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Job Analysis

Job Title	Operating Engineer – Mechanical Utilities Maintenance Engineer (AVM)	Worker	
DOT Number	950.382-026	Claim Number	
Employer	Port of Seattle	Employer Phone #	(206) 787-3000
Employer Contact	Dan Hytry	Date of Analysis	8/3/09; 4/9/13; 12/21/18

☐ Job of Injury ☐ Transferable Skills Job ☐ New Job ☒ 40 hours Per Week ☒ 4-5 Days Per Week

Job Description, Essential Functions, Tasks and Skills:

The Port of Seattle is a municipal corporation created on September 5, 1911 by the voters of King County. The Port of Seattle is divided into operating divisions, plus other departments that support the divisions and the broad mission of the Port: 1) Aviation Division, 2) Maritime Division, and 3) Economic Development Division.

Mechanical Utilities Operating Engineers[1] working at Sea-Tac Airport are categorized into one of three distinct jobs: 1) Central Mechanical Plant Operators, 2) North End Operators, and 3) Maintenance Engineers.

This job analysis is for an Operating Engineer working as a Mechanical Utilities Maintenance Engineer for the Aviation Maintenance Department at Sea-Tac Airport.

Essential Functions:
The Operating Engineers working as Mechanical Utilities Maintenance Engineers at Sea-Tac are tasked with the operations and maintenance of mechanical components of the utility systems throughout the airport facilities and surrounding offsite locations. Maintenance Engineers operate, maintain, repair, overhaul and troubleshoot issues related to boilers, air compressors, pumps, refrigeration systems, chillers, diesel generator systems, hydraulic systems, HVAC systems, DDC control systems, domestic water systems, fire

[1] There are several different jobs for Operating Engineers working at Sea-Tac Airport. Workers may specialize in maintaining the passenger transit system, passenger boarding bridges, conveyance systems, or mechanical utilities/boiler room-related systems and equipment.

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sprinkler system, and other tasks related to the mechanical systems throughout the airport facility.

Primary responsibilities are for the mechanical systems related to:

1. Heating and cooling (HVAC systems) throughout the airport.
2. Domestic sewer systems (including the mechanical systems in the airport bathrooms).
3. Fire suppression systems.
4. Pump house related to emergency water source.

The Operating Engineers also have responsibilities over a number of other smaller mechanical systems, including:

- Underground fuel storage tanks (gas and diesel).
- Pumps in sewer and rainwater lift stations.
- Check valves used to prevent backflow of contaminants into the domestic water system.
- Refrigerators and dishwashers located in break rooms in the Airport Office Building ("AOB").

<u>Tasks assigned to Maintenance Engineers may include:</u>

- Meet with supervisors to discuss current issues and obtain assignments.
- Perform tasks to address corrective maintenance ("CM") concerns, or preventive maintenance ("PM") projects. Project examples include:
  - Replacing valves and motors.
  - Change oil in motors.
  - Clean out the boilers on a periodic basis.
  - Unclog toilets by taking them apart.
  - Replace broken toilets or sinks.
  - Replace the batteries in the sensors used to activate sinks and toilets.
  - Repair soap dispensers.
  - Fabricate/machine replacement parts. Cut and form metal.
  - Weld/solder materials.
  - Replace filters throughout the airport.

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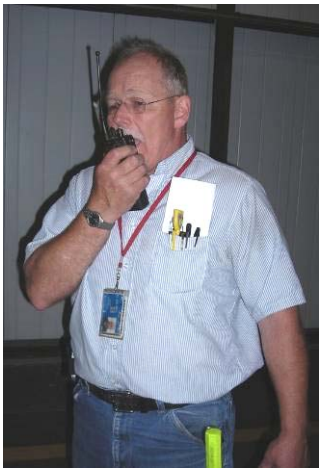
- Adjust room temperatures as requested by Port of Seattle employees and tenants.
- Replace uninterruptible power supply ("UPS") units.
- Perform inspections. Document completed inspections.

- Respond to emergency maintenance ("EM") calls. Troubleshoot problems and develop a plan of action to address the issue(s) immediately. Implement solutions.
- Repair and/or rebuild reusable parts and/or equipment. Rebuild motors and valves. Install new bearings in equipment. Work may be completed at work bench.
- General clean-up as necessary.
- Perform special projects as requested.

