OVERVIEW:
Under general direction, incumbents of positions in the class operate, service and perform maintenance activities following appropriate safety procedures on various mechanical equipment such as gas turbines, generators, gas compressors, air emission systems and water purifiers in a campus power plant. Incumbents of positions operate and perform maintenance on other related power plant equipment such as boilers, diesel or gas reciprocating engines, and other mechanical auxiliary equipment. Incumbents of positions monitor instrumentation gauges for operating problems; operate and monitor the power plant’s computer-based management system as it interfaces with the Energy Management System (EMS); endeavor to coordinate the operation of power plant equipment in order to produce the optimum amount of energy in the most cost-effective manner; and perform other related duties as required.

DISTINGUISHING CHARACTERISTICS:
The Power Plant Operator class encompasses positions that operate, service and render repairs following appropriate safety procedures to mechanical equipment in campus power plants. The Power Plant Operator class is distinguished from the Operating Engineer by: the type of mechanical equipment that is operated and serviced; the additional training and knowledge that is required to operate and service such equipment: the degree of independence and responsibility that the position has in ensuring that the optimum amount of energy is produced in the most cost-effective manner; the fact that such positions function in power plants which typically produce at least 500 kilowatts of electricity, and where the steam pressure is greater than 15 pounds per square inch (PSI) or the hot water temperature is greater than 250° Fahrenheit (F).

The Power Plant Operator class differs from the Building Service Engineer class by the fact that the Power Plant Operator specializes in the operating, servicing and maintaining of high speed revolution cogeneration, system equipment. The Building Service Engineer, on the other hand, works with a wider range of equipment in maintaining, servicing, repairing and inspecting heating, ventilating, plumbing, electrical, mechanical and air conditioning systems. The Power Plant Operator, however, must be particularly aware of safety precautions, as such high speed revolution equipment produces at least 500 kilowatts of electricity with steam pressures over 15 PSI or water temperatures over 250° F.

Unlike the Operating or Building Service Engineer, the Power Plant Operator spends a majority (50%) of time on operating, servicing and rendering repairs to gas turbines and auxiliary mechanical equipment such as compressors, generators, water purifiers and air emission systems. The performance of these duties requires additional classroom and hands-on training. Although the Power Plant Operator may also operate, service and render repairs to other mechanical equipment such as boilers or gas/diesel reciprocating engines, these duties usually do not occupy a majority of the position’s time, nor do they require as extensive training or knowledge. An exception to this rule may be when positions are located in power plants that produce more than 500 kilowatts of electricity or where the steam pressure is greater than 15 PSI or the hot water temperature is greater than 250° F. Incumbents in positions that spend a majority of time operating, servicing and rendering repairs to gas or diesel reciprocating engines in a power plant producing less than 500 kilowatts of electricity or lower steam pressures and hot water temperatures are more appropriately classified as Operating Engineers.
TYPICAL ACTIVITIES:
Incumbents of positions in this class are responsible for operating, maintaining, repairing, inspecting, monitoring and documenting, as necessary, mechanical equipment such as gas turbine engines, gas compressors, waste heat boilers with economizers, package or built-up water tube boilers with or without economizers, diesel/natural gas reciprocating engines, boiler feed and condensate water systems, cooling towers and systems, deaerating feed water tanks, boiler feed and condensate pumps, boiler feed water and condensate return systems, 12-volt starter battery packs, electrical switch gears, reverse osmosis water purification systems, deionized NOX water systems, automatic water softeners, fuel oil supply and transfer systems, air compressors and systems and similar apparatus; and perform preventive and corrective maintenance on such equipment.

Incumbents assist in the operation, maintenance, repair and inspection of heating, air conditioning, refrigeration, ventilation and water treatment equipment as it pertains to cogeneration or power systems; examples include: hot water boilers, chillers, condensers, compressors, circulating water pumps, blower fans, valves, ducting, gauges and manhole covers; and may also render emergency repairs to steam, natural gas, water and air systems and oil distribution systems. Incumbents are also responsible for proper distribution of the electrical system and the electricity produced by the power plant, plus the proper transfer from on-station usage to alternate users.

Incumbents may repair and replace bearings, shafts, seals, rings and electrical wiring in the installation of central system parts, gauges, valves and pipes which require the application of appropriate specialized skills and knowledge.

Incumbents monitor instrumentation gauges for natural gas leaks, turbine and generation bearing temperatures, turbine and generator vibration, resistivity of deionized water and liquid/gas fuel valve positions; test, adjust and calibrate boiler and turbine control systems; make sophisticated balance and vibration checks on gas turbine engine, diesel engine and gas compressor; operate, calibrate and maintain the oxygen trim systems on package boilers; monitor and check natural gas pressures from the main distribution system; monitor electrical loads; and follow established safety procedures in performing all duties.

Incumbents sample and treat fuel oil by introducing additives as prescribed by dosage charts; make visual observations of turbine exhaust in order to evaluate and correct exhaust to maintain acceptable emission levels.

Incumbents operate the power plant’s computer-based management system as it interfaces with the main Energy Management System (EMS); monitor computer functions to start, stop and control the kilowatt output of the generator through electrical control systems; and interpret input/output energy calculations and equipment efficiency calculations.

Incumbents may rotate through various shift assignments in the central power plant or be required to tend package power plants located at various sites within the campus.

MINIMUM QUALIFICATIONS:
Knowledge and Abilities:
General knowledge of high and low pressure boilers, gas turbines, reciprocating engines, electrical distribution and transfer equipment, reverse osmosis water systems, computer-based management and energy management systems, fuel oil test equipment, boiler feed water test equipment, electrical/electronic pneumatic and hydraulic control systems, air quality control equipment, ventilation, heating and air conditioning systems; and the methods, safety procedures, tools, materials and equipment used in the operation, maintenance and repair of such equipment. Ability to operate, repair and maintain the above identified equipment following appropriate safety procedures; repair and replace bearings, shafts, seals, rings and electrical wiring in the installation of central system parts, gauges, valves and pipes; ensure that all safety factors are met while operating equipment and tools; follow emergency procedures during a utility outage in order to return power back successfully; interpret and work from blueprints, manuals, diagrams and operating procedures; interpret pressure, compound vacuum and temperature gauges, monitor and interpret data transmitted through the power plant control and energy management computer.
printouts; operate power plant’s computer-based management system as it interfaces with the Energy Management System (EMS); analyze situations accurately and take prompt action during emergencies; interpret input/output energy calculations and equipment efficiency calculations; and read and write at a level appropriate to the duties of the position.

**Experience:**
Equivalent to successful completion of an on-the-job training program in the operation, maintenance and minor repair of gas turbines, generators, gas compressors, air emission systems and water purifiers in a power plant and cogeneration system. Experience and/or training in the operation of a power plant’s computer-based management system is desirable.

Equivalent to two years experience in the operation, maintenance and repair of boilers, diesel or gas reciprocating engines and other related mechanical equipment.

Completion of a terminal degree/certificate program from a recognized educational institution in mechanical technology which included the actual operation of boilers, gas or reciprocating engines may substitute for up-to-one year of the required experience.

Prospective applicants who have not had the experience listed may be considered eligible based on other equivalent evidence of meeting the above minimum qualifications.