AIR CONDITIONING MECHANIC WG-5306-10

UTILITIES HVAC

I. POSITION AND ORGANIZATION INFORMATION

Position:

Air Conditioning Mechanic, WG-5306-10

Purpose of position:

The primary purpose of this job is to install, repair, and modify large/complex systems that provide for a variety of air conditioning functions such as heating, cooling, humidifying, dehumidifying, cleaning, filtering, and circulating.

Organization:

Organization goals:

II. MAJOR DUTIES

A. Duty (Critical):

The employee repairs and maintains a variety of large commercial and industrial refrigeration and air conditioning systems and supporting equipment with complex problems and extensive repairs requiring judgment to locate malfunctions. Systems include those with a variety of compressors and a variety of refrigerant controls. Systems use a variety of complicated motor controls and other controls to protect against overload or overheating. Calculates air flow and pressure-temperature characteristics. Maintenance includes dismantling, repairing, reassembling, and testing units such as pumps, impellers, compressors, chillers, receivers, condensers, and evaporators. (25%)

Tasks:

1. Makes extensive repairs to faulty equipment to keep inoperative time to a minimum.

2. Locates trouble before dismantling and makes repair to insure proper functioning after reassembly.

Selected Staffing KSAs:

A1, A2, A3, A4, A5, A6, A7, A8

B. Duty (Critical):

Plans, lays out, and installs a variety of large complex commercial and industrial systems and supporting equipment used to condition air in warehouses, shops, hangars, hospitals, and large office buildings. Complexes contain special requirements such as communication centers, electronic data processing centers, operating rooms, laboratories, clean rooms, link training rooms, and other areas with sensitive equipment. (25%)

Tasks:

1. Reads and interprets detailed equipment blueprints, electrical schematics,

drawings, and specifications for proper installation.

2. Determines installation needed to accomplish work so that downtime of system is held to a minimum.

Selected Staffing KSAs:

A1, A2, A3, A4, A5, A7, A8

C. Duty (Critical):

Troubleshoots a variety of large commercial and industrial refrigeration and air conditioning systems and supporting equipment. Checks elements which control low and high side pressure; the temperature of the cooling units, liquid and suction lines, and the running time of various mechanisms. Checks for the probability of leaks by visual and audible examination of equipment, by application of prescribed test procedures and equipment, and by exploration of probable reasons for equipment failure. Tests refrigeration, air conditioning, ventilation, and related control systems and equipment. Analyzes and isolates system malfunctions. Tests pressure and temperature of refrigeration and distribution systems. Tests system operation and detects component malfunctions. Inspects and calibrates controls and gauges. (25%)

Tasks:

1. Determines causes of defects and malfunctions on assigned equipment.

2. Determines repairs needed through appropriate testing and inspection.

Selected Staffing KSAs:

A1, A2, A3, A4, A5, A6, A7, A8

D. Duty (Critical):

Utilizes established safety practices, rules, regulations, and procedures to maintain a safe and clean work environment. Uses and assures proper fit of required safety equipment and clothing such as safety shoes, glasses, ear protection, face masks, and/or hard hats. Uses and maintains tools. Maintains records and documents actions. (25%)

Tasks:

1. Operates equipment in a safe manner, applying established safety rules and regulations to minimize minor violations and to avoid major violations due to employee error or negligence.

2. Informs the supervisor of accidents and/or damage to supplies or equipment or of any observed unsafe practices, procedures, and/or conditions in a timely manner and in accordance with established policies and procedures.

3. Uses, maintains, and accounts for all types of hand and/or power tools and test equipment required to accomplish duties.

4. Prepares accurate, complete, and up-to-date records of actions taken and assures documentation is properly signed and coordinated in a timely manner.

Selected Staffing KSAs:

A1, A2, A3, A4, A5, A6, A7

E. Other Work Requirements

1. The employee may be recalled to duty.
2. This position requires the employee to drive a motor vehicle. An appropriate, valid driver's license is required for the position.