<u>Necessary skills and abilities include:</u>

- Have the skills to complete the assigned task(s), using all of the various types of tools and equipment, in a safe manner.
- Have the experience, knowledge, and abilities to identify and trouble-shoot an issue quickly, identify the best method(s) to address an issue, and correctly complete the identified task.
- Have the physical abilities to perform all of the assigned tasks.
- Be able to follow directions and stated tolerances closely, and being detailed oriented.



- Be able to work independently, but also within a team environment.
- Be able to read blueprints and communicate correctly using system terminology.
- Fundamental knowledge of plumbing codes.

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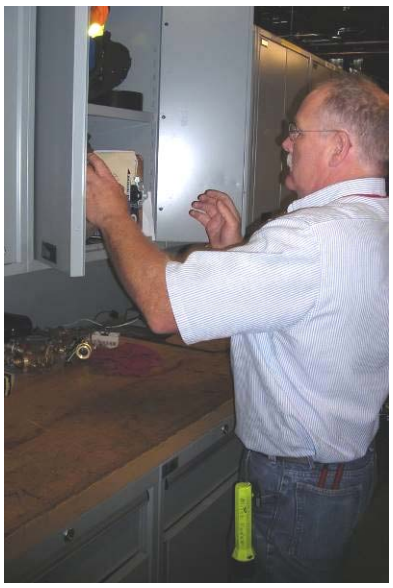
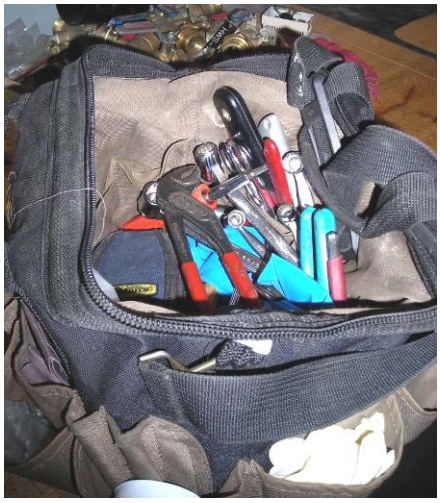
Machinery, Tools, Equipment, Personal Protective Equipment:

- Hand tools, including wrenches (some up to 3 feet long, and 20 pounds), pliers, vice grips, screwdrivers, tape measures, utility knives, and hammers.
- Power tools, including impact wrenches, drills, and grinders.
- Saws, lathes, mills, parts washer, and other shop tools.
- Refrigeration testing and recovery equipment.
- Work benches. Work tables.
- 2-way radio for communication.
- Flashlights.
- Keys.
- MIG, TIG, and stick welding equipment.
- Shelves and drawer units.
- Ladders: step, self-supporting, and extension.
- Man lifts/scissor lifts.
- Scaffolding units.
- Forklift. Hand trucks. Wheeled carts.
- Tool boxes, bags, or buckets.
- Overhead/bridge hoist.
- Windows-based computers (used by workers to track parts usage/inventory, document completed work tasks, document work requests, and receive and send electronic mails).
- iPads, iPhones, and other mobile devices used to track pending and completed work tasks.
- Confined space testing equipment is used by the Maintenance Engineers as required.





Workers wear protective-toed boots or shoes. They may also wear safety glasses, face shields, rubber boots and rubber gloves (particularly if adding chemicals into the water used in the boilers and other heating/cooling systems), hearing protection, safety vests, hardhats, gloves, kneepads, and fall arrest harnesses as required.

