

PLAINTIFF'S EXHIBIT

TEX-139



WA-TEX 001650

JOB CONTENT

PLANT: Puget Sound
DEPARTMENT: RP&S - Docks
CLASSIFICATION: Pumper Helper B

TRAINEE:

A. BASIC TRAINING

DATE

NAME

1. Departmental Organization
2. Relation of Department to Refinery Operations
3. Departmental Working Rules
4. Departmental Safety Practices
5. Departmental Fire Protection
6. Departmental Tools
7. Lubrication of Equipment
8. Operation of Centrifugal Pumps
9. Operation of Steam Reciprocating Pumps
10. Operation of Valves and Plug Cocks
11. Operation of Pressure Gauges
12. Operation of Steam Traps
13. Tank Fittings and Equipment
14. Hose Handling Procedure
15. Marine Terminology
16. Docks Resume
17. Blending Plant Resume
18. Liquified Petroleum Gases
19. Transmountain Pipe Line
20. Departmental Operating Manual
21. First Aid Training
22. Receipt of Foreign Crude
23. Significance of Tests

WA-TEX 001651

TEXACO

FORM 8-44 (8-70) 5000

To FRANK R. WELP
 From BEON PH Date 4/19/71

Please:

- ☐ Attend to
- ☐ Note and return
- ☐ Note and forward to Files
- ☐ See (phone) me re attached

- ☐ Prepare reply for my signature
- ☐ Send me information required to answer
- ☒ For your information
- ☐ As per conversation

- ☒ As requested
- ☒ For your comments and suggestions
- ☐ Does attached meet with your approval?
- ☐ For signature, if you approve

Other Remarks

Checked the attached with L.A.C. of L.A.P. He informs that changes, deletions, additions, etc. to instructions will be written into the unit master copy at the time of effect. There will be no delay in compliance.

All manuals will be officially updated at least once annually.

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PLANT: Puget Sound
DEPARTMENT: RP&S - Docks
CLASSIFICATION: Pumper Helper B
OPERATION: A-1 Departmental Organization

IMPORTANT STEPS	KEY POINTS
1. Supervisory Staff	Foreman: In charge of all operations in the Department. a. Responsible to the Manager, Asst. Manager and the Supervisor of Operations. Plans and directs the operating activities of all in the Department, such as changes in routine routing of flow and blending of products, etc. Handles personnel and operating problems, originating in the Department. b. Responsible for administration of all employee training activities and the development of a competent work force. Assistant Foreman: a. Responsible to the Foreman of the Department in charge of and supervises directly all operations in the RP&S-Docks Department. b. Will be in close contact with all operations going on in the Department and makes decisions on problems which arise. Gives OK's on products which have been approved for shipment and outlines mixes and transfers, loading and unloading of tank cars and tank trucks. c. Supervises all operations of the various product blending at the Blending Plant, including the addition of additives and the unloading and handling of T.E.L. (Tank Cars or Tank Trucks). Directs the receipt of crude oil into tankage and the mixing and blending of products in tankage.

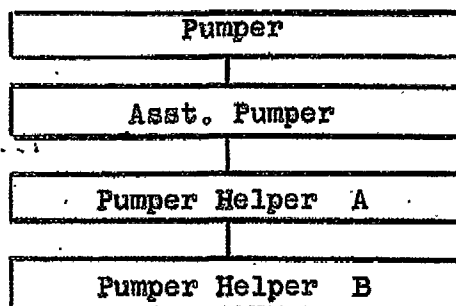
JOB BREAKDOWN

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PLANT: Puget Sound
DEPARTMENT: RP&S - Docks
CLASSIFICATION: Pumper Helper B
OPERATION: A-1 Departmental Organization (Cont.)

IMPORTANT STEPS	KEY POINTS
1. Supervisory Staff (Cont.)	d. Supervises operations at the Docks. Directs activities of berthing and unberthing, servicing ships and barges, discharging of ballast, loading and discharging of cargoes and all details pertaining to handling of movements over the Docks, including delivery of bunkers and water to ships.

