



Bock Consulting

Job Analysis

Job Title	Operating Engineer – Satellite Transit System (STS) (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	11/26/08; 3/11/09; 12/28/16; 12/21/18

- Job of Injury
 Transferable Skills Job
 New Job
 8-10 Hours Per Day
 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.

The Aviation Division owns and operates Seattle-Tacoma International Airport. Sea-Tac Airport handles more than 40 million passengers a year, and offers state-of-the-art air cargo facilities. The Aviation Division employs a maintenance staff which is responsible for all tasks associated with the maintenance and on-going operations at Sea-Tac Airport.

This job analysis is for an Operating Engineer – Satellite Transit System (STS) position working at Sea-Tac Airport in the Aviation Maintenance group.

The STS at Sea-Tac Airport consists of a north and a south loop, with a shuttle track connecting the two loops. The Airport has 20+ passenger cars that can be configured to meet passenger load demands.

The primary responsibilities of the Operating Engineers are to maintain the passenger cars of the STS (work is primarily performed during the day shift), and to maintain the station doors and guide beams used to guide the trains of the STS (primarily performed during the graveyard shift).



Essential Functions

- Meeting with supervisors to discuss current issues and



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obtain assignments.

- Responding to system issue calls. May assist with the retrieval of an inoperative train or car.
- Maintaining and repairing mechanical equipment and systems the related to the passenger train cars. Tasks may include, but not limited to:
 - Inspecting and maintaining air compressor units. Clean equipment, clean or replace air intake filter, check oil level and check for signs of oil leaks, check drive belts, check belts for any unusual wear, and check that all cables and hoses are secure. Rebuild or replace air control valve, rebuild air dryer assembly, replace dryer desiccant and purge valve, replace air compressor valves, replace suction valve a-rings and felts.
 - Inspecting and maintaining heating, ventilating, and air conditioning equipment.
 - Inspect and maintain train car door operations. Inspect door channels, clean door cap, inspect door hanger wheels, and clean and inspect door threshold and anti-rattle device. Ensure anti-riser is clean and squarely mounted. Check operator arm roller for flat spots, and check operator arm for proper operation. Check motor gear cases for leakage. Tighten screws as required. Lubricate door operator. Replace worn or damages components as necessary.
 - Inspecting and maintaining couplers used to connect train cars. Inspect for proper mounting or damage. Verify free movement. Inspect rubber donuts for wear or cracks. Inspect condition of the train line locking pins. Verify free movement. Lubricate coupler locking pins with grease.
- Maintaining and repairing the door systems that allow passengers to enter the trains. Tasks may include:
 - Inspecting and cleaning the threshold Cap Track and Roller Track. Replace worn parts as needed. Checking Drive Belt. Tighten or replace as required.
 - Checking the autolock for proper engagement with the right and left lock keepers. Adjust as necessary.





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- Using force gauge, measure and record force required to lift the guideway side emergency release latch and verify door can be opened. Ensure door release sign is easily readable.
- Inspect the bumpers and bottom guides. Adjust or replace components as necessary.
- Monitor door operation during service or use hand held programmer to operate door set to check for any obvious problems.
- Maintaining and repairing the transfer tables and filler tables used to add or remove cars from the train system. Tasks may include:
 - Checking hoses and fittings are secure. Checking for air leaks. Checking lubrication levels.
 - Checking tracks, drive wheels and bearings, lubricating drive wheels as required, checking motors and gearboxes, and filling gearboxes with lube as required. Checking rollers, and observing operations of the equipment.
- Maintaining and repairing the guide beams/tracks used to guide the passenger trains throughout the STS. Tasks may include:
 - Walking the roadway to observe the guide beam and support members. Inspecting guide beam (particularly in area of supports). Checking for cracks. Checking for distress or movement of anchor bolts. Checking concrete roadway and running surfaces. Check the concrete ceiling and walls for leaks or cracks. Check drainage through roadway along tunnel floor. Check the evacuation bridges.
 - Inspect alignment of guide beams. Adjust alignment of guide beams as necessary.
- Fabricating/machining replacement parts used in the systems and equipment maintained by the Operating Engineers.
 - Cut metal and form metal.
 - Weld materials using welding equipment.
- Repairing and/or rebuilding reusable parts and/or equipment. Work may be completed at work bench.
 - Rebuild motors and compressors.
 - Install new bearings in wheels or pulleys.
 - Clean metal parts with parts washer or grinder/buffer.





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- General cleaning as necessary.

