

Nothing in this job description restricts management's right to assign or reassign duties and responsibilities to this job at any time.

DUTIES Serves as journey (full performance) level heating, ventilation, and air conditioning (HVAC) Mechanic at Washington Dulles International Airport (IAD). Installs, operates, calibrates, adjusts, maintains, troubleshoots, repairs, replaces, and modifies a full and diverse range of commercial-grade/industrial-scale and residential-scale HVAC equipment and systems. Equipment and systems include air compressors and driers, pneumatic controls, air handlers, low pressure boilers, High Temperature Hot Water (HTHW) generators, a thermal ice storage system and multiple large-tonnage chillers and cooling towers ranging from 30 to 2000 tons. Applies the theories, principles, requirements, and standards of the trade and uses the full range of tools of the trade, including specialized tools and computer software to adjust equipment systems and diagnose problems. Performs related functions.

Operates, maintains, and repairs a variety of heating and air-handling systems and related HVAC equipment including low-pressure boilers, 50 MBTU high-temperature hot-water boilers, small exhaust fans, multi-zoned air-handling units with multi-filtering systems, air intake fans, mixed-air fans, high-voltage HVAC units used with HTHW and chilled water, ventilation units, exhaust fans in manholes, Variable Air Volume (VAV) boxes, diffusers, ductwork, heat pumps, and various pumps and air compressors.

Monitors performance of equipment/systems and adjusts controls manually or via energy management computer to keep buildings, offices, and classrooms at preset comfort ranges for heating and cooling.

Responds to calls for service such as temperature complaints. Repairs and replaces electrical, electronic, and pneumatic controls of HVAC equipment. Troubleshoots and diagnoses electrical and other problems with air conditioning equipment by reading dials and gauges and using diagnostic equipment, wiring diagrams and schematics for all voltages within units and back to service disconnects, to determine operating status of equipment and isolate problems such as defective/malfunctioning automatic valves, electrical and mechanical failures in motors, and leaks in tanks. As required, disassembles equipment or removes brick and mortar from around equipment to locate leaks or to gain access to malfunctioning units or parts. Evaluates nature of problems and extent of repairs required. Performs major and minor repairs such as replacing and aligning 12-foot shafts with bearings; repairing or replacing heating and cooling coils, timers, electrical switches, solenoids, and electrical controls; and replaces dampers.

Performs preventive maintenance. Replaces or cleans filters on air handlers and air curtains, etc.; cleans strainers; inspects bearings, drains air compressors; checks refrigerant charge and adds refrigerant as necessary by weighing or charging to manufacturer's specifications; punches tubes in chillers to remove scale; aligns and replaces broken or worn valve plates, drive belts, bearings, pulleys, fan blades, fuses, etc.; lubricates fan motors, shaft bearings, moving parts, etc.; calibrates thermostats and pneumatic controls; resets controls on electronic filters; replaces blower motors and cleans coils on heat pumps; replaces mechanical seals on pumps and aligns to close tolerances for shaft alignment with motors; and performs related tasks. Installs duct work and diffusers as required. Recommends modifications to design of equipment for improved operations.

Periodically operates incinerators to dispose of materials (such as those seized or confiscated by law

enforcement) and operates 50 MBTU high-pressure boilers and 2,000-ton chillers, which includes recording readings of gauges, observing equipment for leaks, and detecting changes in motor sounds or other indications of abnormal operation. Follows procedures to make adjustments or take equipment offline, as required.

Collaborates with Air Conditioning Mechanics in maintaining or repairing thermal ice storage systems, chillers, window air conditioners, water coolers, roof-top heat pumps, and refrigeration equipment, as assigned.

Uses a variety of hand tools and specialized tools, such as punches, hacksaws, hydraulic presses, grinders, sand blasters, shears, computers with diagnostic and energy management software, multi-meters, gas welding outfits, air flow meter, refrigeration gauge, vacuum pumps, water testing kit, Vernier calipers, and micrometers to install, maintain, and repair equipment.

Handles refrigerants and hazardous materials (such as fuel and chemicals) in accordance with regulations and other requirements. Performs work according to building/fire codes and in accordance with safety procedures.

Uses manuals, technical guides, and electrical diagrams and schematics. Keeps records and makes reports of work accomplished (such as completion of work orders) and materials used (such as filters, lubricants, refrigerants, special chemicals, and cleaning solvents). Maintains familiarity with Material Safety Data Sheets (MSDS).

Keeps abreast of HVAC industry developments that may affect heating, ventilation, air conditioning, and refrigeration (HVAC-R) equipment and systems to make observations and recommendations for improvements in the operation, preventive maintenance, and practical use of modern technology.

Sets up and cleans up work site and performs shop keeping tasks common to the trade including painting equipment such as pumps, piping, boilers, air compressors and concrete foundation pads.