2. Hourly Line of
Promotion



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PLANT: Puget Sound
DEPARTMENT: RP&S - Docks
CLASSIFICATION: Pumper Helper B
OPERATION: A-2 Relation of Department to Refinery Operations

IMPORTANT STEPS	KEY POINTS
1. General Information	The RP&S-Docks Department functions to serve the entire plant in the receiving, transferring, storing, blending and preparing for shipment of refinery stocks. This includes L.P.G., motor gasolines, middle distillates, jet fuels and bunker fuels. An important function is the blending of the various component streams from the units and intermediate storage into finished product suitable for shipment. The department operates the Tank Farm consisting of 49 tanks, with a system of operating line arrangements to accomplish the job of blending finished product for shipment. The department operates the shipping and transfer pump manifold. The department operates the in-line Blending Plant, plus the Tetra-Ethyl-Lead Plant, the tank car loading rack and the tank truck loading racks. The RP&S-Docks Department also operates the Docks, which are used for unloading and loading of tankers and barges.
2. Refinery Operating Departments	Includes the: Crude and Vacuum Still-ing Unit with Deasphalter Unit. Hydrotreating Unit-Catalytic Reforming Unit.- Fluid Catalytic Cracking Unit and Gas Recovery Alkylation Unit-Catalytic Polymeriza-tion Unit -

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PLANT: Puget Sound
DEPARTMENT: RP&S - Docks
CLASSIFICATION: Pumper Helper B
OPERATION: A-2 Relation of Department to Refinery Operations
(Continued)

IMPORTANT STEPS	KEY POINTS
2. Refinery Operating Departments (Cont.)	~~Boiler House Effluent Plant~~ Receiving, Pumping and Storage and Docks Department -

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PLANT: Puget Sound
DEPARTMENT: RP&S - Docks
CLASSIFICATION: Pumper Helper E
OPERATION: A-3 Departmental Working Rules

IMPORTANT STEPS	KEY POINTS
1. Absences	When employee is to be absent from work he should notify his foreman, ass't. foreman, or shift foreman on duty as far in advance as possible.
2. Reading Matter	Newspapers, magazines or any literature not pertinent to Refinery operation must not be read on the job.
3. Housekeeping	The department is divided into areas and each operator is assigned one of these areas to keep clean. He is held responsible for keeping his assigned area clean and orderly at all times. Helpers having tank farm areas, must keep trash, rags and bottles picked up, and any trash or rubbish which he cannot handle should be reported to his supervisor. The Dock slab, Blending Plant, Tank Truck loading slabs and the Tank car spots must be washed, cleaned and maintained in an orderly condition. It is expected and will be insisted on that good housekeeping is maintained throughout the Department.
4. Work Permits	Before a workman or inspector is allowed to enter tanks, vessels, or pits written permission must be given on the Safety Work Permit, Form R-241-A. Hot Work Permits, Form R-241, are issued when it is necessary to burn, weld, light fires, or do any "hot work" in the tank farm, blending areas, loading racks, on the Docks or any location in the department. Refer to Standing Instructions Manual details for issuing Work Permits.

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PLANT: Puget Sound
DEPARTMENT: RP&S - Docks
CLASSIFICATION: Pumper Helper B
OPERATION: A-4 Departmental Safety Practices

IMPORTANT STEPS	KEY POINTS
1. Housekeeping	<u>A Safe Department Is A Clean Department.</u> All buildings, areas, pumps, manifolds, loading racks, docks and tankage are to be kept clean at all times. The following points are a guide in order to keep the Department clean. a. Keep pumps and motors wiped down. b. When a spill occurs, wash down and clean up at once. c. Area around gauge and sample hatches on tankage are to be kept clean at all times. d. Keep all rags and bottles picked up in all areas. e. Have clean hands when necessary to do paper work. f. Use tubs on Docks and ships when disconnecting cargo hose. g. Wash down any dye spills at once in the Blending Plant. h. When a job is completed, return all tools to their proper storage.
2. Use of Safety Equipment	Gas masks are to be used in areas where poisonous gases are present. The gas usually present and encountered in refinery operations is Hydrogen Sulphide (H_2S) which is highly poisonous. If there is a doubt that H_2S is present a gas mask is to be worn in that area until a test is made to establish that no gas is present.

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PLANT: Puget Sound
DEPARTMENT: RP&S - Docks
CLASSIFICATION: Pumper Helper B
OPERATION: A-4 Departmental Safety Practices (Cont.)

