

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 Exterior Electrician Operator-In-Charge (OIC) at Washington Dulles International Airport (IAD), Metropolitan Washington Airports Authority (Airports Authority). Responds to emergencies and trouble calls as the sole "on duty exterior electrician" on evening, night and weekend shifts approximately 65% of the time and completes work orders [installing, testing, adjusting, maintaining, troubleshooting, repairing/replacing, and modifying a full range of electrical distribution systems (consisting of medium-voltage (600v-34.5\69kv), underground and overhead power lines, airfield lighting systems and navigational aids (that are not maintained by the Federal Aviation Administration), street and parking lot lighting systems, AC/DC and control systems, programmable logic controllers (PLC's), as well as standby generator systems, uninterruptible power supplies (UPS), and battery systems] as an Exterior Electrician on the day shift the remainder of the time. May perform preventive maintenance evenings, nights, or weekends if not responding to emergencies or troubleshooting. Performs related functions.

Responds to trouble calls from the Airport Operations Duty Officer such as lights broken by jet aircraft, problems with airfield lighting intensities, loose runway centerline lights, and broken or blown over taxiway and runway guidance signs. Obtains permission to correct dangerous safety hazards on the airfield while Airport Operations closes the runway. Replaces and/or repairs cable, makes electrical splices and repairs medium-voltage transformers for airfield lighting fixtures, as required in emergencies. Responds to alarms on master control panel when major lines or equipment fail and investigates immediately (e.g., if breaker is tripped), determines possible cause and advises supervisor of incident and whether an additional electrician is needed to assist in the repairs.

Diagnoses and evaluates problems. Considers such facts as the extent of repair required, the number and kind of workers needed, whether there is a service contract, the consequences of delaying action, and airport priorities for passenger flow, safety, and security in evaluating problems.

Takes appropriate action on electrical problems. Makes necessary repairs or adjustments or shuts off equipment and uses the overtime list to call in additional personnel as needed to remedy power outages, airfield lighting failures and other emergencies; or calls the Work Order Desk to call for contractor support; consults Airport Operations Duty Officer and notifies supervisor of serious problems.

Maintains record of trouble calls and preventive maintenance; reports special problems encountered on log sheet and then enters that data into the Airports Authority's Computerized Maintenance Management System [CMMS].

As Exterior Electrician:

Works on medium-voltage distribution and power systems, automatic transfer switches, UPS's, interior and site lighting systems, portable and stationary generators, motors, motor control centers, traffic signals and variable speed drives.

Inspects, troubleshoots, repairs, and performs preventive maintenance on various airfield lighting systems, including runway edge, centerline, and touchdown zone lights all airfield lights; repairs include locating and repairing or replacing faulty transformers, cables, splices lamps, and fixtures, as needed, while working on an active airfield around large operating aircraft. Rebuilds airfield fixtures by dismantling, sand blasting, drilling, tapping, and replacing necessary components to assure fixtures maintain water tight integrity and proper lighting levels. Identifies and informs supervisor of items in need of repair both verbally and through a daily log book. Inspects electrical vaults and regulators that control airfield lights, replaces relays and circuit boards as required, and logs the need for additional repairs and/or materials needed. Inspects outside lighting (street, parking-lot, and road signs) and records any areas that are unlit. Provides portable light to plant and emergency generators on airfield as requested for possible accidents or mechanics working on equipment. Performs preventive maintenance such as cleaning runway surface-condition sensors and rebuilding fixtures, relamps, etc. Records trouble calls, lights out, equipment failures, etc., and the action(s) taken in detail.

Operates, maintains, troubleshoots, and repairs portable light plants and electrical portions of stationary and portable generators.

Repairs and performs preventive maintenance on switchgears, transformers, regulators, generators, automatic transfer switches, motor control centers, UPS's, and variable speed drives to ensure they are constantly functional in case of power failure.

Bends and installs conduits, junction boxes, panel boards, control schemes, and other devices associated with electrical systems.

Installs and maintains Transient Voltage Surge Suppression Systems (TVSS) for protection against spikes and swells in the distribution equipment.