Necessary skills and abilities include:

- Having the skills to complete the assigned task(s), using all of the various types of tools and equipment, in a safe manner.
- Having the ability to identify and trouble-shoot an issue quickly, identify the best method(s) to address an issue, and correctly complete the identified task.
- Having the physical abilities to perform all of the assigned tasks (much of the work is performed on lifts, ladders, or over shoulder height while reaching).
- Ability to follow directions and stated tolerances closely, and be detail oriented while working.
- Ability to work independently, but also within a team environment. Because the STS Shop is a multi-craft shop, the Operating Engineers need to be able to work closely with other crafts (such as Electricians, Electronic Technicians, and Auto Shop personnel), and coordinate work among the various types of crafts.



Machinery, Tools, Equipment, Personal Protective Equipment:

- Hand tools, including wrenches, pliers, vice grips, screwdrivers, tape measures, utility knives, and hammers.
- Power tools, including impact wrenches, drills, chop saws, grinders, and reciprocating saws.
- Grease guns, grease, and other lubricants.
- Saws, lathes, mills, parts washer, and other shop tools.
- Work benches. Work tables.
- 2-way radio for communication. Flashlights.
- MIG, TIG, and stick welding equipment.
- Shelves and drawer units.
- Ladders: step, self-supporting, and extension.
- Man lifts/scissor lifts. Scaffolding units.
- Forklift (smaller, walk-behind unit). Hand trucks. Wheeled carts.
- Tool boxes or buckets.
- Wheeled stools.
- Push/pull gauges.
- Overhead/bridge hoist. Jib hoist.
- Elevator (used to move larger parts in and out of storage loft).

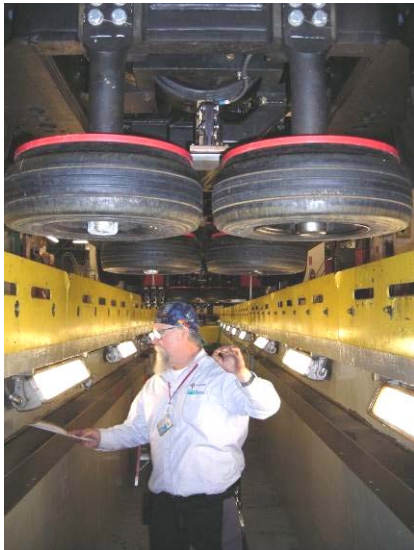




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- Windows-based computers (used by workers to track parts usage/inventory, document completed work tasks, document work requests, and receive and send electronic mails).
- Cleaning products, and biocide/fungicide pellets.

Workers wear steel-toes boots and safety glasses at all times. Workers must wear a “Bump Cap” while working in a pit under the train cars. Workers also wear safety vests, hardhats, gloves, ear protection, kneepads, and fall arrest harnesses as required. Confined space testing equipment is also used by the Operating Engineers as required.



Work “pit” in shop.



Walk-behind forklift.



Shop tools.



Exiting the shop “pit” under a coupler.



Working on a wheeled stool.



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Education / Training:

Operating Engineers are represented by the Operating Engineers union (Local 302).

The STS Shop seeks employees with at least 5 years of industrial experience (which may include apprenticeship training and/or vocational schooling).

New hires are generally assigned to shadow more experienced workers to learn the tasks and duties assigned to the Operating Engineers in the STS Shop.

Additional training includes AOA training (which allows workers to drive on the airfield), Electrical Panel Safety, Hazardous Materials Management, Asbestos Awareness, forklift, power truck, and pallet jack certification, and Accident Reporting & Analysis for supervisors.

A valid Washington State Driver's License is required in this position, as is the ability to pass a required FAA background check.



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.	Frequently
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.	Frequently
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.	Continuously
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.	Occasionally
Multi-tasking.	Continuously
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.	Occasionally

Frequency Designations: Required Beneficial Not Necessary	
Maintaining Attendance and An Assigned Work Schedule	
Maintaining predictable and reliable attendance each work shift.	Beneficial
Being punctual.	Beneficial
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



