HYDROELECTRIC PLANT TECHNICIAN II
CALIFORNIA STATE PERSONNEL BOARD
SPECIFICATION

Schematic Code: --
Class Code: --
Established: --
Revised: --
Title Changed: --

HYDROELECTRIC PLANT TECHNICIAN II

DEFINITION

This is the full journey level class in the Hydroelectric Plant Technician series. An incumbent works under direction to perform the full range of journey level preventive and corrective maintenance tasks associated with protection schemes, monitoring and control equipment, communications and security systems, metering, sensors, computerized and related equipment used in State Water Project (SWP) generating/pumping plants, switchyards, and water conveyance facilities; performs shop or field work as needed to install, calibrate, maintain, operate, troubleshoot, repair and test electrical, electronic, and electromechanical equipment and devices; and does other related work as required.

TYPICAL TASKS

Conducts pre-job hazard identification, assessment and control; operates and reads test instruments; records and summarizes test data; utilizes testing equipment and operating knowledge of hydroelectric plants, protective relaying devices, governor systems, excitation systems, and protective relaying communication networks; responds to trouble calls, including after hours and on weekends, as necessary; performs testing, maintenance, and repair of all components of SWP electrical and mechanical systems, including pressure transducers and transmitters, accelerometers, instrument records, potentiometers, temperature devices, supervisory control equipment, bridge circuits, solenoid valves, and other electrical or electronic devices and protective devices utilizing industry standards; tests, adjusts, calibrates, modifies, analyzes, operates, and corrects malfunctions in pressure, temperature, flow, vibration, speed, level measuring, monitoring and control systems, which includes pneumatic controllers, flow integrators, sensors, indicators, regulators, transmitters, gauges, valves, and aural visual alarms; locates equipment or device failures in order to repair or replace defective components in response to trouble calls; troubleshoots excitation/voltage regulator equipment, vibration equipment, circuit breakers, governors, insulation tests, trip and alarm tests, and hydraulic systems; inspects and tests equipment and circuits to identify malfunctions or defects using wiring diagrams and testing devices such as ohmmeters, voltmeters and ammeters; analyzes test data in order to diagnose malfunctions, to determine performance characteristics of systems, and to evaluate effects of system modifications; troubleshoots excitation/voltage regulator equipment, vibration equipment, circuit breakers, governors, insulation test, trip, and alarm test and hydraulic systems; performs preventive and corrective maintenance; installs and tests existing and replacement systems and equipment; verifies equipment malfunction; troubleshoots, repairs and predicts areas of possible future failures; performs specialized testing

such as Doble Test, Hi-Pot Testing, and Corona Probe; performs service interruption investigations after equipment failures; performs tests on computer systems in the field, including running diagnostics on computers to evaluate their operation and testing power supplies for proper voltage output, current, and low ripple content; uses vendor supplied computer diagnostic procedures, as well as oscilloscopes, digital counters, oscillators, and logic analyzers, to repair and maintain reliability of computer control and communication systems; maintains SCADA applications on networks, including plant operator interfaces, programmable logic controllers, and protocol test sets; assists the Control System Branch, the Communications Support Branch, and Field Divisions in the installation and testing of new equipment and modifications to existing equipment/software, including power management systems, RTU's; fiber optic communication equipment, and Telco equipment located at different sites in the SWP; interprets and works from complex plans and drawings; reads and analyzes logic diagrams, upgrades and makes logic changes for requested changes; modifies protective circuits and devices according to given drawings and settings; maintains equipment and conducts testing, calibration, software upgrades and programming of same, including sensors, data collection platforms, remote data stations, and structures; maintains, modifies and updates LAN's, WAN's, data communication equipment (hardware and software), fiber optic cable and equipment, microwave equipment, and the Northern/Southern Hub; installs network interfaces and software to bring computers onto the network; performs system administration for PBX and related equipment within a facility, including moves, adds and changes; collaborates with other sections, outside agencies, and vendors to identify and correct problems with interconnected systems; prepares for special test set-ups, including selecting instrumentation; verifies compliance with lockout/tag out procedures by visually inspecting equipment and communicating with crews; instructs subordinates in the use, operation and functions of test equipment, testing methods and procedures, and computer analyzing equipment; assists in the training and development of entry-level technicians; prepares requisitions for tools, supplies, repair parts and services; receives equipment and prepares records to track various equipment during shipping to vendors for repairs; selects and orders parts required for maintenance of control system equipment; researches the availability of new parts and/or subsystems to replace obsolete or unavailable parts; provides for necessary tools and equipment; recommends equipment modifications and operational changes to obtain increased usefulness/reliability; conducts asset inventories; performs maintenance management tasks associated with reporting and historical data recording; maintains support documentation such as equipment specifications, drawings and manufacturer's manuals; prepares test reports and maintains hardware and software documentation, equipment history files, trouble reports, and inventory records; corrects and updates logic drawings and documentation of all equipment modifications and changes; assists in the development of procedures to implement preventive maintenance for control systems.

