



**Disability Services**  
**Safety and Claims Management**  
 Department of Executive Services  
 Human Resources Management Division  
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## JOB ANALYSIS

Job Title:	Marine Engineer	DOT Title:	Engineer
SVP:	8	DOT #:	197.130-010
Location of Analysis:	Pier 51	Name of Employee:	
Analyst:	Kyle Pletz, VRC, CDMS	JA Source:	Laura Merritt
Presenting VRC:		Employer Contact:	Ron Panzero
Date Analysis Completed:	6/5/13	Supervisor Contact Information	Phone: 206-263-5039 E-mail: ron.panzero@kingcounty.gov

On-Site    
  Interview    
  Representative

### JOB DUTIES:

#### Essential Functions according to the employer:

All King County jobs require ability/essential function to:

- Demonstrate predictable, reliable, and timely attendance.
- Follow written and verbal directions to complete assigned tasks on schedule.
- Read, write, and communicate in English & understand basic math.
- Learn from directions, observations, and mistakes and apply procedures using good judgment.
- Work independently or as part of a team and interact appropriately with others.



The incumbent in this classification is responsible for ensuring the operational readiness of the ferryboat through the maintenance, service and routine repair of the main engines, propulsion, mechanical, electrical and related vessel systems. Work includes establishing an effective preventive maintenance plan, maintaining service documentation and logs, performing safety checks, and maintaining and repairing deck and passenger area facilities.

- Establish and perform a comprehensive preventive maintenance schedule for all on board systems; diagnose and repair malfunctions; determine repairs required by outside contractors; coordinate and perform repairs without interference in the normal schedule of operations.
- Assist Captain with vessel startup and shutdown.
- Perform daily checks of all machinery and vessel systems.
- Perform repairs and preventive maintenance on dock lines and loading ramps, gates and security systems.



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- Perform vessel safety and daily maintenance checks.
- Perform preventive maintenance, cleaning and minor repairs on HVAC system.
- Repair vessel flooring and upholstery.
- Repair sewage system.
- Perform other duties as assigned.

**EXPERIENCE, QUALIFICATIONS, KNOWLEDGE, SKILLS:**

**MINIMUM QUALIFICATIONS:**

- Knowledge of marine engines, propulsion, electrical, communication, steering and related vessel systems.
- Knowledge of applicable USCG regulations.
- Knowledge of the proper use of fire extinguishers and life waving equipment.
- Knowledge of safe lifting techniques.
- Skill in effectively handling multiple competing priorities.
- Skill working with a variety of individuals from diverse backgrounds.
- Skill in establishing and maintaining effective working relationships.
- Skill in use of hand and power tools for maintenance and repair.
- Skill in communications.
- Skill in working with a variety of individuals from diverse backgrounds.
- Ability to respond safely, effectively and expeditiously in an emergency.

**NECESSARY SPECIAL QUALIFICATIONS:**

- Possession of a valid Transportation Workers Identification Card (TWIC).
- May be required to work a split shift.
- Additional licenses, certifications and other requirements determined necessary to meet the business needs of the employing unit may be required.

**Machines, Tools, Special Equipment, Personal Protective Equipment Used:**

Gloves, glasses, ear protection, welding helmet, welders (acetylene, MIG and TIG), plasma cutter, grinders, reciprocating saw, drills, band saw, pipe threading machine, various hand tools, impact tools, engine parts, jig saw, drill press, welding table, magnetic drill press, fuel lines, engine fluids, sewage lines, electrical testers, flashlight, breakers, shore lines, engines, generators, batteries, pumps, etc. The employee works on all components of 3 different passenger ferries.

**PHYSICAL REQUIREMENTS**

Frequency Scale	Strength	Work Pattern	
<b>N</b> = Never	<input type="checkbox"/> Sedentary	<input checked="" type="checkbox"/>	Full-time*
<b>S</b> = Seldom (1-10 %, up to 48 min)	<input type="checkbox"/> Light	<input type="checkbox"/>	Part-time
<b>O</b> = Occasional (11-33%, 48 min. – 2 hr 25 min)	<input type="checkbox"/> Medium	<input checked="" type="checkbox"/>	Seasonal*
<b>F</b> = Frequent (34-66%, 2 hr 26 min – 5 hr 35 min)	<input checked="" type="checkbox"/> Heavy	*	Hours Per Day
<b>C</b> = Constant (67-100%, more than 5 hr 35 min)	<input type="checkbox"/> Very Heavy	*	Days Per Week

This is classified as a MEDIUM job by the US Department of Labor, but is adjusted to HEAVY for this particular job. Work is performed on a smaller vessel which does not have a spacious engine room with hoists like larger vessels.