IMPORTANT STEPS	KEY POINTS
2. Use of Safety Equipment (Cont.)	Canister type masks with yellow canister are used in open areas when a small quantity of poisonous gas (H_2S) is present. Never enter a tank or vessel wearing a canister mask unless a Safety Work Permit, Form R-241-A is given by the foreman. Several types of canisters to protect against different gases are manufactured and are identified by colors. The yellow canister with black label is usually used by RP&S employees. This canister protects against Hydrogen Sulphide (H_2S) gas. The <u>red</u> canister is an all purpose type. The <u>white</u> canister protects against sulphur dioxide (SO_2). The proper method of wearing, adjusting and testing canister masks is taught and illustrated by on the job instruction.
3. Hose Mask	Another type of mask used in refinery work is the hose mask. This type is used in high concentration of gas such as inside tanks, tank cars and non-ventilated vessels. The Safety Reference Manual will be studied during training for detailed instructions on the use of gas masks and actual practice is given during your training on the job.
4. Guards on Shafts and Connectors	All moving shafts and connectors on pumps and equipment in the RP&S and Docks Department should be provided with guards. If necessary to remove guards for repair of equipment, they must be replaced immediately after work is finished. Missing guards should be called to your Foreman's attention promptly.

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PLANT: Puget Sound
DEPARTMENT: RP&S - Docks
CLASSIFICATION: Pumper Helper B
OPERATION: A-4 Departmental Safety Practices (Cont.)

IMPORTANT STEPS	KEY POINTS
5. Vapor Globes On Lighting Equipment	Vapor globes are provided on lighting equipment to prevent flammable gases from entering and being ignited by an electric arc which may be present in the lighting fixture. If the vapor globe is broken or removed, notify Foreman at once.
6. Flashlights	Only approved flashlights are permitted for use in RP&S Docks Department. These are supplied by the Company and personally owned lights are not to be used.
7. Work Permits	a. <u>Safety Work Permit, Form R-241-A</u> This permit is to be prepared in duplicate and properly signed before an inspector or workman enters a tank or vessel that has been in service and before such vessel is unheaded and disconnected. All lines are to be blinded off before entering a vessel that has been in service. b. <u>Hot Work Permit Form R-241</u> This permit is to be made out in duplicate and properly signed before any hot work is done on vessels, lines and other equipment. Hot work includes any operation wherein the heat used or generated may be of sufficient intensity to cause the ignition of any flammable liquids and gases, or any other combustible matter. Detail instruction will be given during training from the Standing Instruction #3.

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PLANT: Puget Sound
DEPARTMENT: RP&S - Docks
CLASSIFICATION: Pumper Helper B
OPERATION: A-4 Departmental Safety Practices (Cont.)

IMPORTANT STEPS	KEY POINTS
8. Gas Tests	Prior to issuing a Safety Work Permit for entry into any confined space where combustible or toxic gases may be present or can be anticipated, a combustible gas test shall be made by shift Inspector-Laboratory. The results of the test shall be noted on the permit and the permit signed by the Inspector.
9. Safety Precautions	Before issuing any Safety or Hot Work Permits, extreme care must be taken to make sure all fire hazards such as oil pools, or flammable materials are not present in the area, sewers covered, etc.
10. Electrical Equipment	All electrical equipment should be of the approved type. Portable equipment such as extension cords should be protected from accidental cutting or damage and if in questionable condition should not be used.
11. Grounding	Before loading or discharging a ship or barge, or tank truck, these units are to be grounded with the static cable provided. The static cable should remain attached to a vessel until cargo hose are disconnected. In the case of trucks, the static wire is to remain attached until truck is loaded.
12. Motor Vehicles	No motor vehicle is to be operated on the Dock proper while vessels are loading or discharging. All truck motors are to be stopped while loading tank trucks. A barricade is to be erected at each end of tank car rack area while loading or unloading is taking place.

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PLANT: Puget Sound
DEPARTMENT: RP&S - Docks
CLASSIFICATION: Pumper Helper B
OPERATION: A-4 Departmental Safety Practices (Cont.)