Monitors electrical systems by reading and recording gauges, meters, dials, and protective relays within the distribution center switchgear. Uses computers to operate, monitor, troubleshoot, and record critical electrical systems, standby generator systems, and network protective relaying schemes.

Operates, maintains and repair the human-machine interface (HMI) hardware and software components for the Airfield Lighting Control System (ALCS) and for the Supervisory Control and Data Acquisition (SCADA) system.

Operates, maintains, troubleshoots, and repairs backup generator systems to ensure timely and proper operation during adverse weather conditions and power outages.

Locates and isolates faults in cables, switchgear units, control systems, etc., caused by lightning, failures, and/or construction activities using insulation resistance test base line information.

Regularly reads, updates, and reviews design and as-built blueprints, block diagrams,

schematics, manuals, and construction drawings to troubleshoot and/or repair critical backup power systems, medium-voltage electrical distribution systems, and variable speed drives. Tests, maintains and troubleshoots battery systems.

Interprets, troubleshoots and repairs faulty electric and electronic components such as circuit boards, programmable logic controllers (PLCs) and digital, electromechanical, electronic and pneumatic relays.

Maintains, troubleshoots, and replaces electrical motors and kWh meters; maintains and records readings on electric revenue meters for tenant billing purposes.

Programs, sets timing, and installs systems for traffic signal controls, including detections system, conflict monitors, and twelve ring National Electrical Manufacturers Association (NEMA) controllers. Programs, installs, repairs, and calibrates vehicle security gates.

Performs miscellaneous electrical work, such as installing new electric service; temporary substations and wiring; airfield regulators; standby generator systems; and other electrical systems critical to airport operations following the National Electric Code (NEC) and Airports Authority Design Manual as assigned.

Maintains, tests, and repairs lightning protection systems in accordance with National Fire Protection Association (NFPA) 780 utilizing protective equipment in accordance with NFPA 70E Personal Protective Equipment (PPE) requirements for safe work on and near energized circuits in order to prevent injury.

Checks electrical equipment in utility building (e.g., switchgear [volts, amperages]), emergency generator, battery room, and indicating lights of master control panel, and assures that medium -voltage distribution feeders are energized. If planned outage is underway (e.g., because contractor is working on taxiway), ensures work is completed before restoring power. Removes tags as dictated by Airports Authority directives, and advises his/her immediate Supervisor and the Airport Operations Duty Officer that system is operational.

May work occasionally, or incidentally, with Interior Electricians in interior work or work which involves both inside and outside equipment on medium-voltage equipment, and systems for cross/increased training purposes, or in conjunction with performing emergency repairs.

Regularly uses tools and equipment such as meg-ohm meters, cable fault locators, digital multi-meters, phase-testers, Hi-Pot, various hand tools, and Personal Protective Equipment while performing duties. Follows safe clearance switching orders to operate critical systems during normal and abnormal working conditions to ensure continuous airport operations, while preventing injury and unplanned downtime or electrical outages.

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 (such as managers, supervisors, professionals, and support staff), vendors/suppliers/tenants/service contractors, airport users, and the general public.

Performs recurring duties such as cleaning shop/work area or inputting information and completing work orders via computer for all equipment maintained, overhauled, or repaired.

May provide escorts for design engineers, consultants and contractors for site surveys or other activities within the secure areas of the airport.

Uses a computer and modern office suite software (such as Microsoft Office), specialized software such as the Computerized Maintenance Management System (CMMS), and supply and procurement modules of Oracle used by the Airports Authority, and radio and telecommunication devices to plan, schedule, communicate, research diagnostic information, keep up with technology, obtain/close out work orders, etc.

Operates aerial lift truck (with air brakes), scissor lift, and forklift at heights of up to 95 feet to work on overhead electrical systems and repair lighting for aircraft ramps, streets, parking lots, and lighted directional signs on active ramps around operating aircraft. Drives a pick-up truck to work sites, landside and airside, including active airfields.