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**\*Peak Season**

Engine Room	Saturday			Sunday			Monday				
	Start Time	Stop Time	Hours/Day	Start Time	Stop Time	Hours/Day	Start Time	Stop Time	Hours/Day		
Engineer 1			0	9:30	20:00	10.5	9:30	20:00	10.5		
Engineer 2	9:30	20:00	10.5			0			0		
Tuesday			Wednesday			Thursday			Friday		
Start Time	Stop Time	Hours/Day	Start Time	Stop Time	Hours/Day	Start Time	Stop Time	Hours/Day	Start Time	Stop Time	Hours/Day
9:30	20:00	10.5	4:30	15:00	10.5			0			0
		0	9:30	20:00	10.5	9:30	20:00	10.5	9:30	20:00	10.5

**\*Winter**

Crew	Monday			Tuesday			Wednesday				
	Start Time	Stop Time	Hours/Day	Start Time	Stop Time	Hours/Day	Start Time	Stop Time	Hours/Day		
Engineer A	9:30	20:00	10.5	9:30	20:00	10.5	4:30	15:00	10.5		
Engineer B			0			0	9:30	20:00	10.5		
Thursday		Friday			Saturday			Sunday			
Start Time	Stop Time	Hours/Day	Start Time	Stop Time	Hours/Day	Start Time	Stop Time	Hours/Day	Start Time	Stop Time	Hours/Day
		0			0			0	9:30	20:00	10.5
9:30	20:00	10.5	9:30	20:00	10.5	9:30	20:00	10.5			0

PHYSICAL DEMANDS		FREQUENCY					ACTIVITY DESCRIPTION
	% Time	N	S	O	F	C	
Sitting				X			Up to 1 hr./time for up to 2 hrs. total while ordering parts, completing engine log, computer duties and driving.
Standing						X	Up to 1 hr./time for up to 6-8 hrs. total while welding as well as performing bench work, repairs and inspections.
Walking						X	Up to 1 hr./time for up to 6-8 hrs. total while preparing vessels for daily operation, performing inspections, transferring to/from shore power, fueling, emptying sewage tank, etc. Employee regularly walks between piers, vessels and a workshop on a barge, up to 1000' at a time.

Lifting floor – waist	N	S	O	F	C	
		75-100	40-60			
						lbs.
						Up to 5 min./time for up to 2 hrs. total with weights of 40-50 pounds to manipulate parts during installation and removal. Manipulates magnetic drill press (80 lbs.) and large parts such as sewage pump or turbo (75 lbs.).



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<b>Lifting</b> waist-shoulder	<b>N</b>	<b>S</b>	<b>O</b>	<b>F</b>	<b>C</b>	lbs.	Up to 5 min./time for up to 2 hrs. total with weights of 40-50 pounds to manipulate parts during installation and removal. Manipulates magnetic drill press (80 lbs.) and large parts such as sewage pump or turbo (75 lbs.).
		75-100	40-60				
<b>Lifting *</b> above shoulder	<b>N</b>	<b>S</b>	<b>O</b>	<b>F</b>	<b>C</b>	lbs.	Up to 5 min./time for up to 2 hrs. total with weights of 40-50 pounds to manipulate parts during installation and removal. Manipulates magnetic drill press (80 lbs.) and large parts such as sewage pump or turbo (75 lbs.). Items are passed up/down hatch of engine room.*
		75-100	40-60				
<b>Carry *</b> (Dist.)	<b>N</b>	<b>S</b>	<b>O</b>	<b>F</b>	<b>C</b>	lbs.	Up to 50' at a time for up to 2 hrs. total with weights of 40-50 pounds to move a tool box or parts to/from work area. Seldom carry large parts such as sewage pump or turbo (75 lbs.) between engine room and cart. A cart is available, but does not fit in engine rooms and cannot always be used to transfer on/off the vessels.
		51-100  25'	4-50  50'				
<b>Pushing/ Pulling</b>	<b>N</b>	<b>S</b>	<b>O</b>	<b>F</b>	<b>C</b>	Minimal	Up to 150' with up to 100 lbs. of force when pushing a lube-oil drum on a hand cart.
		100	50+			lbs force	

\*Lifting and carrying can be performed while entering/exiting engine room via hatch:



	<b>N</b>	<b>S</b>	<b>O</b>	<b>F</b>	<b>C</b>	
<b>Climbing</b>				X		Up to 5 min/time up to 3 hrs. total when climbing 6-7 rung vertical ladder for engine rooms, 12 stairs to upper deck, roof of vessel, on/off vessel and within small engine room.
<b>Balancing</b>					X	Work is performed on a floating dock as well as a moving passenger ferry that are swaying due to