MINIMUM QUALIFICATIONS

Either I

One year of experience in the California state civil service performing the duties of a Hydroelectric Plant Technician I, Range B.

Or II

Three years of responsible and varied experience performing testing, calibration and maintenance of protections systems, monitoring and control equipment, communications and security systems, metering and sensors similar to those used in generating/pumping plants, switchyards, and water conveyance facilities; AND Completion of an approved two-year (60 semester or equivalent quarter units) technical curriculum in electrical, electronic, mechanical or computer-science technology at the community college level, or equivalent. [Additional electrical, electronic, mechanical, or computer-science work experience in an electrical utility or equivalent industrial or military facility, may be substituted for the required education on the basis of one year of experience being equivalent to 15 semester units.]

KNOWLEDGE AND ABILITIES

Knowledge of: equipment and procedures for testing, inspection, calibration, installation, troubleshooting, maintenance and repair of control systems, communication systems, network systems, and associated equipment; mathematics, algebra, trigonometry, and Boolean logic to solve electrical and electronic problems; test equipment and diagnostic devices (ex. oscilloscopes, multi-meters, counters, power system, logic, and network analyzers) to determine, diagnose, and isolate problems or malfunctions; electrical and electronic theory and its application to solve electrical and electronic system problems and to test, maintain and repair electrical and electronic equipment; support and maintenance practices for LANs and computer equipment and software for the SWP facilities; technical drawings (ex. one line diagrams, schematics, wiring diagrams and logic diagrams); color code standards for electrical wiring and components used in the manufacture, configuration, and repair of electrical equipment' equipment and procedures for testing electrical, electromechanical and electronic devices associated with large generating and pumping plants and switchyards; electronic, electro-mechanical and hydraulic equipment and procedures for testing and measuring flow, vibration, pressure, temperature, speed, level, and displacement; materials, equipment, and procedures for testing, maintenance and repair of electronic and electromechanical devices; equipment, procedures, safety and testing requirements for protection systems such as CT, PT, and electromechanical and microprocessor based protective relays; equipment, procedures, safety and testing practices for large-scale distributed supervisory control and data acquisition (SCADA) systems and distributed communication systems; equipment, procedures and testing practices for network and security systems; instrumentation for measuring flow, level, position, temperature, pressure, speed, and vibration; safety procedures for working on high-voltage equipment, including lockout/tag-out procedures; hydroelectric facilities and high-voltage testing such as AC power-factor(Doble), DC insulation resistance (Meggar), and AC and DC high potential testing; safety, security and reliability practices, federal and state regulatory mandates as related to hydroelectric facilities and high-voltage equipment; hydroelectric plant construction, operation and maintenance; electrical and electronic theory as applied to power and pumping plant equipment.

Ability to: determine, diagnose, and isolate problems or malfunctions in order to make necessary repairs; use mathematics, including algebra, trigonometry and Boolean logic to solve electrical and electronic problems; apply electrical and electronic theory and application to solve electrical and electronic problems and to test, maintain and repair

electrical components, equipment and systems; read and interpret technical drawings, documentation and procedures for testing and repairs, and to interpret test results; use a personal computer for standard office applications and specialized troubleshooting; maintain cooperative working relationships with co-workers; work in an environment that requires strict adherence to instructions, standards, and procedures; identify potential safety hazards; follow written and oral instructions for completing work tasks; test, inspect, calibrate, install, troubleshoot, maintain, and repair control systems, communication systems, network systems, and related equipment; test electrical, electromechanical, and electronic devices associated with large generating pumping plants and switchyards; install test equipment and make all necessary connections; wire components and equipment following wiring diagrams or schematics; comprehend policies, procedures, orders, rules, and other related written documents/materials to perform the duties of the job; work independently without close supervision to perform the duties of the job.

SPECIAL CHARACTERISTICS

Legally operate a motor vehicle; pay close attention to detail in order to ensure the completeness and accuracy of work performed by oneself and/or others; work as a team when necessary to complete the duties of the job in a cohesive and professional manner; work quickly and accurately in a high-pressure work environment; be reliable and dependable to properly perform job duties; prioritize and organize work activities of self and others to ensure that all work is completed correctly and in a timely manner.

SPECIAL REQUIREMENTS

The North American Electric Reliability Corporation (NERC) Critical Infrastructure Protection (CIP) Standard CIP-004 that is part of the Energy Policy Act of 2005 requires the completion of a thorough background investigation. Persons convicted of a felony may not be eligible to compete for, or be appointed to, positions in this class. Under the provisions of NERC CIP Standard CIP-004, any persons unsuccessful in the background investigation may be disqualified from having authorized cyber or authorized unescorted physical access to Critical Cyber Assets (CCA's).