IMPORTANT STEPS	KEY POINTS
13. Fires and Open Lights	When loading or unloading flammable liquids, there should be no fires, open flames, or open lights present on deck of ships or barges, or in any compartment which is located on, facing, open, or adjacent to that part of the deck on which cargo hose are connected. All companionway doors aboard ship are to be kept closed while a vessel is loading cargo. Obviously it is necessary to maintain fires in boiler room and galley while a ship is at the dock and in most instances, this equipment is so located that no difficulty is expected. However, some hazard is involved and should be given careful consideration. All galley fires aboard barges are to be out before loading begins and there is to be no fires aboard a barge until loading is completed. <u>NO SMOKING</u> aboard a barge at anytime loading is taking place.
14. Tugs, Alongside While Loading or Unloading	No tugs or other marine equipment is allowed to come alongside vessels while receiving or discharging cargo. This is important in that it is dangerous as a fire hazard and is strictly forbidden by U.S. Coast Guard rules. When a barge arrives at our dock in tow and the tug is to wait until the barge is loaded, the tug is to tie-up to the end of the pier-head furthest away from the barge and not leave the dock area while barge is loading.
15. Leakage or Spill of Oil At Docks	Extreme care must be taken to avoid any leakage or spill of oil into the water. This is not only a fire hazard but also pollutes public waters and is in violation of State and Federal laws.

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PLANT: Puget Sound
DEPARTMENT: RP&S - Docks
CLASSIFICATION: Pumper Helper B
OPERATION: A-4 Departmental Safety Practices (Cont.)

IMPORTANT STEPS	KEY POINTS
15. Leakage or Spill of Oil at Docks (Cont.)	Close attention must be given to standby while a vessel is "topping out" to prevent cargo tanks from overflowing. Always use tubs as a catch basin when disconnecting hose on vessel's deck to prevent oil from spilling over side, into the water.
16. Electric Storms	The pumping of gasoline, Jet Fuel, and crude oil or other low flash products, to or from the vessel should be shut down during severe electrical storms.
17. Smoking	Watch for violation of smoking rules in any rea of RP&S Docks Department, especially by strangers or vessel personnel while using docks or boarding or leaving vessel. Any violation of smoking rules noted aboard should be reported immediately to the mate or captain or other ship's officer or to the bargemen.
18. Fire Fighting Equipment	Fire fighting equipment is located throughout the RP&S Docks. An inspection of this equipment should be made periodically to make sure it is in first class condition and ready for use.
19. Gauging and Sampling Floating Roof Tanks	Detailed instructions will be given during training on instructions for gauging and sampling Floating Roof Tanks. These instructions will be taken direct from the Standing Instruction #1.

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PLANT: Puget Sound
DEPARTMENT: RP&S - Docks
CLASSIFICATION: Pumper Helper B
OPERATION: A-5 Departmental Fire Protection

IMPORTANT STEPS	KEY POINTS
1. Housekeeping	Good housekeeping is of major importance in refinery fire prevention. Leaky valves, plugged sewers, leaky glands, oil spills, waste and dunnage piles are all potential fire causes. Rags saturated with paints or drying oils should be hung out to dry and afterwards buried or burned. Paints should be stored in closed buckets. All properties and operating units should be maintained in a neat and orderly manner, free of wood, paper and other debris. Responsible personnel should be notified immediately upon discovery of any condition not conducive to good housekeeping. Pressure gauges, lubricators and lubricators should be wiped clean.
2. Safe Operations	Safe and efficient operations eliminate fire hazards. Oral or written instructions should be understood thoroughly and followed explicitly by the employee. When in doubt, the employee should consult his superior.
3. Matches	Safety matches only are permitted on Company property. In "No Smoking" areas, it is preferable not to carry any matches.
4. Use of Gasoline	The use of gasoline for cleaning equipment is strictly forbidden. Where it is necessary to use gasoline for any purpose in the plant it should be kept in vapor tight containers.
5. Approved Flashlights	Approved flashlights and electric lanterns included in the Texaco Book of Material and Equipment Standards should be used by the employee.

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PLANT: Puget Sound
DEPARTMENT: RP&S - Docks
CLASSIFICATION: Pumper Helper B
OPERATION: A-5 Departmental Fire Protection (Cont.)