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. Five years of progressively responsible experience (post high school) in the maintenance and repair of electrical equipment and systems, which includes:
 - a. two years specializing in installation, test, diagnosis, maintenance, and repair of a range of medium-voltage electrical equipment and systems, such as, but not limited to, generators, transformers, switches, circuit breakers, control systems, rectifiers, regulators, and similar equipment. This includes knowledge of the theories, principles, requirements, and standards of the electrical trade, **and**
 - b. one year of journey level experience with primary responsibility for service and emergency procedures and demonstrating the ability to make decisions and direct actions to maintain or restore service until relieved.

A Master's License as an Electrician is evidence of five years of progressively responsible electrical trade experience, but is not, by itself, evidence of the two years of experience

specializing in test, diagnosis, maintenance, and repair of a range of medium-voltage equipment and systems, as specified.

3. Ability to obtain a Class B Commercial Driver's License (CDL) within 90 days of hire or placement onto the job.

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 Electrician.
2. Substantive experience in responding to and repairing airfield lighting systems, overhead and underground medium-voltage distribution systems, automatic and manually operated switchgear, transformers, traffic signals, and street and parking lighting.
3. 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.
4. Possession of a Class B Commercial Driver's License (CDL).

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. *Local, Federal, airport industry or Airports Authority-specific bodies of knowledge listed below may be acquired on the job, typically; ability to rapidly acquire them is required at the time of vacancy announcement closure.*

1. Full performance (journey) level knowledge of, and skill in, medium-voltage electrical equipment and systems installation, testing, adjustment, maintenance, troubleshooting, and repair/replacement. This includes but is not limited to:

Knowledge of the theories, principles, requirements, and standards of the electrical trade and the National Electric Code (NEC), altogether, as they apply to transformers, rectifiers, series and parallel AC and DC circuitry, integrated circuits and suppression circuits, AC and DC controls, switches, air and vacuum circuit breakers, starters, regulators, switchgear, motor control centers, variable speed drives and cables to perform preventive maintenance, calculate circuitry, recognize malfunctions, locate their causes, and determine the best methods for correcting defects to maintain or restore electrical service.

Knowledge of Federal and State regulations, codes and standards and Federal Aviation Administration (FAA) regulations as they pertain to airfield lighting, medium-voltage electrical distribution systems, emergency generator systems, low voltage electrical distribution systems, and emergency battery systems. Skill in installing and modifying electrical systems, subsystems, and components used for airfield lighting and medium-voltage service to troubleshoot, repair, and perform preventive maintenance on various airfield lighting systems.

Ability to rapidly acquire technical knowledge of new equipment and systems as they come on line and off warranty.

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

Skill in using hand and power tools of the trade in routine and non-routine work, such as various fault locators, AC and DC hi-potential testers, transformer turns ratio testers, battery impedance testers, micro-ohm meters, resistance testers, phasing sticks, infra-red cameras, phase rotation meters, medium-voltage meters, current meters, volt/ohm meters, and pipe threading machines to locate areas of malfunction; to determine whether a line is energized, de-energized, or where energy is lost; to repair equipment such as medium-voltage electrical distribution systems, emergency generators, airfield lighting systems, low voltage electrical systems, and street and parking lot lighting systems; and to perform related functions.

Skill in using test equipment and computer software in working on electrical systems.

Skill in using manufacturers' manuals, specifications, schematics, blueprints, and other drawings (including construction drawings, block diagrams, and wiring diagrams) to determine appropriate settings or alignments and trace circuits and perform related functions.

Skill in developing new drawings or modifying existing schematics.

Skill and ability to recognize excessive current flow, taking medium-voltage feeders off-line, determining the reasons for tripped breakers, performing similar tasks to assure operation of medium-voltage distribution and lighting systems during evening, night and weekend shifts, and otherwise maintain, troubleshoot and repair electrical systems, subsystems and equipment.

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 diagnosing and evaluating electrical problems, evaluating them, and considering the extent of repair required and calculating line loads using computerized specialized software.

