

## **JOB DESCRIPTION**

**TITLE:** Boiler Plant Mechanic/Utility Fitter

**DEPT:** SITE OPERATIONS, FT. WAINWRIGHT

**REPORTS TO:** SHIFT ENGINEER OR MAINTENANCE SUPERVISOR

**WAGE:** PER PUBLISHED SCALE

### **POSITION OBJECTIVES:**

Perform a variety of maintenance and utility fitter duties consistent with operation of a coal fired Central Heat & Power Plant (CHPP). The duties include maintenance, repair and overhaul of a variety of steam plant equipment. This may include steam generating boilers, steam turbine generators, and electric motors from ½ to 400 horsepower which drive various size pumps from single stage to multi stage with a full range of pressures. The system includes maintaining a coal and ash conveying system, water treatment systems, miscellaneous power plant auxiliary equipment and diesel engines. Repair and overhaul of the coal fired steam generating boilers involves rebricking furnaces and ash pits, replacing grates, line shafts, grade air seals, rails and air tubes. Replaces, repairs and rebuilds coal stokers and realigns segment drive shafts to coal stokers. Replaces and repairs bearings on fan shafts, balances fan blades, removes and installs boiler tubes including rolling tubes in headers, welding and hydro testing tubes in boilers, economizers, super heaters, and air heaters to ASME standards and codes. Performs a full range of tasks associated with a journeyman level welder including oxygen/acetylene gas welding, electric arc welding on a variety of dissimilar metals. Requires proficiency with plasma cutting techniques and use of mig and tig welding machines. Welding is performed in accordance with ASME boiler pressure vessel codes. Performs a full range of pipefitting trades, tasks and procedures. Work includes the installation, repair and maintenance of piping to include steam piping up to 24 inches in size and at pressures up to 450 psi. Temperatures are potentially in excess of 650 degrees Fahrenheit. Calculates thermo expansion of pipe so steam lines will operate safely. Determines tools and materials necessary such as pipe, fittings, valves, check valves, steam traps and other accessories. Troubleshoots and analyzes defects or malfunctions in piping systems and equipment. Installs, repairs and maintains a variety of steam components including pressure reducing valves, relief valves, pressure gauges, condensate return/vacuum pumps and expansion joints. Performs threading, cutting, fitting, bending, assembling, alignment, support and anchoring of pipe. Insulates pipe after work is completed.

### **MAIN ACTIVITIES:**

1. Perform repair, maintenance and overhaul of coal fired steam generating boilers of up to 150,000 pounds per hour capacity.
2. Perform complete maintenance, repair and overhaul of steam turbine generators, auxiliary turbines and related equipment, including governors, pressure relays, bearings, couplings, control valves, over speed tripping mechanisms, turbine diaphragms and related equipment.

3. Non-destructively test all parts of boiler for cracks and breaks. After repair/overhaul, perform on-line checks of turbine generator before it is put back in service.
4. Maintain coal handling equipment and perform repairs such as changing segments, shafts, bearings, motor and chain drives.
5. Troubleshoot and maintain all equipment involved in coal handling such as car pullers, car shakers, pan feeders, screens and coal scales.
6. Repair and when necessary, overhaul diesel engines used to power electric generators.
7. Perform the full range of tasks associated with journeyman level welder.
8. Perform a full range of pipefitting trades, tasks and procedures.
9. Maintain accurate and complete maintenance records for the work performed at the CHPP and on the affiliated heat distribution system.
10. Use of precision instruments in the performance of daily duties.
11. Troubleshoot and diagnose system malfunctions and in coordination with the Maintenance Supervisor, outline a repair strategy for major projects.

