



***Job Analysis: Operating Engineer – Mechanical Utilities Maintenance Engineer (AVM)
Port of Seattle – DOT #950.382-026***

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

Primary responsibilities are for the mechanical systems related to:

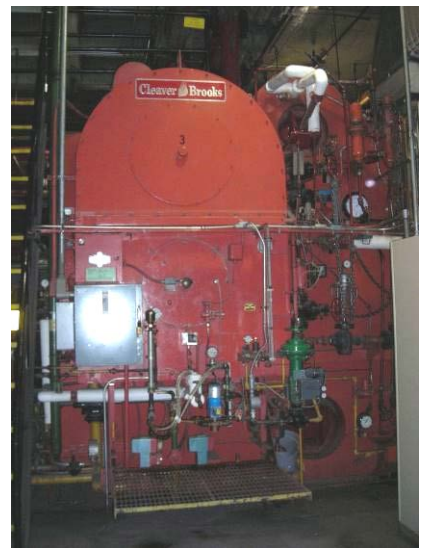
1. Heating and cooling (HVAC systems) throughout the airport.
2. Domestic sewer systems (including the mechanical systems in the airport bathrooms).
3. Fire suppression systems.
4. Pump house related to emergency water source.

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”).

Tasks assigned to Maintenance Engineers may include:

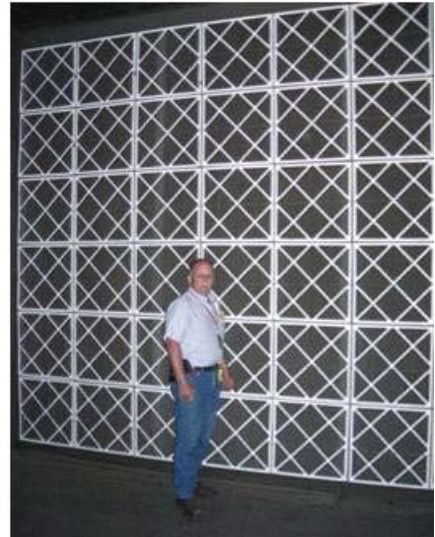
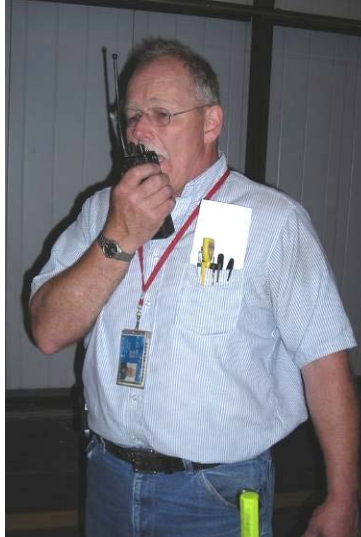
- Meet with supervisors to discuss current issues and obtain assignments.
- Perform tasks to address corrective maintenance (“CM”) concerns, or preventive maintenance (“PM”) projects. Project examples include:
 - Replacing valves and motors.
 - Change oil in motors.
 - Clean out the boilers on a periodic 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 using necessary equipment in a safe manner.
 - Replace filters throughout the airport.
 - Adjust room temperatures as requested by Port of





***Job Analysis: Operating Engineer – Mechanical Utilities Maintenance Engineer (AVM)
Port of Seattle – DOT #950.382-026***

- 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.



Necessary skills and abilities include:

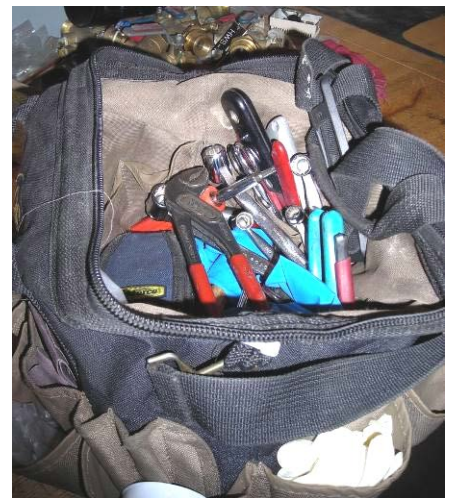
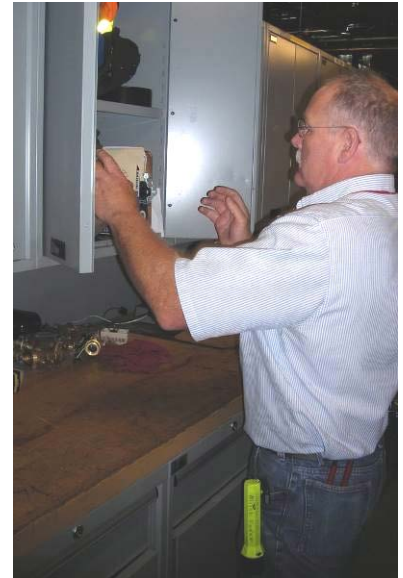
- Have the skills to complete the assigned task(s), using all of the various types of tools and equipment, in a safe manner.
- Have the experience, knowledge, and abilities to identify and trouble-shoot an issue quickly, identify the best method(s) to address an issue, and correctly complete the identified 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 prints and plans, and communicate correctly using system terminology.
- Fundamental knowledge of plumbing codes.