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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	Depends on assigned tasks. May use a wheeled stool while working, or sit on the floor to reach system components.
Standing	F	Work is generally accomplished alternating between standing and walking.
Walking	F	Work is generally accomplished alternating between standing and walking. Workers in the immediate shop areas, and between the north and south shops. Periodically the Operating Engineers have to walk the entire train routes to inspect the guide beams used to guide the trains.
Lifting (up to 25 pounds)	F	Lifting tools, equipment cover panels, smaller parts and components, containers of grease/oil, filters, smaller ladders, 2-way radio, and paperwork/documents.
Lifting (25 to 75 pounds)	O	Lifting tool boxes/buckets, ladders, motors, pumps, and other system components.
Overhead Lifting (up to 25 pounds)	O	Workers may have to lift items overhead to replace or repair components, or to pull items from storage shelves.
Lifting (over 75 pounds)	N/A	Overhead hoists, jib hoists, forklifts (smaller, walk-behind unit), and other devices are available to lift heavier objects. Elevators are available to move parts into/out of the parts storage areas.
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 50 pounds)	O	Carrying tool boxes/buckets, ladders, motors, pumps, and other system components.
Carrying (over 50 pounds)	N/A	Wheeled carts, hand trucks, forklifts, or other devices available to move/transport components/equipment.
Pushing/Pulling (Estimated force up to 20 pounds)	O	Opening/closing drawers of tools, parts, and hardware, using tools, removing and positioning parts, moving wheeled tool chests, carts, and scaffolding, moving portable welding equipment.
Pushing/Pulling (Estimated force 20 to 45 pounds)	S	Using tools, moving wheeled tool chests and carts, moving portable welding equipment, and positioning and maneuvering various pieces of equipment (including a walk-behind forklift).
Climbing Stairs/Ladders	F	The STS shop has “pits” which allow workers to work under the train cars. A pit is entered using stairs at either end of a pit. Stairs are also used to walk between the north and south STS shops, and to reach parts storage areas. Ladders are used extensively while working under the train cars in the pits. Ladders are also used extensively to work on the door systems in the passenger stations. Ladders, scaffolding, and manlifts are used while working next to or reach the top of the train cars.



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Working at Heights/Balancing	F	The STS shop has “pits” which workers need to be aware of while working in the shops. Ladders, scaffolding, and manlifts are used extensively while working. Workers are also exposed to heights while walking in the train tunnels or working on the door systems in the passenger stations (the walkways and passenger stations are elevated above the surface on which the trains run).
Bending at Waist	F	While inspecting or repairing components, structures, or systems at or below waist level, gathering parts and items stored at or below waist level, and working at a workbench or parts washer.
Bending Neck	C	In a majority of the tasks accomplished by the Operating Engineers, neck movement would be considered important (whether working under a train car, working on a ladder next to a train car or adjusting door systems, or working at a workbench).
Twisting at Waist	S	Twisting may be necessary to reach particular work areas or system components. Workers can minimize the amount of necessary twisting by moving their feet or frequently repositioning the ladder/scaffolding/manlift on which they are working. Twisting may also be necessary to maneuver around the guide wheels that extend underneath the train cars when the Operating Engineers are working in a shop “pit.”
Crouching/Kneeling	O	When working on equipment or items below waist level, or gathering parts and supplies stored below waist level. Workers have kneepads to wear while kneeling.
Crawling	S	May crawl while working on equipment or items below waist level, or while cleaning system components.
Stooping	S	While working under a train car on a ladder, leaving and entering a shop pit when a train car is near one end of the pit, and maneuvering around the guide wheels that extend underneath the train cars when the Operating Engineers are working in a shop “pit.” May also be necessary when walking in the shop parts storage areas.
Reaching (To shoulder level)	F	While inspecting and installing parts and equipment, working with shop tools, and gathering parts and supplies stored below shoulder level. NOTE: Workers use ladders, scaffolding, and manlifts to try and position work at chest level when possible.
Reaching (Over the shoulder)	F	While inspecting and installing parts and equipment, particularly while working in a pit below a train car, or on a ladder inspecting or repairing components of the door systems on the train cars or in the passenger stations. Also when gathering parts and supplies stored above shoulder level.
Driving	N/A	
Foot Controls	S	Potentially while operating a manlift.
Repetitive Motion	N/A	The variety of tasks assigned to Operating Engineers generally minimizes repetitive motion.
Handling/Grasping	C	40 % Pinch Grasp 60 % Whole Hand Grasp
Fine Finger Manipulation	F	Using hand tools, rebuilding equipment with small parts, disconnecting/reconnecting system components, applying lubricant/grease, operating controls on power tools and welding equipment, using keys and 2-way radio, and typing.



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Talking	O	Communicating with supervisors, co-workers, and potentially the public (if working in the airport terminals).
Hearing	C	Communicating with supervisors, co-workers, and potentially the public. 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, documenting parts used on inventory log, and documenting completed PMs (checklists).
Normal Job Site Hazards	C	Moving train cars, working near 600 volts used to power trains, moving machinery, working at heights (ladders, lifts, pits in shop), sharp edges on torn parts, pinch hazards, working around low hanging equipment, working with heavy parts, and exposure noise, dust, and fumes.
Expected Environmental Conditions	C	STS Operating Engineers generally work in a shop environment, passenger train stations, or in the train tunnels. Workers may be exposed to loud noises, dust, and fumes.

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