

ASSISTANT ELECTRICAL TESTER, 7511
ELECTRICAL TESTER, 7513
SENIOR ELECTRICAL TESTER, 7515

Summary of Duties : Makes routine calibration tests of meters; makes routine electrical tests of materials; assists in testing more complex electric instruments and equipment; tests electric meters, control and protective relays, instruments, transformers, and other equipment and materials; may act as a lead over a small crew engaged in testing; or may supervise a group of employees engaged in field or laboratory electrical testing and performs the more difficult functions of electrical testing; and does related work.

Distinguishing Features : The work of an Assistant Electrical Tester is technically less difficult than that of an Electrical Tester. When assigned to more difficult work, an Assistant Electrical Tester is supervised directly. High voltage is encountered in some of the work, but in such cases every procedure is subject to immediate review by a supervisor, or safety precautions are taken by providing equipment guards and interlocks.

An Electrical Tester performs a variety of tests and adjustments on electric equipment and materials in the field or in a laboratory. Most tests are standardized and present only the problem of adapting normal procedures to specific assignments. The work, however, is technical in nature and requires the application of electrical principles. Ordinarily an Electrical Tester does not receive close supervision and may act as a lead over a small crew.

A Senior Electrical Tester supervises and participates in such work as tests and inspections of protective relays, electrical materials, transformers, watt-hour meters and portable instruments; field watt-hour meter tests; corrosion tests; transformer load tests; insulating oil tests. Senior Electrical Testers also perform the more complex testing, calibrating and repairing of protective relay equipment, control equipment, revenue metering equipment, test instruments, oscillographs, recorders, generating plant equipment and remote terminal units; field testing of electrical systems and equipment. The work of a Senior Electrical Tester requires a thorough understanding of test procedures, the proper functioning of equipment to be tested and the ability to work independently.

Examples of Duties : Assistant Electrical Tester : Inspects and makes routine laboratory tests of single-phase and self-contained polyphase watt-hour meters and routine field tests of small single-phase watt-hour meters; checks meter and service wiring for defects and evidence of energy diversion; records and reports test data; cleans, calibrates, adjusts, and makes repairs to various types and sizes of single-phase meters; makes minor repairs to electric and nonelectric

instruments including meters and recording devices; assists in testing indicating and graphic instruments; assists in making ratio and phase angle tests on current and potential transformers; cleans, calibrates, adjusts and repairs various sizes and types of single-phase meters; assists in making electrical tests to determine voltage, load, and temperature conditions of transformers and secondary cables; computes loads by comparing chart readings with conversion tables; assists in making corrosion surveys; tests and adjusts corrosion control equipment; makes sketches showing details of cable layout and other information for primary circuit records.

Inspects shipments and collects and prepares samples of materials for tests; tests lineworkers' rubber gloves and protective devices; assists in inspecting and testing transformers, circuit breakers, regulators, and other electrical equipment, checks wiring of control panels and makes test connections; assembles and dismantles test equipment; assists in taking and testing oil and gas samples from station apparatus; assists in dielectric tests of insulating oils and materials; assists in the maintenance and repair of oscillographs; distributes oil by barrel and oil lines; operates oil evacuator for removal of air from cable oil.

Assists in testing electric equipment for conformance to specifications and standards; may act as a lead worker in a crew of Assistant Electrical Testers; occasionally instructs new employees in testing methods; and drives automotive equipment as required.

Electrical Tester : Inspects, tests, calibrates, maintains, and repairs large capacity metering installations; checks meter registration against standards at various loads and power factors; corrects readings by using calibration curves; checks installation and calibration of metering and indicating instruments; maintains and repairs accessory equipment such as totalizing and graphic demand devices, timing motors, and clocks.

Makes field tests on transformers, using graphic and indicating instruments to determine load, voltage, and temperature conditions; measures voltage on customer's services, voltage on the 4800-volt system to determine regulator operation and adjustments, and voltage to ground and current loss, using bridge methods and drainage hookups; tests or assists in testing station electric equipment such as voltage regulators, indicating instruments, transformers, rotating machines, insulating oil, circuit breakers, control and protective relays. Performs tests on wire, cable, and line hardware; maintains and repairs oscillographs; takes insulating oil and gas samples from apparatus; assists in commissioning tests of power circuits and equipment; assists in maintaining and repairing recorders and control systems. Inspects, calibrates, revises, adjusts and repairs protective relay equipment. Assists in the preparation of reports and test guides and procedures for protective relays.

Sets control adjustments for feeder voltage regulators, tap changing

transformers, regulating transformers and switched capacitor banks; tests operation of pallet switches, interlocks, and relay control circuits; checks wiring diagrams for correct installation, operation and indication of control circuits; makes wiring diagrams of system facilities and test setups; makes field corrosion surveys, soil resistivity surveys, and surveys to detect stray electric currents; tests cathodic protection installations and drainage switches; assists in determining protective measures required.

Makes investigations and tests to determine if electronic and electrical equipment conforms to electrical specifications and standards; investigates complaints involving regulation of primary system voltage.

May act as lead worker for a small crew of Assistant Electrical Testers or Electrical Testers; may instruct new employees in test methods and the safe and proper use of equipment; and drives automotive equipment as required.