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Large Boiler

Large Chiller

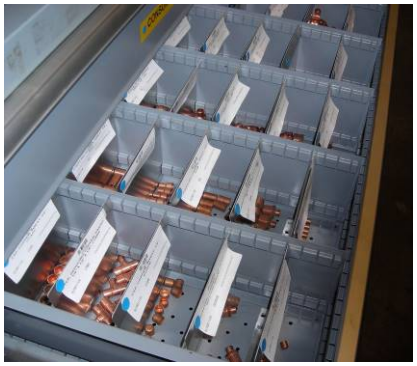
Large Valve

6" Backflow Assembly

Manual Forklift

Spare Parts Storage

Motor



Spare Parts Drawer

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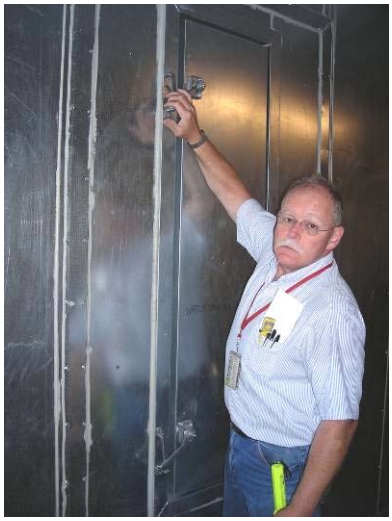
Forklift


Ladders


Entering Air Handler


Large Motorized Fan and Overhead Hoist


Carbon Filters

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Education / Training:

High school diploma or equivalent.

The Mechanical Utilities Shop seeks Journey level employees with at least 5 years of industrial experience (which may include apprenticeship training).

Operating Engineers working as Mechanical Utilities Maintenance Engineers must have:
1. Grade 2 Steam License from the City of Seattle.
2. City of Seattle Refrigeration Operators License.
3. CFC Universal License (refrigerant license from the EPA).

Additional IAQ, HVAC, DDC, BAT, CCS, welding, and plumbing licenses and/or certifications are also preferred.

The Mechanical Utilities Maintenance Engineers are represented by the Operating Engineers Union (Local 302).

A valid Washington State Driver's License is required in this position, as is the ability to pass a required FAA/FBI background check and the Security Identification Display Area ("SIDA") and Aircraft Operations Area ("AOA") training courses.

New hires are generally assigned to shadow more experienced workers to learn the tasks and duties assigned to the Maintenance Engineers.

Per the Dictionary of Occupational Titles (DOT): 950.382-026 Maintenance Engineer

Specific Vocational Preparation (SVP): 7 (From two to four years)

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COGNITIVE AND BEHAVIORAL ELEMENTS/DEMANDS

Frequency Definitions:

Continuously = Occurs 66-100% of the time. **Occasionally** = Occurs 1-33% of the time
Frequently = Occurs 33-66% of the time. **Rarely** = May occur less than 1% of the time.
Never = Does not ever occur.

Comprehension	
Articulating and comprehending information in conversations.	Continuously
Reading, comprehending, and using written materials.	Continuously
Understanding and solving problems involving math and using the results.	Occasionally
Using technology/instruments/tools & information systems.	Continuously
Working with two and three dimensional formats.	Occasionally
Remembering	
Remembering spoken instructions.	Continuously
Remembering written instructions.	Continuously
Remembering visual information.	Continuously
Recalling information incidental to task at hand.	Continuously
Memorizing facts or sequences.	Occasionally
Remembering simple instructions.	Continuously
Remembering detailed instructions.	Continuously
Learning & Processing	
Effectively learning and mastering information from classroom training.	Occasionally
Effectively learning and mastering information from on-the-job training.	Continuously
Learning from past directions, observations, and/or mistakes.	Continuously
Using common sense in routine decision making.	Continuously
Recognizing and anticipating potential hazards and taking precautions.	Continuously
Thinking critically and making sound decisions.	Continuously
Integrating ideas and data for complex decisions.	Frequently
Determining and following precise sequences.	Frequently
Coordinating and compiling data and information.	Occasionally
Analyzing, synthesizing data and information.	Occasionally
Tasking and Planning	
Performing repetitive or short-cycle work.	Frequently
Working under specific instructions.	Continuously
Completing complex tasks.	Frequently
Directing, controlling, or planning for others as necessary for basic tasks.	Occasionally
Directing, controlling, or planning for others as necessary for complex tasks.	Rarely
Multi-tasking.	Frequently
Planning, prioritizing, and structuring daily activities.	Continuously

