and other tools related to close tolerance analysis and work. Ability to use PC computer and Microsoft Office applications.

CERTIFICATES, LICENSES and REGISTRATIONS REQUIREMENTS

Employees in this position will be required to obtain and maintain the following certifications, licensing and registrations:

- Valid Drivers license from state of residency equivalent to a California Class A, B, and/or C with appropriate commercial license endorsements
- MWD High Voltage Switching Certification
- Crane Certification
- Forklift Certification
- Respirator Certification

PHYSICAL DEMANDS/WORK ENVIRONMENT

Expectations of Hours of Service, Emergency and Stand-by Service:

Employees in this position may be required to work Off-shift hours and/or stand-by services to address operational needs and emergencies as required. May be required to work extended periods away from the normal reporting location.

Physical Demands:

Heavy tasks may require lifting and carrying items weighing up to 50 pounds, with intermittent need to lift and carry materials and/or equipment weighing up to 100 pounds with assistance. Frequently requires pushing, pulling, turning and positioning parts, assemblies, equipment and tools weighing as much as 100 pounds. May be required to lift and move heavy items with the assistance of others and with lifting devices such as jacks, hoists and cranes of varied types and capacities. Physical effort includes frequent walking, stooping, bending, reaching, standing, kneeling and sitting for long periods of time.

Work Environment:

Work is performed indoors and outdoors at large pumping, treatment, hydroelectric or control facilities or other assets under all types of conditions, including extreme temperatures, open and confined spaces ranging from crawl spaces to sub-structures as well as varied types of terrains. Job tasks frequently require working from heights and functioning from lifts, hoists, scaffolds, and cranes over surfaces ranging from earthen materials to concrete, steel and water. Work activity may be frequently conducted in close proximity to high volume/pressurized water, as well as exposed, electrically energized equipment including high voltage systems, large rotating, pneumatic, and hydraulic driven equipment. The work environment frequently involves exposure to equipment and tools producing high levels of noise, as well as potentially dangerous materials and chemicals that require careful adherence to extensive safety precautions, rules and regulations.