



**DECEMBER 2018**  
**FLSA: NON-EXEMPT**

## **INSTRUMENTATION TECHNICIAN I**

*This class specification indicates, in general terms, the type and level of work performed as well as the responsibilities of employees in this classification. The job functions described are not to be interpreted as being all-inclusive to any specific employee.*

### **DEFINITION**

Under direct or general supervision or direction, performs a variety of routine to complex assignments in the maintenance, calibration, and repair of process control instrumentation and related equipment; implements additions or modifications to control systems; and troubleshoots and repairs electrical, electronic, microprocessor-based and pneumatic and mechanical process control components.

### **SUPERVISION RECEIVED AND EXERCISED**

Receives direct or general supervision or direction from the assigned supervisory and/or managerial staff. Exercises no direct supervision over staff. May receive task direction, review and training from a Lead Instrumentation Technician.

### **CLASS CHARACTERISTICS**

This classification is the second of five (5) levels within the instrumentation maintenance job series. Positions at this level have prior experience but are not expected to function with the same amount of program knowledge or skill level as positions allocated to the Instrumentation Technician II level and exercise less independent judgment in matters related to work procedures and methods. Work is usually supervised while in progress and fits an established structure or pattern. Exceptions or changes in procedures are explained in detail as they arise.

### **EXAMPLES OF ESSENTIAL JOB FUNCTIONS** (Illustrative Only)

*The following essential job functions are typical for this classification. Incumbents may not perform all of the listed job functions and/or may be required to perform additional or different job functions from those set forth below to address business needs and changing business*

- Performs or assists in non-complex installations of process control components, panels, cables, and systems; determines measurements and develops drawings for installations; orders equipment, parts, and supplies for installation of systems; installs parts, equipment, piping, and wiring per design specifications; calibrates the instruments; tests the systems; corrects any failures; documents control cable routing; coordinates installation with other divisions as necessary.
- Ensures established safety precautions are adhered to, corrects unsafe work conditions / practices, and/or reports unsafe work conditions / practices to assigned supervisory or managerial staff.
- Maintains process control instrumentation and support systems throughout the plant and at off-plant pump stations; cleans, calibrates, and lubricates control equipment and enclosures, tools, test equipment, vehicles, and instrument shop facilities; maintains shop equipment by sending test equipment out to vendor for calibration and certification; maintains spare equipment inventory.
- Travels to various District locations for equipment installation, maintenance and operational or design meetings.

- Troubleshoots and repairs electrical, electronic, microprocessor-based, pneumatic, and mechanical process control components; identifies, isolates, and diagnoses failures using various types of test equipment; interprets schematic and loop drawings; coordinates repairs with other divisions as necessary; interfaces and coordinates with contractors and or vendors when necessary for installation or repair of equipment.
- Gathers technical information to support the addition or modification of control systems needed to enhance the operation of wastewater treatment process controls by researching existing control systems; implements additions or modifications by reprogramming software such as ladder logic that interfaces personal computers with programmable logic controllers (PLC's), customizing application programs that interface PLC's with distributive control systems (DCS's), and reprogramming man machine interface (MMI) software.
- Orders parts and materials for repairs and projects; prepares purchase requisition forms; maintains parts inventory; contacts vendors to locate parts and equipment and reviews new products or procedures.
- Performs special projects including redesigning, retrofitting, and/or refurbishing existing plant devices. This may include security equipment such as cameras and safety equipment such as fire alarm and protection systems.
- Performs lockout/tagout procedures to assist contractors with repairs when necessary.
- Performs preventive, predictive and corrective maintenance on electrical generation and distribution systems including generator control, breaker, and master panels; redesigns, retrofits and/or refurbishes existing equipment; upgrades or modifies SCADA system as necessary.
- Works with contractors to solve problems regarding installation of new equipment and control systems and repair of existing equipment and systems.
- Reviews as-built drawings during plant construction; maintains and updates all applicable documents including software and application programs, instrumentation loop drawings, piping and instrument drawings (P&ID), and electrical ladders schematics; maintains summary of daily repairs and calibration tasks; enters into computer database.
- Performs related duties as assigned.