Uses a computer and modern office suite software (such as MS Office) to plan, schedule, communicate (using email), word process (light word processing only) and perform research (Internet use, as in searching for parts and performance information and keeping up with technology). Uses specialized software such as the CMMS to obtain/close out work orders, the supply and procurement modules of Oracle to requisition parts, and the EMCS to operate, troubleshoot, and fine tune equipment. Uses radio and telecommunication devices to exchange work information.

Communicates and interacts effectively with internal and external business contacts, including, but not limited to, other members of the unit/team, other Airports Authority employees, vendors/suppliers/service contractors/tenants, and airport users.

Drives a pick-up truck or similar vehicle (with tools, parts, etc.) to airside and landside work sites, and may drive to/from suppliers and other sites. Performs operator maintenance on the vehicle and keeps it in orderly condition. May provide escorts for contractors/visitors for site surveys or other activities within the secure areas of the airport.

Performs other duties as assigned.

Critical features of this job are described under the headings below. They may be subject to change through reasonable accommodation or otherwise.

MINIMUM QUALIFICATIONS (MQs)

To be rated qualified for this job, an applicant must meet all of the MQs listed below at the time of vacancy announcement closure.

1. A high school diploma, a Certificate of General Educational Development (GED), or an equivalent combination of education, experience, and training.
2. Four years of progressively responsible experience (post high school) in the installation, test, diagnosis, maintenance, and repair of HVAC equipment and systems, which includes specialized experience using a range of commercial-grade/industrial-scale and residential-scale HVAC equipment and systems, such as, but not limited to, air and water-cooled condensers, High Temperature Hot Water (HTHW) generators, thermal ice storage systems, large-tonnage chillers, high- and low-pressure boilers, humidifiers, dehumidifiers, circulating pumps, air handlers, and exhaust fans. This includes knowledge of the theories, principles, requirements, and standards of the HVAC trade. (A Journey License as an Air Conditioning Mechanic is evidence of four years of progressively responsible trade experience, but is not, by itself, evidence of experience using commercial and industrial A/C equipment and systems.)
3. Environmental Protection Agency (EPA) Universal Certification (Section 608) to service HVAC/Refrigeration Equipment.

PREFERRED QUALIFICATIONS

The qualifications listed below (if any) are preferred and may be considered in the selection process, but they are not required to be rated qualified for this job.

1. A Journey License (or higher) as an HVAC Mechanic.
2. Experience working safely in a trade on a busy airfield or in an equivalent work environment such as, but not limited to, working in a trade requiring prolonged concentration and attention to detail amid maritime or motor freight cargo loading/unloading or other types of near-constant movements/operations that require continuous situational awareness and alertness to continually changing circumstances and events.

KNOWLEDGE, SKILLS, ABILITIES, AND OTHER FACTORS (KSAOs)

The following KSAOs are required for successful performance of this job and are a basis for rating and ranking applicants who are found to meet the MQs. *All local, Federal, airport industry or Airports Authority specific bodies of knowledge listed below may be acquired on the job; ability to rapidly acquire them is required at application/placement.*

1. Full performance (journey) level knowledge of, and skill in, heating, ventilation, and air conditioning (HVAC) equipment and system installation, operation/adjustment, maintenance, troubleshooting, and repair/replacement. This includes but is not limited to:

Knowledge of the theories, principles, requirements and standards of the HVAC trade (such as the refrigeration cycle, air flow, heat transfer laws, the use of refrigerant tables, pressure-temperature characteristics, and controls for and the mechanical operation of, HVAC equipment) to recognize abnormal conditions and make adjustments or repairs.

Knowledge of the operating characteristics of a wide range of commercial-industrial and residential HVAC systems/equipment, such as HTHW systems and industrial-commercial chillers.

Knowledge of HVAC industry/technological developments in equipment and materials as may apply to the equipment/systems of IAD to make recommendations for practical applications to IAD systems.

Knowledge of which HVAC units, return air, and mixed-air fans work together and the areas they serve to trace problems and restore regulated temperatures in specific areas.

Ability to rapidly acquire technical knowledge to operate, maintain, and service new equipment and systems as they come on line or off warranty.

2. Skill in using tools, technical manuals, schematics, materials, and other equipment and guides in journey level HVAC work. Examples include:

Skill in electrical testing equipment such as a voltmeters, megohm meters, and laser shaft alignment tools.

Skill in using hand and power tools of the trade in routine and non-routine work, such as punches, hacksaws, hydraulic presses, grinders, sand blasters, shears, torque wrenches, multi-meters, gas welding outfits, vacuum pumps, Vernier calipers, and micrometers in work such as assembling/disassembling high-pressure boilers, replacing and aligning shafts with bearings, replacing heating coils on HVAC units, repairing or replacing electrical switches and controls, and installing ductwork.

Skill in using shop math, manuals, schematics, and diagnostic equipment to calibrate thermostats; to determine the sizes of ducts, capacities of equipment, and airflow required to air condition/ventilate small areas; and to adjust mechanical seals on pumps and grind seats on valves to manufacturers' specifications.