#### **SKILLS AND QUALIFICATIONS:**

1. Possess a high level of multi-trade skills and abilities specific to Boiler Plant Equipment Mechanic, Boilermaker, Diesel Mechanic, Welder, Pipefitter, Machinist and Insulator duties.
2. Ability to use precision instruments such as vernier/dial calipers, inside and outside micrometers, surface gauges, depth gauges, dial indicators and related maintenance equipment.
3. Skill in the use of torque wrenches, pipe cutting, bending, threading, gas/electric welding, boiler tube rollers and expanders, hydraulic press, lathe, power saws, drill press, grinders, shapers, and vertical/horizontal boring mills.
4. Skill in the use of testing and measuring devices including micrometers and mechanical analysis vibration equipment for the process of diagnosing, repairing and testing equipment and systems used to align rotors such as turbo motors, shafts, pumps, fans, etc.
5. Ability to calibrate flow of chemical and treated/untreated water for proper flow rate adjustments.
6. Ability to rebuild valve and actuators such as steam flow valves, water flow valves, auto pneumatic coal scale gates, fly ash gates, etc.
7. Very high degree of knowledge, accuracy and skill to develop, lay out and fabricate work. Must display exceptional knowledge of mechanical building plans, blueprints and in the use of shop mathematics.
8. A high degree of knowledge and skill to plan and lay out the installation, modification and repair of new and existing piping systems and equipment.
9. Knowledge, use and interpretation of shop manuals. Must demonstrate knowledge in theory, practices, processes and terms of the trade in order to overhaul turbines, diesels and related auxiliary equipment.
10. Skilled in the safe use of acid to remove scale from boiler tubes, steam lines, and valves in order to maintain the boiler plant system in a safe working condition.

11. Knowledge and ability to perform welding on high pressure superheated steam lines in accordance with ASME Boiler and Pressure Vessel Code.
12. Knowledge of high pressure piping systems and equipment such as steam heating, steam generation and vacuum systems.
13. Knowledge of various components of such systems as boilers, steam generators, pumps, and various brands/types of steam traps, drip lines, vents, expansion joints, expansion loops, anchors, pressure reducing valves, heat exchangers, water make up control, temperature control and air vents.
14. Must demonstrate ability to operate in a safe, journeyman manner and an ability to work well with other employees.
15. Must be able to communicate effectively with other workers, supervisors and senior management.
16. Must be able to work independently with little direct supervision.

**PHYSICAL EFFORT:**

The systems worked on are sometimes in hard to reach places such as crawl spaces or inside utilidors. Position requires the ability to stand, stoop, bend, kneel, climb and work in tiring and uncomfortable positions. Frequently handles, lifts, carries and sets up parts and equipment weighing up to 50 pounds, and occasionally items weighing more with assistance of material lifting devices or other workers. Work requires good coordination of eyes, hands, legs and body. Work is frequently required in temperatures exceeding 110 degrees Fahrenheit when working on steam and boiler components therefore incumbent must be physically capable of working in such an environment.

**WORKING CONDITIONS:**

Work is inside boilers and on scaffolds, ladders and catwalks. Worker is exposed to abnormal temperatures, noises and fumes. Frequently required to work in cramped conditions. Some hazards exist from burns, moving machinery and electrical shock. Required to properly wear and use safety equipment such as hearing protection, respirators, disposable clothing, hard hats, safety glasses and safety footwear. Subject to strains, cuts and bruises while moving heavy materials or equipment or working with tools on heavy pipe and equipment. At times may be required to work on energized steam lines.

**CONDITIONS OF EMPLOYMENT:**

1. Incumbent must be able to maintain a level of physical fitness to perform the duties of Boiler Plant Mechanic/Utility Fitter.
2. The incumbent is subject to pre-hire and random drug testing in accordance with the published policy of Doyon Utilities.
3. The incumbent must maintain a Class A Commercial Driver's License from the State of Alaska.
4. Incumbent must maintain welder certification according to ASME Boiler and Pressure Vessel Codes.
5. Willingness to be scheduled for standby/emergency call-ins on a rotational basis with other similarly qualified employees.
6. Must be capable of lifting at least 50 pounds to shoulder level.

7. May be required to work shift work when more than one shift is scheduled.

**EDUCATION AND TRAINING:**

1. High School Diploma or equivalent is required.
2. Welder certification in accordance with ASME Boiler and Pressure Vessel Code.
3. Must maintain Class A Commercial Driver's License from the State of Alaska.

**EMPLOYMENT CLASSIFICATION:**

Non-exempt/Full Time Permanent