IMPORTANT STEPS	KEY POINTS
6. Static Electricity	Formation of static electricity can be prevented in most instances by properly grounding and bonding all lines, equipment, etc. Where this precaution is not effective, it may be necessary to resort to the injection of steam to cause a humid condition whereby static is dissipated without sparks or harmful results.
7. Fires	An employee discovering a fire should make an effort to extinguish it unless it is obviously too large for the equipment on hand. Employee should take no chances of letting fire spread too much before help is summoned.
8. Fire Extinguishers	Two basic types of extinguishers will be found on the unit. They are: Dry Chemical and CO₂ a. The dry chemical extinguisher contains a powder in a pressurized container. Pressure is obtained by use of a propellant which is an inert gas i.e., freon, nitrogen. This type of extinguisher has the best capability for putting out fires of the equipment available to the Operator. It is safe for use on electrical, oil and trash fires. b. The CO₂ extinguisher is a container with carbon dioxide gas under pressure. When released, the gas has both a smothering and cooling effect. This extinguisher is used on the same type of fires as the dry powder, but has limited ability for controlling fires. It's most useful application is with electrical fires because it cools and leaves no cleanup problem.

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PLANT: Puget Sound
DEPARTMENT: RP&S - Docks
CLASSIFICATION: Pumper Helper B
OPERATION: A-5 Departmental Fire Protection (Cont.)

IMPORTANT STEPS	KEY POINTS
9. Steam	Steam hoses are available and useful in suppressing a fire. The steam excludes oxygen to smother the fire and is most useful in control of slow-burning fires in inaccessible areas.
10. Fire Blankets	Fire blankets are stored in wall mounted containers that are easily opened for quick access. They are used on persons whose clothing is afire.
11. Additional Equipment	The fire truck carries additional fire fighting tools and equipment that is manned by a Fire Company. Any person discovering a fire should attempt to extinguish it if it is small. If there is any doubt about the person's ability to control the fire, he should sound the alarm to bring assistance.

JOB BREAKDOWN

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PLANT: Puget Sound
DEPARTMENT: RP&S - Docks
CLASSIFICATION: Pumper Helper B
OPERATION: A-6 Departmental Tools

IMPORTANT STEPS	KEY POINTS
1. General Information	Special tools found in the RP&S-Docks Department for use in carrying out operations are as follows.
2. Tank Farm and Blending Plant	Gauge lines (or tapes) cords and lead weight for taking samples from tanks. Special thermometers. Special wrenches for tightening packing glands on valves. Brass thief rods to take water gauges on tanks. Aluminum wand for dry dye induction. Grease guns for lubricating equipment. Special wrenches and tools for unloading Tetra-ethyl Lead tank cars.
3. Tank Car and Tank Truck Racks	Dorris gauge sticks for tank car loading special bomb sampler for bottom samples. Wrenches for T/C outlet caps and dome covers.
4. Docks	Ropes, slings, snatch blocks for handling cargo hose.

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PLANT: Puget Sound
DEPARTMENT: RP&S - Docks
CLASSIFICATION: Pumper Helper B
OPERATION: A-7 Lubrication of Equipment

IMPORTANT STEPS	KEY POINTS
1. General	Proper lubrication of all mechanically operated equipment in the Refinery is a very important function from the standpoint of dependable and trouble-free operation. Lubrication and proper care of all equipment shall be the responsibility of the operator in charge of the operation of the equipment. Much needless and unnecessary interruption of service can be prevented if each employe will cooperate by observing recommended lubrication practices and procedures.
2. Checking	A check of lubrication of all operating equipment should be made at least twice per shift, first when coming on shift and again approximately 4 hours later. The more common causes of faulty lubrication to look for are: a. Plugged lines - Lubrication is ineffective unless it reaches the desired points. b. Contamination: Acid contamination may cause serious corrosion. Caustic will form soap in some compounded oils and result in clogging lines. Water may cause emulsions and sludge formations. Keep free from dirt or foreign materials by maintaining all lubricating equipment clean at all times.

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PLANT: Puget Sound
DEPARTMENT: RP&S - Docks
CLASSIFICATION: Pumper Helper B
OPERATION: A-7 Lubrication of Equipment (Cont.)