Basic skill in using energy management system (EMS) software to revise set points for automatic operation of equipment at new ranges.

3. Skill in problem solving to select, organize, and logically process relevant information (verbal, numerical, or abstract) to solve a problem. This includes the ability to recognize subtle aspects of problems, identify relevant information, and make balanced recommendations and decisions. Examples include assessing HVAC system performance by taking readings, calculating heat

loads using specialized software, etc.; maintaining and troubleshooting reciprocating and centrifugal chillers, cooling towers, boiler plants, gas piping, hot water, chilled water and steam piping, direct expansion systems, fans and starters; and troubleshooting air handlers.

4. Skill in using a computer and modern office suite software (such as MS Office) to plan, schedule, communicate (using email), word process (light word processing only) and perform research (Internet use, as in searching for parts and performance information and keeping up with technology) and specialized software (such as the CMMS to obtain/close out work orders, supply and procurement modules of Oracle to requisition parts, and HVAC diagnostic and operating software) to troubleshoot problems and fine tune equipment, and radio and telecommunication devices to exchange work information.
5. Skill in written communication to understand written information (including instructions, descriptions, and ideas) and to express such information in writing so that others will understand. Examples include reading technical-operational materials (such as technical manuals, maintenance schedules, and work orders) and administrative-programmatic materials (such as Airports Authority supply procedures), and writing briefly about similar types of matters such as closing out work orders and using Material Safety Data Sheets (MSDS).
6. Skill in oral communication to understand verbal information (including instructions, descriptions, and ideas) and to express such information verbally so that others will understand. Examples include exchanging routine and non-routine operational and procedural information with co-workers, contractors, and customers.
7. Interpersonal skills to interact with business contacts in a businesslike, customer service-oriented manner.
8. Ability to work safely and knowledge of the safety rules and procedures needed to do so.

RESPONBILITY Is responsible, at the full performance (journey) level, for installing, operating, calibrating, adjusting, maintaining, troubleshooting, repairing, replacing, and modifying HVAC equipment and systems to help provide efficient HVAC operations and services within prescribed limits and according to appropriate codes. Reports to the Section Supervisor and may work under a Leader on a regular or irregular basis. Independently plans, lays out and completes work on own or in a team and solves journey level problems in accordance with established priorities, policies, procedures, preventive maintenance guides, manufacturer's specifications, codes and other requirements and standards. Keeps the Leader or Supervisor informed of progress and problems or conflicts requiring assistance. Work is subject to review in process, upon completion, and in other ways, such as performance of HVAC equipment/systems after repair, nature and number of call-backs, and comments by customers) in terms of quality, quantity, timeliness, customer service, teamwork, adherence to requirements and other factors, including attainment of specified performance goals and measures.

EFFORT Work requires moderate to heavy physical effort (such as frequent, prolonged periods of exerting 20 to 40 pounds of force or continual exertion of force in the range of 10 to 20 pounds), and considerable mental attention (as in working in very close proximity to energized electro-mechanical systems). Frequently moves from one area to another and ascends and descends stairs

when checking equipment. Stoops, stretches, bends, kneels, or otherwise positions self to access and use or fix work objects and work in tight spaces; may do so for prolonged periods. Carries or otherwise moves and sets up parts weighing up to 75 pounds or more; uses hoists, holders, and pulleys when removing and replacing large units. Must be constantly alert for indications of potential equipment problems or safety issues, such as leaks, stuck gauges, overheating motors, and changes in motor sounds or alarm bells. May use ladder, personnel lift, and bucket truck to reach work objects. Distinguishes color coded wiring. Uses a computer. Obtains information about the status of equipment/systems from dials and gauges. Regularly reviews schematics containing small print. Operates a vehicle using judgment based on traffic, weather, and other factors. Exchanges information by two-way radio and telephone.

WORKING CONDITIONS Works inside and outside in all types of weather, including inclement weather (rain, fog, snow, ice, cold and high heat/humidity). Is exposed to various risks and hazards: possible burns from steam and chemicals; fumes and gases; possible electrical shock; potential falls from ladders and buildings; injury from flying metal parts from grinding; and loud noises from electric generators, chillers, and compressors. Often works with dirty, greasy parts. Works in confined spaces such as manholes and inside boilers or air handlers. Is exposed to dust, dirt, and dampness. Exercises care, follows established safety precautions and procedures, and uses personal protective equipment (such as hard hat, steel toed shoes, rubber/leather gloves, eye protection and hearing protection) and other safety equipment (such as gas/oxygen detector, safety-recovery harness with tripod and confined space monitor), as appropriate and required. Is subject to time pressures of working quickly, but safely and accurately, to keep utilities in service or restore service.

OTHER SIGNIFICANT JOB ASPECTS Subject to hold-over or recall on a 24-hour basis for essential services and emergencies such as HVAC system/equipment failure and snow removal.