4. 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 Airport Operations Duty Officers, co-workers, contractors, and customers especially concerning corrective action for electrical emergency situations.
5. Skill in written communication to understand written information (including instructions, descriptions, and ideas) and in written communication to express such information in writing so that others will understand. Examples include reading technical-operational materials (such as technical manuals, schematics, drawings, blue prints, and work orders) and administrative-programmatic materials (such as IAD and Airports Authority supply procedures); writing briefly about similar types of matters; reading about various software programs such as FM1j, FIMS, and iFix; documenting work order status, time entries, and electrical system operational status; closing out work orders; and completing Material Safety Data Sheets (MSDS).
6. 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, the supply and procurement modules of Oracle to requisition parts, and the Supervisory Control And Data Acquisition (SCADA) to operate, troubleshoot, and fine tune equipment. This includes skill in using radio and telecommunication devices to exchange work information.
7. Interpersonal skills to interact effectively with business contacts in a business like, customer service-oriented manner.
8. Knowledge of, and ability to apply, safety rules and procedures to ensure all work is completed in accordance safe work practices and guidelines (e.g., OSHA Regulations and NFPA 70E).

RESPONSIBILITY Is responsible as the Exterior Electrician OIC for responding to emergency calls and troubleshooting systems and equipment maintained by the Exterior Electrical Section during assigned evening, night, and weekend shifts. Exercises authority, within guidelines, to take or direct the actions needed to maintain or restore service -- corrects the problem(s) oneself or takes other appropriate action(s) such as providing technical evaluations of the extent of repairs required and, as appropriate, informing the Airport Operations Duty Officer. Complies with preventive maintenance guides, FAA regulations, and the NEC. During shift duty, problems are identified by routine walk-throughs, system inspections, and, on some occasions, referred by the Airport Operations Duty Officer or Police Department; the shop leader may also provide work orders and special instructions. The Group Supervisor or Supervisor makes assignments and ensures needed materials are available when the Incumbent is and reviews the shift log and ensures that completed assignments meet accepted practices.

Reports to the Exterior Electric Supervisor. The supervisor reviews the shift log and completed assignments in terms of quality, quantity, timeliness, customer service, teamwork, adherence to

requirements, and other factors, including attainment of specified performance management goals and objectives.

EFFORT Work requires moderate to heavy physical exertion (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 equipment). Frequently moves from one area to another and ascends/descends stairs in checking equipment. Stoops, stretches, bends, kneels, or otherwise positions self to access and use or fix work objects and to work in tight spaces; may do such for long periods. Carries or otherwise moves and sets up parts weighing up to 80 pounds or more. Ascends/descends straight extension and fixed vertical ladders up to 85 feet. Must be constantly alert for indications of potential equipment problems or safety issues, such as 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 computer. Obtains information about the status of equipment/systems from dials and gauges. Reviews, corrects, creates and updates schematics containing small print. Operates vehicle using judgment in consideration of traffic, weather, and other factors. Communicates by two-way radio and telephone

WORKING CONDITIONS Regularly works outside in all types of weather, including inclement weather (rain, fog, snow, ice, cold and high heat/humidity), typically at night. Drives vehicle landside and on airfield. Sometimes works with dirty, greasy parts in confined spaces. Is exposed to dust, dirt, dampness, and noise of jet aircraft, generators, and chillers. Is exposed to various risks and hazards: hazardous substances, such as asbestos and chemicals; possibility of injury from driving/working on airfield and streets; falls, cuts, bruises, eye injuries, and electrical shocks and burns from working amid energized high voltage electrical systems; and fumes/gases from working in electrical manholes. Is exposed to extremely noisy conditions produced by jet aircraft, electric generators, and chillers. Works at heights of up to 95 feet and is subject to fall from high elevations while performing various duties. Exercises care and uses personal protective equipment and other safety gear, such as arc flash clothing, hard hat, face shield, safety shoes, hearing protection, eye protection, high voltage gloves, hot sticks, blankets, safety-recovery harness with tripod, and confined space monitor, as required. Is subject to time pressures of restoring operations of equipment or systems essential to airport or airline functions, safety or security.

OTHER SIGNIFICANT JOB ASPECTS Is subject to hold-over or recall on a 24-hour basis for essential services and emergencies such as snow removal and restoration of electrical power and systems for which the unit is responsible. Will work night hours or weekends.