Senior Electrical Tester : Supervises, schedules, coordinates and participates in the performance of dielectric, load, operating, and other tests on new and reconditioned transformers, oil circuit breakers, and protective devices, and other equipment and electrical materials; recommends necessary repairs on equipment; assists in devising and preparing test procedures; supervises the maintenance and compilation of test and equipment data;

Supervises, schedules, coordinates and participates in the routine testing and repairing of watt-hour meters and meter test accessories, including cleaning, painting, and numbering of meters, instrument transformers, and related equipment; devises new testing methods.

Supervises, schedules, coordinates and participates in test crews making field transformer and circuit voltage, load, corrosion survey (including adjusting protective devices) and related test, including pole top connections, installing graphic or indicating instruments, obtaining voltage readings, and determining transformer ratios.

Supervises, schedules, coordinates and participates in the performance of insulating oil and gas sampling, testing and station wash ground testing and calibration tests on portable instruments and laboratory standards.

Supervises, schedules, coordinates and participates in the testing of protective relay equipment and related devices such as current and potential transformers, relay circuits, and pilot wires under simulated short circuit and normal conditions; tests protective relay equipment associated with oil circuit breakers and switching facilities; changes relay settings and calibrations; reviews specifications for relays and associated equipment for conformance to engineers' orders; prepares reports, test procedure and modification of relays; makes various tests of electrical equipment; assists or

makes with the assistance of an electrical tester, commissioning tests of power circuits and equipment.

Performs field and/or laboratory tests and repairs on watt-hour and indicating metering equipment protective and control systems, oscillographs, recorders, generating plant equipment, substation equipment, remote terminal units, and electrical equipment installed on the Power System.

Checks test data and compiles reports from information obtained; maintains records of test data, equipment identification, and condition of equipment and materials tested; interprets and enforces safety rules and regulations; initiates orders for equipment, materials, and repair parts; requisitions supplies;

Inspects, adjusts, calibrates, tests, and repairs electrical metering, and control and protective equipment installed at various locations; obtains clearances to remove equipment from service for testing purposes or to conduct tests on energized equipment; instructs new employees in test methods and the safe and proper use of equipment; supervises and participates in conducting efficiency, ratio and phase angle tests; supervises and participates in testing samples of gases and insulating oils; supervises and participates in the inspection and maintenance of oscillograph installations; contacts manufacturers' representatives regarding equipment failures; fulfills supervisory affirmative action responsibilities as set forth in the City's Affirmative Action Plan; and drives automotive equipment as required.

All Classes : May occasionally be assigned to other duties for training purposes or to meet technological changes or emergencies.

Qualifications :

| <u>Knowledges</u> | <u>Assistant Elec. Tester</u> | <u>Elec. Tester</u> | <u>Senior Elec. Tester</u> |
|---|---------------------------------------|-------------------------|------------------------------------|
| Principles of electricity, electrical components, and physics pertinent to, and methods used in testing electric meters, relays and instruments, oil insulation, materials, and other electric equipment; | General | Good | Good |

Assistant
Senior

Elec.
Elec.
Elec.

Knowledges (Cont)

Tester
Tester
Tester

Necessary safety precautions
when working near energized
electric equipment;

Good Good
Good

Principles of operations,
characteristics, and common
sources of trouble in electric
meters, instruments and equip-
ment; Good Good

Good

The proper use, maintenance
and adjustment of electric
testing apparatus;

General
Good Good

Mathematics through plane
trigonometry;

General
Good Good

Laws and regulations related
to equal employment opportunity
and affirmative action;

Working

The principles of electronics,
National Standards and Speci-
fication as they pertain to
testing;

General
Working

City personnel rules, policies
and procedures;

General

Memoranda of Understanding as
they apply to subordinate per-
sonnel.

General

Abilities

Make necessary mathematical computations to test and adjust electrical instruments, meters, and devices;

X X
 X

Deal tactfully and effectively with employees and the public; communicate in an effective manner in writing or orally;

X X
 X

Read, interpret, and prepare wiring diagrams;

X X
 X

Assistant
 Senior
 Elec.
 Elec.
 Elec.

Abilities (Cont)

Tester

Tester

Tester

Detect conditions which indicate hazards or potential failure in equipment tested;

X

X

Recommend repairs or betterments to equipment;

X

X

Interpret test results, keep records, and makes reports;

X

X

X

Supervise employees engaged in electrical testing work and enforce safe working practices;

X

Devise methods for electrical testing.

X

Satisfactory completion of one of the following high school or trade school courses: general physical science, physics, or electricity is required for Assistant Electrical Tester. t

Two years of experience as an Assistant Electrical Tester or in a class at least a that level assisting in or conducting electrical tests of meters, instruments o r other electrical equipment are required for Electrical Tester. Successfu l

completion of 15 semester or 22 quarter units in the field of electrical engineering or electricity at a recognized college or trade school may be substituted for on year of experience lacking. e

Two years of experience as an Electrical Tester or in a class at least at that level conducting electrical tests of meters, instruments, or electrical equipment i s required for Senior Electrical Tester.

License : All Classes : A valid California driver's license is required.

Physical Requirements : All Classes : Average lifting up to twenty-five pound s routinely and occasionally seventy-five pounds; arm, hand and finger dexterity wit h both hands involved in activities such as reaching, handling and feeling; goo d speaking and hearing ability; good eyesight. Persons with handicaps may be capabl e of performing the duties of some of the positions in these classes. Such deter - mination must be made by the medical examiner on an individual basis.

As provided in Civil Service Commission Rule 2.5 and Section 4.55 of th e Administrative Code, this specification is descriptive, explanatory and no t restrictive. It is not intended to declare what the duties an d responsibilities of any position shall be.