



**JULY 2012**  
**FLSA: NON-EXEMPT**

## **INSTRUMENTATION TECHNICIAN I/II**

*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, 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 of 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 from a Maintenance Supervisor. Exercises no direct supervision over staff.

### **CLASS CHARACTERISTICS**

**Instrumentation Technician I** – This is the entry level class in the Instrumentation Technician 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. Advancement to the “II” level is based on demonstrated proficiency in performing the assigned functions and is at the discretion of higher level supervisory or management staff.

**Instrumentation Technician II** – This is the full journey level class in the Instrumentation Technician series performing the full range of duties with only occasional instruction or assistance. Positions at this level are distinguished from the Instrumentation Technician I level by the performance of the full range of duties as assigned, working independently, and exercising judgment and initiative. Positions at this level receive only occasional instruction or assistance as new or unusual situations arise, and are fully aware of the operating procedures and policies of the work unit. Work is normally reviewed at critical points of assigned project for soundness of technical judgment and to determine if desired overall objectives have been achieved. Positions in this class are flexibly staffed, and positions at the Instrumentation Technician II level are normally filled by advancement from the Instrumentation Technician I level. This class is distinguished from the Lead Instrumentation Technician in that the latter is responsible for functional direction over and provides training of lower-level staff and is capable of performing the most complex duties assigned to the division.

### **EXAMPLES OF ESSENTIAL JOB FUNCTIONS**

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 practices.

- Perform non-complex and complex installations of process control components, panels, cables, and systems; determine measurements and develop drawings for installations; order equipment, parts, and supplies for installation of systems; install parts, equipment, piping, and wiring per design specifications; calibrate the instruments; test the systems; correct any failures; document control cable routing; coordinate installation with other divisions as necessary.
- Troubleshoot and repair electrical, electronic, microprocessor-based, pneumatic, and mechanical process control components; identify, isolate, and diagnose failures using various types of test equipment; interpret schematic and loop drawings; coordinate repairs with other divisions as necessary. Interface and coordinate with contractors and or vendors when necessary for installation or repair of equipment.
- Maintain process control instrumentation and support systems throughout the plant and at off-plant pump stations; clean, calibrate, and lubricate control equipment and enclosures, tools, test equipment, vehicles, and instrument shop facilities; maintain shop equipment by sending test equipment out to vendor for calibration and certification; maintain spare equipment inventory.
- Maintain and update all applicable documents including software and application programs, instrumentation loop drawings, piping and instrument drawings (P&ID), and electrical ladder schematics; maintain summary of daily repairs and calibration tasks; enter into computer database.
- Gather 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; implement 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.
- Prepare clear and concise purchase requisition forms for process control instrumentation and related equipment; may drive District vehicles.
- As assigned, perform 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.
- Perform lock and tag out procedures to assist contractors with repairs when necessary.
- As assigned, perform preventive, predictive and corrective maintenance on electrical generation and distribution systems including generator control, breaker, and master panels; upgrade or modify SCADA system as necessary.
- Perform related duties as required.

## **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, spreadsheets, and databases.
- Applied physics.
- Mathematical principles.
- 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.
- Techniques for providing a high level of customer service by effectively dealing 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.
- Adhere to safe work practices and procedures.
- Use English effectively to communicate in person, over the telephone, and in writing.
- 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.

**Instrumentation Technician I**

1. High school diploma or equivalent supplemented by trade school training 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.

**License or Certificate:**

- Possession of a valid Grade I Electrical/Instrumentation Certificate from the California Water Environment Association or comparable Instrumentation Society of America (ISA) certification is desirable.
- Possession of a valid California class C driver's license.

**Instrumentation Technician II**

1. High school diploma or equivalent supplemented by college level course work or trade school training in instrumentation technology or a related field, AND
2. Three (3) years of experience maintaining, calibrating, installing, troubleshooting, and repairing electrical, pneumatic, and mechanical process control instruments at a level comparable to an Instrumentation Technician I with the District.

**License or Certificate:**

- Possession of a valid Grade II Electrical/Instrumentation Certificate from the California Water Environment Association or comparable Instrumentation Society of America (ISA) certification is desirable.
- Possession of a 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.

**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 light to medium 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, and to operate a motor vehicle and visit various District sites; 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 a minimum of 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.