## **QUALIFICATIONS**

### **Knowledge of:**

- Operational characteristics of instrumentation equipment and components.
- Electrical and electronic technology principles and practices.
- Principles, methods, materials, and tools used in instrumentation repair and maintenance work.
- Principles of hydraulic and pneumatic control systems.
- Characteristics of fiber optic cable.
- Operational characteristics of process control instrumentation, equipment, and components.
- Principles, methods, materials, and basic tools used in process control instrumentation installation and repair.
- Methods and techniques of maintaining, installing, troubleshooting, and repairing process control instrumentation.
- Application of microprocessors in devices and equipment and techniques used to program them.
- Operational principles of a wastewater treatment facility.
- Preventive and corrective maintenance techniques.
- Principles of analog and digital theory.
- Operational and technical characteristics of high-power equipment including VFDs.
- Office procedures, methods, and equipment including computers and applicable software applications such as word processing, maintenance management systems, spreadsheets, and databases.
- Mathematical principles and calculations.
- Principles and procedures of record keeping.
- NFPA-70E (National Fire Protection Association).

- Occupational hazards and standard safety practices.
- English usage, spelling, vocabulary, grammar, and punctuation.
- Principles and practices of customer service and techniques for effectively communicating with the public, vendors, contractors and District staff.

**Ability to:**

- Perform a variety of installation, repair, and maintenance on process control instrumentation and support systems.
- Inspect, troubleshoot, and repair process control instrumentation and fiber optic equipment.
- Read, interpret, understand, and maintain plans, schematics, technical manuals, ladder logic, diagrams, blueprints, and drawings.
- Perform necessary mathematical calculations.
- Correctly scale calibration.
- Operate test equipment and interpret critical data to solve complex problems.
- Operate, troubleshoot, and repair a variety of high-power equipment.
- Prepare clear and concise technical reports and purchase requisition forms.
- Work independently in the absence of supervision.
- Work extended hours, including nights, weekends, and holidays.
- Adhere to safe work practices and procedures in the workplace.
- Operate a motor vehicle and travel to various District sites, projects and/or meetings.
- Effectively communicate in person, over the telephone, and in writing.
- Utilize a computer, relevant software applications and/or other equipment.
- Establish, maintain, and foster positive and effective working relationships with those contacted in the course of work.

**Employment Standards:**

Any combination of education and experience that provides the required knowledge, skills, and abilities may be qualifying as determined by OCSD.

1. High school diploma or G.E.D., supplemented by specialized training such as relevant trade school in instrumentation technology or a related field; AND
2. Two (2) years of experience maintaining, calibrating, installing, troubleshooting, and repairing electrical, pneumatic, and mechanical process control instruments.

**Licenses and/or Certifications:**

- Valid California Class C Driver's License.

**Disaster Service Workers:**

All Orange County Sanitation District employees are designated Disaster Service Workers through state law (California Government Code Section 3100-3109). Employment with the Orange County Sanitation District requires the affirmation of a loyalty oath to this effect. Employees are required to complete all related training as assigned, and to return to work as ordered in the event of an emergency.

**Standby and Call Back:**

Employees in this classification may be required to participate in standby duty and are subject to call back, which may include nights, weekends and 24-hour emergency call out with little or no notice. Any employee designated to serve on standby, or report to an emergency, and refuses to do such, shall be subject to disciplinary action up to and including termination.

### **PHYSICAL DEMANDS**

Must possess mobility to work in and around wastewater treatment plants and pump/lift stations and related utility systems and facilities; strength, stamina, and mobility to perform moderate to heavy physical work, to work in confined spaces and around machines, to climb and descend ladders, and to operate varied hand and power tools and equipment; ability to travel to various District sites, projects and/or meetings; vision to read printed materials and a computer screen; and hearing and speech to communicate in person and over the telephone or radio. The job involves fieldwork requiring frequent walking in operational areas to identify problems or hazards. Finger dexterity is needed to access, enter, and retrieve data using a computer keyboard or calculator and to operate above-mentioned tools and equipment. Positions in this classification bend, stoop, kneel, reach, and climb to perform work and inspect work sites. Employees must possess the ability to lift, carry, push and pull materials and objects weighing up to 40 pounds, or heavier weights with the use of proper equipment.

### **ENVIRONMENTAL ELEMENTS**

Employees work in and around wastewater utilities and in the field and are exposed to loud noise levels, cold and hot temperatures, inclement weather conditions, road hazards, vibration, confining workspace, chemicals, mechanical and/or electrical hazards, and hazardous physical substances and fumes. Employees may interact with upset staff and/or public and private representatives and contractors in interpreting and enforcing departmental policies and procedures.