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						waves; some areas do not have railings so there are exposed heights on edges of docks and vessels with water below. Works in engine rooms (ceiling height of 4'7" and confined space) while crawling around hot engines while in a moving vessel. See pictures.
Stooping / Bending				X		Up to 30 min/time up to 4 hrs. total while inspecting engine rooms (ceiling height of 4'7") and performing repairs.
Twisting				X		Up to 30 min/time up to 4 hrs. total while inspecting engine rooms (ceiling height of 4'7") and performing repairs in awkward positions.
Squatting / Kneeling				X		Up to 30 min/time up to 4 hrs. total while inspecting engine rooms (ceiling height of 4'7") and performing repairs.
Crawling			X			Up to 5 min/time up to 2 hrs. total while inspecting engine rooms (ceiling height of 4'7") and performing repairs.
Foot Controls			X			Up to 1 hr./time for up to 2.5 hrs. total while driving work truck between worksites and vendors in order to obtain parts.
<b>Reaching</b> (Level)	Forward				X	For up to 1 hr./time for up to 6 hrs. total while performing maintenance and repairs, driving, performing computer duties, ordering parts and using a flashlight as well manipulating hand tools and parts.
	Below Waist				X	For up to 1 hr./time for up to 4 hrs. total while performing maintenance and repairs, driving, performing computer duties, ordering parts and using a flashlight as well manipulating hand tools and parts.
	Above Shoulder			X		For up to 2 min/time for up to 1 hr. total in a shift while performing overhead repairs as well as when moving tools and parts in/out of engine compartment.
Handle/Grasp					X	For up to 1 hr./time for up to 6 hrs. total while performing maintenance and repairs, driving, and using a flashlight as well manipulating hand tools and parts.
Fine Finger Manipulation				X		For up to 30 min/time for up to 5 hrs. total when threading bolts, using testing equipment, operating buttons and switches, welding and manipulating small hand tools
	<b>N</b>	<b>S</b>	<b>O</b>	<b>F</b>	<b>C</b>	
Hand Controls				X		For up to 5 min/time for up to 4 hrs. total while operating power tools such as saws, drills, testers, grinders, pumps, fans and pipe threading machine. Also uses hand controls when using welding equipment.
Repetitive Motion	X					Body part: _____ Cycles/hr. _____



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Vibratory Tasks			X			For up to 5 min./time for up to 1 hr. total while undoing bolts with an impact wrench to inspect voids.
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	N	S	O	F	C	
Talking				X		Interacting with coworkers and providing customer service to the general public.
Hearing				X		Interacting with coworkers and providing customer service to the general public.

Visual:

Visually inspects vessels on a continuous basis, including dark areas such as the engine room.

ENVIRONMENTAL CONDITIONS	FREQUENCY					ENVIRONMENTAL CONDITIONS	FREQUENCY				
	N	S	O	F	C		N	S	O	F	C
Exposure to Weather				X		Noise Intensity				X	
Extreme Cold		X				Atmospheric Conditions				X	
Extreme Hot				X		Exposed Heights				X	
Wet and / or Humidity				X		Exposure to Electricity				X	
Proximity to Moving Mechanical Parts				X		Exposure to Toxic / Caustic Chemicals			X		
Exposure to Explosives	X					Exposure to Radiation	X				

Other:

**Analyst's Comments:**

The employee inspects and works in engine rooms (ceiling height of 4'7" and confined space) while crawling around hot engines while in a moving vessel. Arrow indicates travel path to front of engine where the generators are located. Orange line indicates ceiling height of 4'7".

Work is performed on a floating dock as well as a moving passenger ferry that are swaying due to waves; some areas do not have railings so there are exposed heights on edges of docks and vessels with water below; constant balancing is essential for safety.





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**Possible Employer Modifications:**

[Empty rectangular box for possible employer modifications]

**Note:** The information for this job analysis was gathered by either on-site observation, interview and / or is representative of the labor market as indicated on page one. Additional data may have been obtained from standardized industry resources such as the DOT, GOE, COJ, OOH, WOIS and O-NET. 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.

**Analyst:**

**Presenting VRC signature:**

\_\_\_\_\_  
Vocational Consultant

\_\_\_\_\_  
Date

\_\_\_\_\_  
Vocational Consultant

\_\_\_\_\_  
Date

**Employer Verification:**

**Employee Verification:** (optional)

\_\_\_\_\_  
Name

\_\_\_\_\_  
Date

\_\_\_\_\_  
Name

\_\_\_\_\_  
Date



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**MEDICAL PROVIDER:**

I agree that the employee can perform the physical activities described in this job analysis and can return to work.

State date employee is released to return to work if different from today's date \_\_\_\_\_

I agree the employee can perform the described job but only with modifications (describe in comments section). Modifications are needed on a permanent  or temporary  basis.

The employee **temporarily** cannot perform this job based on the following physical limitations:

**Anticipated release date:** \_\_\_\_\_

**Treatment plan:** \_\_\_\_\_

The employee is **permanently** restricted from performing the physical activities described in this job analysis based on the following physical limitations (state objective medical findings):

**Comments:**

\_\_\_\_\_  
Signature

\_\_\_\_\_  
Date

\_\_\_\_\_  
Print Name

- Attending Physician       Consulting Physician       Pain Program Physician
- IME Physican               PCE Therapist               OT / PT Therapist
- PEP Physician