***Job Analysis: Operating Engineer – Mechanical Utilities Maintenance Engineer (AVM)
Port of Seattle – DOT #950.382-026***

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).
- Tablets/iPads used to track pending and completed work tasks.
- Confined space testing equipment is used by the Maintenance Engineers as required.



Workers wear steel-toed boots or shoes, or glue-on/clip-on steel toe covers. 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), ear protection, safety vests, hardhats, gloves, kneepads, and fall arrest harnesses as required.



Bock Consulting

Claimant:
Claim #:
8/3/09; 4/9/13; 6/6/18
Page 5 of 13

***Job Analysis: Operating Engineer – Mechanical Utilities Maintenance Engineer (AVM)
Port of Seattle – DOT #950.382-026***



Large Boiler



Large Chiller



Large Valve



6" Backflow Assembly



Manual Forklift



Spare Parts Storage



Example of Maintained Motor



Spare Parts Drawer



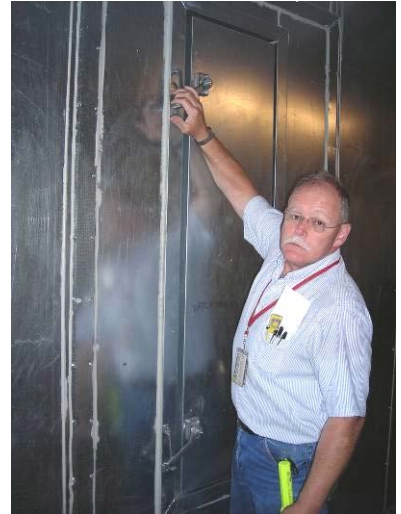
***Job Analysis: Operating Engineer – Mechanical Utilities Maintenance Engineer (AVM)
Port of Seattle – DOT #950.382-026***



Forklift



Ladders



Entering Air Handler



Large Motorized Fan and
Overhead Hoist



Carbon Filters



***Job Analysis: Operating Engineer – Mechanical Utilities Maintenance Engineer (AVM)
Port of Seattle – DOT #950.382-026***

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, or have the ability to obtain within one year of hire, the following licenses:

1. Grade II Steam and Grade II Boiler Licenses from the City of Seattle.
2. City of Seattle Refrigeration Operators License.
3. CFC Universal License (refrigerant license from the EPA).
4. OIT License as required (for waste water treatment).

Additional IAQ, HVAC, DDC, welding, and plumbing licenses and/or certifications are also preferred. A Washington State (07) Electrical License for working with low voltage will become a requirement (currently it remains a preferred hiring requirement).

The Mechanical Utilities Maintenance Engineers are members of the Operating Engineers Union (Local 286). If not a member of the Union, workers must join the Union within 30 days of employment.

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)



***Job Analysis: Operating Engineer – Mechanical Utilities Maintenance Engineer (AVM)
 Port of Seattle – DOT #950.382-026***

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.	Occasionally
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.	Frequently
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.	Occasionally
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.	Occasionally
Working under specific instructions.	Continuously
Completing complex tasks.	Occasionally
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



Bock Consulting

Claimant:
Claim #:
8/3/09; 4/9/13; 6/6/18
Page 9 of 13

***Job Analysis: Operating Engineer – Mechanical Utilities Maintenance Engineer (AVM)
Port of Seattle – DOT #950.382-026***

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.	Frequently
Responding effectively to emergency situations.	Occasionally

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.	Not Necessary
Adjusting to a flexible schedule of work days and/or shifts.	Beneficial



**Job Analysis: Operating Engineer – Mechanical Utilities Maintenance Engineer (AVM)
 Port of Seattle – DOT #950.382-026**

PHYSICAL DEMANDS

N/A: Not Applicable

S: Seldom (1-10% of the time)

O: Occasional (10-30% of the time)

STRENGTH: Sedentary Light

F: Frequent (30%-70% of the time)

C: Constant (Over 70% of the time)

WNL: Within Normal Limits (talking, hearing, etc.)