III. KNOWLEDGES, SKILLS AND ABILITIES (KSAs)

A. Selected Staffing KSAs:

1. Knowledge of the principles and theories of air conditioning and refrigeration and properties of refrigerants.
2. Knowledge of the construction and operation of a variety of large commercial and complex industrial systems.
3. Knowledge of safety regulations, practices, and procedures.
4. Skill in dismantling, repairing, and reassembling pumps, impellers, compressors, chillers, receivers, and evaporators.
5. Skill in maintaining difficult balances of a variety of refrigerant controls and complicated motor controls.
6. Skill in troubleshooting complex problems on large projects applying prescribed test procedures and equipment.
7. Skill in the use of hand tools, power tools, and a variety of test equipment.
8. Ability to interpret instructions, specifications, etc. (including blueprint reading).

B. Basic Training Competencies:

1. Knowledge of the principles and theories of air conditioning and refrigeration and properties of refrigerants.
2. Knowledge of the construction and operation of a variety of large commercial and complex industrial systems.
3. Knowledge of safety regulations, practices, and procedures.
4. Skill in dismantling, repairing, and reassembling pumps, impellers, compressors, chillers, receivers, and evaporators.
5. Skill in maintaining difficult balances of a variety of refrigerant controls and complicated motor controls.
6. Skill in troubleshooting complex problems on large projects applying prescribed test procedures and equipment.
7. Skill in the use of hand tools, power tools, and a variety of test equipment.
8. Ability to interpret instructions, specifications, etc. (including blueprint reading).

IV. CLASSIFICATION FACTORS

Factor 1. Knowledge

1. -- Knowledge of principles and theories including the refrigeration cycle, temperature measurement, and the properties of several refrigerants. Knowledge of pressure and temperature relationships and refrigerant tables.

-- Knowledge of the design and operating characteristics of a variety of large industrial and commercial refrigeration and air conditioning systems. Skill in making air flow calculations.

-- Skill in troubleshooting complex problems and in installing and making extensive repairs on large systems.

-- Skill in using hand tools, portable power tools, and a wide variety of test equipment including special tools such as acetylene torch, ammeters, refrigeration gauges, electronic leak detectors, control devices, vacuum pump, hydraulic press, and micrometers.

-- Skill in reading schematics, blue prints, and technical manuals.

-- Knowledge of electrical wiring and a variety of types of controls (electrical, electronic, pneumatic) sufficient to find replace, and make limited repairs to defective equipment, and run test circuits from outside disconnect box to the system.

-- Knowledge of related electrical, sheet metal, welding, insulating, and carpentry installation and fabrication tasks.

Factor 2. Responsibility

The mechanic independently plans and completes work following the full range of accepted trades practices. Works from work orders, building plans, shop sketches, blueprints, and oral assignment instructions with little or no check during progress. Completed work may be spot-checked for timeliness, accepted trade practices, and customer satisfaction.

Factor 3. Physical Effort

The employee lifts, carries, and handles equipment up to 50 pounds unassisted and over 50 pounds with assistance. Works from ladders, scaffolding platforms, or cramped areas where equipment, parts, or tools are hard to reach. Work requires frequent stooping, stretching, bending, kneeling, and working in tiring, uncomfortable positions for long periods. In addition, work involves frequent movement and maneuvering of large, heavy equipment using hoists, holders, and pulleys as required.

Factor 4. Working Conditions

The employee works indoors and outdoors, on elevated structures, and in cramped areas. Subject to discomfort from face masks or other protective devices when there is a possibility of exposure to toxic refrigerants, noxious gases, fumes, or acids. Subject to possible burns from refrigerants. Works near moving parts of equipment and machinery, energized electrical circuits, sharp metal edges, loud noises, and toxic fumes, which could cause cuts, burns, and respiratory ailments. May be subject to sudden and frequent temperature changes.

V. CLASSIFICATION SUMMARY

In this position:

Duty A. 25% WG-5306-10 Air Conditioning Mechanic
Maintains Refrigeration Systems

Duty B. 25% WG-5306-10 Air Conditioning Mechanic
Plans Systems

Duty C. 25% WG-5306-10 Air Conditioning Mechanic
Troubleshoots Refrigeration Systems

Duty D. 25% WG-5306-10 Air Conditioning Mechanic
Utilizes Safety Regulations

OPM Job Grading Standard for Air Conditioning Equipment Mechanic, WG-5306, TS-17 dated June 1971.

Grade: WG-10