IMPORTANT STEPS	KEY POINTS
2. Checking (Cont.)	c. Overheating: Usually bearings that are uncomfortably hot to the touch indicate overheating. All bearings overheating above normal will bear frequent checking. d. Low Oil Levels: Normal oil levels should be maintained. Investigate any abnormal usage and report condition to Asst. Foreman or Shift Foreman.
3. Lubrication Chart	Refer to Lubrication chart which specifies the grade of lubricant for each service. The Lubrication charts are posted in the Blending Plant, Tank Car Rack, Tank Truck Rack and Docks. Use of the wrong grade of lubricant may result in an equipment failure. If in doubt consult the Pumper. A lubrication manual is available in the RP&S office.

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PLANT: Puget Sound
DEPARTMENT: RP&S - Docks
CLASSIFICATION: Pumper Helper B
OPERATION: A-8 Operation of Centrifugal Pumps

IMPORTANT STEPS	KEY POINTS
1. Description	Centrifugal pumps derive the name from the use of the principle of centrifugal force in the operation. This type pump in its simplest form is composed of an impeller, fitted to a bearing-supported shaft, which rotates in a volute casing in a manner that imparts centrifugal force to the product pumped resulting in increasing the velocity, or increasing the pressure, at the discharge.
2. Operation	The product enters the center (called the eye) of the impeller filling the vanes and rotation of the impeller tends to discharge by centrifugal force into the volute casing and out the discharge line. As the product is forced away from the impeller eye, a vacuum is created which draws in more product. Consequently, there is a constant flow through the pump.
3. Uses	Because of their comparative simplicity, dependability, few working parts and ability to operate under a wide variety of conditions, centrifugal pumps are widely used in the refinery. They are commonly classified as single-stage pumps with one impeller, and multi-stage pumps with two or more impellers on a common shaft and operating in series. Operating principles of the multi-stage pumps are identical with the single-stage, the difference being that in a multi-stage pump the discharge from the suction impeller, the first stage,

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PLANT: Puget Sound
DEPARTMENT: RP&S - Docks
CLASSIFICATION: Pumper Helper B
OPERATION: A-8 Operation of Centrifugal Pumps (Cont.)

IMPORTANT STEPS	KEY POINTS
3. Uses (Cont.)	is directed into the suction eye of the second stage impeller, and so on, thereby giving an additional increase in pressure through each stage. It follows through that multi-stage pumps are used when high pressure differentials between suction and discharge conditions are desired.
4. Drives	Centrifugal pumps usually are driven by electric motors or steam turbines depending upon existing conditions. Selection of the type of drive is dependent largely on two factors: a. Plant steam-electric balance. b. Need for continuous operation in case of electric power interruption. When both factors are involved, dual-driven pumps are often installed for normal operation on electric motor for improved plant power balance and equipped with automatic controls to permit continued operation on steam when electric power fails.
5. Starting- Preparation	Before starting a centrifugal pump, the following preparation should be made: Check oil level in bearings of pumps and driver. Fill to normal operating level as necessary. Start cooling water to bearings and glands when provided. When a gland seal circulating system is installed, start circulation through system.

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PLANT: Puget Sound
DEPARTMENT: RP&S - Docks
CLASSIFICATION: Pumper Helper B
OPERATION: A-8 Operation of Centrifugal Pumps (Cont.)

IMPORTANT STEPS	KEY POINTS
5. Starting-Preparation (Cont.)	Check that coupling guards are in place and that drive shaft is free of wrenches, rags or other objects.
6. Starting-Prime Pump	Centrifugal pumps are not self-priming and must be filled with liquid in order to function properly when started. On pumps with positive suction head, open suction valve <u>wide open</u> and bleed all air or vapor from the pump casing through top bleeder. On multi-stage pumps, each stage must be bled off separately. On pumps with suction lift, priming is accomplished by a priming device, usually a vacuum pump or steam jet, which evacuates the pump casing. Open the suction valve <u>wide open</u>, open top bleeder to priming device and operate the primer until pump is full of liquid. Normally, it will be necessary to keep the priming device operating until the pump is started. <u>Never</u> attempt to start a centrifugal pump DRY. Wear rings may seize and seriously damage the pump.
7. Starting-Pump	As pump is started, watch discharge pressure gauge for steady increase as pump comes to normal speed. If pressure fails to rise or varies rapidly up and down, it usually indicates poor suction or leaking packing glands and pump should be shut down until fault is located and corrected.