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Use Appropriate Behavior for Professional Work Environment		
	Receiving criticism and accepting limits appropriately.	Frequently
	Maintaining emotional control and organization under increased stress.	Continuously
	Maintaining socially appropriate affect, temperament, and behavior.	Continuously
	Monitoring own quality of performance and altering behaviors to correct mistakes or improve outcome.	Continuously
	Working independently and/or unsupervised.	Continuously
	Adapting to frequent interruptions, changes in priorities, or changes in work location.	Continuously
	Responding effectively to emergency situations.	Frequently

Frequency Designations: **Required** **Beneficial** **Not Necessary**		
Maintaining Attendance and An Assigned Work Schedule		
	Maintaining predictable and reliable attendance each work shift.	Required
	Being punctual.	Required
	Taking rest periods at set times or only at times determined by breaks in job responsibilities.	Required
	Adjusting to a flexible schedule of work days and/or shifts.	Beneficial

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PHYSICAL DEMANDS

N/A: Not Applicable
S: Seldom (1-10% of the time)
O: Occasional (10-30% of the time)
F: Frequent (30%-70% of the time)
C: Constant (Over 70% of the time)
WNL: Within Normal Limits (talking, hearing, etc.)

STRENGTH: ☐ Sedentary ☐ Light ☒ Medium ☐ Heavy ☐ Very Heavy

	Frequency	Comments
Sitting	**S**	**Depends on assigned tasks. May sit while working on a computer, or may be able to sit on the floor while working on a specific project. Potentially while driving truck/cart to remote project sites.**
Standing	**F**	**Work is generally accomplished alternating between standing and walking.**
Walking	**F**	**Work is generally accomplished alternating between standing and walking. The Central Mechanical Plant is located under the Sea-Tac Airport parking garage, however tasks and projects performed by the Maintenance Engineers are performed in locations throughout Sea-Tac Airport (including the main and satellite terminals, and in various parts on or next to the airfield).**
Lifting (up to 25 pounds)	**F**	**Lifting tools (individual tools and tool bags), smaller parts and components, air filters (few ounces up to 20 pounds), smaller ladders, 2-way radio, and paperwork/documents.**
Lifting (25 to 50 pounds)	**O**	**Lifting larger tool boxes/buckets, ladders, motors, pumps, and other system components.**
Lifting (50 to 75 pounds)	**S**	**Motors, pumps, and other larger system components. Lifting devices are available to lift heavier objects to mitigate lifting demands (overhead hoists, forklifts, and other devices).**
Carrying (up to 25 pounds)	**F**	**Carrying tools, smaller parts and components, containers of grease/oil, filters, smaller ladders, 2-way radio, and paperwork/ documents.**
Carrying (25 to 75 pounds)	**S**	**Carrying tool boxes/buckets, ladders, motors, pumps, and other larger system components. Wheeled carts, hand trucks, forklifts, or other devices available to move/transport components/equipment.**
Pushing/Pulling (Force up to 20 pounds)	**F**	**Opening/closing doors and drawers containing tools, parts, and hardware, gathering supplies and parts from shelves and drawers, using tools, loosening or tightening fasteners, disconnecting and connecting system components, and moving wheeled carts and portable welding equipment.**
Pushing/Pulling (Estimated force 20 to 50 pounds)	**S**	**Gathering supplies and parts from shelves and drawers, using tools, loosening or tightening fasteners, disconnecting and connecting system components, and moving wheeled carts and portable welding equipment.**
Climbing Stairs/Ladders	**O**	**Ladders, scaffolding, or manlifts may be used to reach work heights. A permanent ladder is used to reach the top of the boilers. The main floor of the Central Mechanical Plant is down a flight of stairs from the maintenance offices.**
Working at Heights/Balancing	**S-O**	**Depends on assigned tasks. Ladders, scaffolding, and manlifts may be used to reach work heights. Workers may work near open manholes and vaults.**