Medium Heavy Very Heavy

Frequency

Comments

Sitting	S-F	Depends on assigned tasks. May sit while working on a computer, may be able to sit on the floor while working on a specific project, or while on break.
Standing	O-F	Work is generally accomplished alternating between standing and walking.
Walking	O-F	Work is generally accomplished alternating between standing and walking. The Central Mechanical Plant is located under the Sea-Tac 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 10 pounds)	F	Lifting tools, smaller parts and system components, smaller air filters (few ounces up to 10 pounds), smaller ladders, 2-way radio, and paperwork/documents.
Lifting (10 to 25 pounds)	O	Lifting tool bags, larger air filters (10 to 20 pounds), ladders, motors, pumps, and other system components.
Lifting (25 to 50 pounds)	S	Lifting tool boxes/buckets, motors, pumps, and other system components. Note: Lifting devices are available to lift heavier objects to mitigate lifting demands (overhead hoists, forklifts, and other devices).
Lifting (50 to 100 pounds)	Rare	Motors, pumps, and other larger system components. Note: Lifting devices are available to lift heavier objects to mitigate lifting demands (overhead hoists, forklifts, and other devices).
Carrying (up to 10 pounds)	F	Carrying tools, smaller parts and components, smaller air filters (few ounces up to 10 pounds), smaller ladders, 2-way radio, and paperwork/documents.
Carrying (10 to 25 pounds)	O	Carrying tool bags, larger air filters (10 to 20 pounds), ladders, motors, pumps, and other system components.
Carrying (25 to 50 pounds)	S	Carrying tool boxes/buckets, motors, pumps, and other system components. Note: Carrying devices are available to move heavier objects to mitigate carrying demands (overhead hoists, forklifts, and other devices).
Carrying (over 50 pounds)	N/A	Wheeled carts, hand trucks, forklifts, or other devices are available to move/transport components/equipment.
Pushing/Pulling (Force up to 10 pounds)	F	Opening/closing cabinet doors and drawers, gathering parts and hardware, using tools and moving wheeled carts.
Pushing/Pulling (Est. force 10 to 50 pounds)	S	Using tools, disconnecting/connecting/positioning system components, positioning and maneuvering various pieces of equipment on wheeled carts or wheeled equipment, and moving portable welding equipment.



***Job Analysis: Operating Engineer – Mechanical Utilities Maintenance Engineer (AVM)
 Port of Seattle – DOT #950.382-026***

Pushing/Pulling (Est. force 50 to 100 pounds)	Rare	Using tools, and disconnecting/connecting/positioning system components.
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.
Bending at Waist	F	While 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-O	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-O	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	While maneuvering in and around systems and components; while entering smaller spaces.
Reaching (To shoulder level)	F	While 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	While repairing and installing parts and equipment, inspecting systems, cleaning out the boilers, and gathering parts and supplies stored above shoulder level.
Driving	S	While driving truck/cart to remote project sites.
Foot Controls	S	While driving, and potentially while operating a manlift.
Repetitive Motion	N/A	The variety of tasks assigned to Maintenance Engineers generally minimizes repetitive motion.
Handling/Grasping	F	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 typing.
Keyboarding/Mousing	S	While researching status of remote system monitors, documenting completed projects, creating reports, and sending/receiving electronic mail.
Talking	F	Communicating with supervisors, co-workers, and the public (while working in passenger terminals).



***Job Analysis: Operating Engineer – Mechanical Utilities Maintenance Engineer (AVM)
Port of Seattle – DOT #950.382-026***

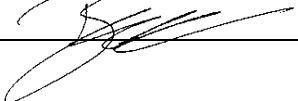
Hearing	C	Communicating with supervisors, co-workers, and the public (while working in passenger terminals). Listening for sounds of malfunctioning machinery and danger in and around work areas.
Seeing	C	Visual abilities would be considered important in this position.
Writing	S	Taking notes and documenting 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.
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: Stuart Mathews, Erik Knowles, Dan Hytry

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

Date June 6, 2018 Signature of Vocational Provider 



***Job Analysis: Operating Engineer – Mechanical Utilities Maintenance Engineer (AVM)
Port of Seattle – DOT #950.382-026***

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