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PLANT: Puget Sound
DEPARTMENT: RP&S - Docks
CLASSIFICATION: Pumper Helper B
OPERATION: A-8 Operation of Centrifugal Pumps (Cont.)

IMPORTANT STEPS	KEY POINTS
7. Starting-Pump (Cont.)	When the fault is improper priming, it is necessary to stop the pumps completely since it is usually impossible to prime or bleed the pump while rotating. Excessive leakage at packing glands may affect operation and on the suction lift type pumps may even prevent priming or result in the pump losing suction after it is started.
8. Starting-Operating Check	After pump is in operation, check that all case bleeders are closed tight. This is particularly important where bleeder lines are in a closed bleeder system. Check bearings for lubrication and indications of overheating. On ring-oil sleeve bearing, it is important to observe that the rings are rotating on the shaft. Adjust water cooling at glands to provide sufficient cooling without waste. Check packing glands for leakage and overheating. It is good practice to allow a packing gland to leak slightly during operation as an aid to lubricating the packing and to prevent overheating. When necessary to make adjustments of packing glands, they should be made slowly and watched for several minutes since overheating sufficient to damage packing can occur in a few seconds on high speed equipment. Care must be exercised to adjust glands evenly to prevent gland rubbing on shaft and overheating from heat of friction.

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PLANT: Puget Sound
DEPARTMENT: RP&S - Docks
CLASSIFICATION: Pumper Helper B
OPERATION: A-8 Operation of Centrifugal Pumps (Cont.)

IMPORTANT STEPS	KEY POINTS
8. Starting-Operating Check (Cont.)	If any condition on a pump cannot be corrected by the operator, the pump should be shut down and the Foreman notified at once.
9. Routine Operation-Routine Checks	All pumps and drivers in continuous operation must be inspected periodically for: a. Proper lubrication, making certain that lubricant is reaching desired points. b. Any bearings becoming excessively warm or rough. c. Proper adjustment of cooling water to bearings and glands. (The use of minimum amount for satisfactory operation will avoid waste of water.) d. Packing glands running hot or leaking excessively. e. Excessive vibration of pump or manifold. f. Unusual noises in pump or driver.
10. Routine-Responsibility for Checks	Unless otherwise covered by instructions, routine checks are to be made every 4 hours by operating personnel. Unusual conditions should be reported to operator in charge without delay. Simple adjustments to packing glands or lubricators may be made by the operator but repacking or other repairs are to be arranged for with the maintenance department handling.

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PLANT: Puget Sound
DEPARTMENT: RP&S - Docks
CLASSIFICATION: Pumper Helper B
OPERATION: A-8 Operation of Centrifugal Pumps (Cont.)

IMPORTANT STEPS	KEY POINTS
11. Shut Down	When the pump is stopped, close suction valve and release pressure on pump casing through bleeder. Shut off supply of cooling water to bearings and glands. Cut off any drop type or other lubricators not automatically controlled.
12. Shut Down- Automatic Cut-in Pumps	The exception to the above procedure applies to pumps set for automatic operation in case of an emergency. In these cases, leave <u>suction</u> and <u>discharge</u> valves <u>open</u> and <u>cooling</u> water running to bearings and glands while the pumps are idle in stand-by service.
13. Preparation for Repairs Repack- ing	When preparing a pump for repacking, check the following. a. <u>Suction</u> and <u>discharge</u> valves are <u>closed</u> tight. b. Pump casing bleeders are open and all pressure released from pump. c. Advise machinist of pump service and any special precautions to be observed.
14. Preparation for Repairs	When repairs are required which necessitate opening the pump case: a. Isolate the pump with blinds on suction and discharge if required. b. If motor-driven, open main switch when possible and hang warning tag sign on starting switch.

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PLANT: Puget Sound
DEPARTMENT: RP&S - Docks
CLASSIFICATION: Pumper Helper B
OPERATION: A-8 Operation of Centrifugal Pumps (Cont.)