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Bending at Waist	**F**	**Performing repairs, inspecting components and/or systems at or below waist level, gathering parts and items stored at or below waist level, and working at a workbench.**			
Bending Neck	**C**	**In a majority of the tasks performed by the Maintenance Engineers, neck movement would be considered important.**			
Twisting at Waist	**S**	**Twisting may be necessary to reach particular work areas or system components. Workers can minimize the amount of twisting by moving their feet or repositioning their bodies while working.**			
Crouching/Kneeling	**S**	**Depends on assigned tasks. When working on equipment or items below waist level, or gathering parts and supplies stored below waist level. Workers may use kneepads while working.**			
Crawling	**S**	**Depends on assigned tasks. May crawl to reach work, or crawl between work tasks.**			
Stooping	**S**	**Maneuvering in and around systems and components. Entering smaller spaces.**			
Reaching (To shoulder level)	**F**	**Repairing and installing parts and equipment, performing inspections, cleaning out the boilers, working with shop tools, and gathering parts and supplies stored between waist and shoulder level. NOTE: Workers use ladders, scaffolding, and manlifts to try and position work at chest level when possible.**			
Reaching (Over the shoulder)	**O**	**Repairing and installing parts and equipment, inspecting systems, cleaning out the boilers, and gathering parts and supplies stored above shoulder level.**			
Driving	**S**	**Driving truck/cart to remote project sites.**			
Foot Controls	**S**	**While driving.**			
Repetitive Motion	**S**	**The variety of tasks assigned to Maintenance Engineers generally minimizes repetitive motion.**			
Handling/Grasping	**C**	**40**	% Pinch Grasp	**60**	% Whole Hand Grasp
Fine Finger Manipulation	**C**	**Using hand tools, disconnecting/reconnecting system components, operating controls on power tools and welding equipment, rebuilding equipment with small parts, operating 2-way radio, using keys, and using computer mouse.**			
Keyboarding	**S**	**Researching status of remote system monitors, documenting completed projects, creating reports, and sending/receiving electronic mail.**			
Talking	**C**	**Communicating with supervisors, co-workers, and the public (while working in passenger terminals).**			
Hearing	**C**	**Communicating with supervisors, co-workers, and the public (while working in passenger terminals). Listening for sounds of malfunctioning machinery and danger in and around work areas.**			
Seeing	**C**	**Visual abilities would be considered important in this position.**			
Writing	**S**	**Taking notes and documenting parts used.**			
Normal Job Site Hazards	**C**	**Working near boilers and chillers, welding sparks, fire, moving machinery, working at heights (ladders, lifts, open manholes and vaults), sharp edges parts and components, pinch hazards, working around low hanging equipment, working with heavy parts, and exposure noise, dust, and fumes.**			

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Expected Environmental Conditions	**C**	**Will generally work in all types of environments. This includes boiler rooms, mechanical rooms, public areas, and offices. Worker may be exposed to various temperatures throughout a shift, and be exposed to external weather conditions.**

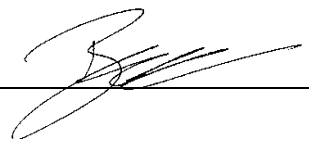
The above job analysis represents the requirements of a specific job based on personal observations, discussions with employer representatives, and/or workers. On occasion, practicality and feasibility prevent the direct observation and/or gathering of objective quantifiable data. For this reason, a "best estimate" may have been used when reporting physical demand frequencies.

Analysis was done on the job site? ☒Yes ☐ No

Job Analysis Reviewed By: Dan Hytry

Completed by Vocational Provider: Brice York, B.A., CDMS

Date **December 21, 2018** Signature of Vocational Provider



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FOR PHYSICIAN'S/EVALUATOR'S USE ONLY

☐ The injured worker can perform the physical activities described in the job analysis and can return to work on _____

☐ The injured worker can perform the physical activities described in the job analysis on a part-time basis for _____ hours per day. The worker can be expected to progress to regular duties in _____ weeks/months.

☐ The injured worker can perform the described job, but only with the modifications/ restrictions in the attached report and/or listed below. These modifications/restrictions are (check one):

☐ Temporary for _____ weeks _____ months
☐ Permanent

☐ The injured worker cannot perform the physical activities described in the job analysis based on the physical limitations in the attached report and/or listed below. These limitations are (check one):

☐ Temporary for _____ weeks _____ months
☐ Permanent

COMMENTS:

Date _____ Physician's/Evaluator's Signature _____

Physician's/Evaluator's Name Printed _____

PLEASE RETURN COMPLETED FORM VIA FACSIMILE TO:

Port of Seattle Employee Health & Safety Department at (206) 787-3406

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