IMPORTANT STEPS	KEY POINTS
14. Preparation for Repairs (Cont.)	c. If turbine-driver, check line and exhaust steam valves closed and turbine case bleeders open. Place warning tag signs on supply line valves. Whenever possible after repairs are completed, a test of pump operation shall be made by the operator with machinist standing by to determine that repairs are satisfactory. If it should be necessary to check a motor-driven pump for direction of rotation, the pump must be <u>full</u> of liquid before test is made. When stock is unavailable for such a test, the motor must be uncoupled from the pump and reconnected after the test is made.
15. Starting-Electric Motor Drives	Before starting any electric motor, check lubrication of bearings.
16. Overload Trip-Electric Motor Drives	When the switch trips out for any reason push the "reset" button to reset for normal operation. If the reset does not operate, it is generally due to overheating caused by the overload. In such cases, allow a few minutes for the reset relay to cool and try resetting again.

JOB BREAKDOWN

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PLANT: Puget Sound
DEPARTMENT: RP&S - Docks
CLASSIFICATION: Pumper Helper B
OPERATION: A-9 Operation of Steam Reciprocating Pumps

IMPORTANT STEPS	KEY POINTS
1. Preparation- Starting	Before starting a direct acting steam pump, check the following: a. Check rocker arm assembly for lubrication. b. Check operation of force feed lubricator by manually operating and observing flow of oil at sight feed. c. Check that pump action will not be obstructed by wrenches, bars, or other foreign material. d. Start cooling water to packing glands when supplied. e. Check bleeders open on steam end of pump, live steam and exhaust steam lines. f. Check line up on suction and discharge of pump. Any closed valve on discharge will result in subjecting discharge system to high pressure and should be avoided.
2. Start Pump	Open exhaust steam valve wide open. Open live steam valve to slowly warm up cylinders and blow out any condensate. Close bleeders; gradually open live steam valve until pump is operating at desired speed. Check gauge on discharge. Excessive pressure may be the result of improper lineup or plugged lines. Open discharge bleeder to remove air trapped in pump or line and to observe product pumped. Improper filling or poor suction will be indicated by discharge or part stroke of the pump.

JOB BREAKDOWN

A-9
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PLANT: Puget Sound
DEPARTMENT: RP&S - Docks
CLASSIFICATION: Pumper Helper B
OPERATION: A-9 Operation of Steam Reciprocating Pumps (Cont.)

IMPORTANT STEPS	KEY POINTS
2. Start Pump (Cont.)	Check operation of lubricators. Be sure all bleeders on steam and liquid ends of pump are <u>closed</u> tight before leaving pump.
3. Routine Operation- Routine Inspection	All pumps in continuous operation must be checked hourly for: a. Making sure lubrication is reaching desired points. b. Adjustment of cooling water to glands. c. Packing gland leakage of steam or product. d. Excessive vibration of pump or manifold. e. Unusual noises in pump.
4. Routine Operation- Responsibility for Inspections	Normally, the Helper will make 4 hour inspections and report any unusual conditions to Pumper in charge. The Pumper shall make inspections at least every four hours if no A Helper available.
5. Routine Operation- Adjust Packing Glands	Repacking or other repairs will be done by maintenance machinists, but minor adjustments to reduce leakage at packing glands may be made by operating personnel. Care should be taken to pull up glands evenly to avoid "cocking" the gland which might cause uneven wear on packing or excessive friction between gland and rod. Make adjustments slowly. Allow time for packing to adjust itself, or "set," before pulling too tight.

JOB BREAKDOWN

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PLANT: Puget Sound
DEPARTMENT: RP&S - Docks
CLASSIFICATION: Pumper Helper B
OPERATION: A-9 Operation of Steam Reciprocating Pumps (Cont.)

IMPORTANT STEPS	KEY POINTS
5. Routine Operation- Adjust Packing Glands (Cont.)	Be extremely careful while adjusting gland while pump is operating -- whenever possible, shut down pump temporarily.
6. Routine Operation- Adjust Pump Speed	For most efficient operation, both operating and maintenance, pump speeds should be regulated within these limits:

<u>Length of Stroke</u> Inches	<u>Strokes per Minute*</u>	
	<u>Intermittent</u>	<u>Continuous</u>
3	56	36
4	50	33
5	46	29
6	40	26
8	35	23
10	35	23
12	30	20
15	30	20
18	30	20
24	25	16

* A stroke is considered as one complete forward and backward movement of one piston.

By complying with the above speeds, the pump will normally fill properly with the result of more product pumped, less steam consumption, and less wear on pump parts.

When pumping very light liquids, gasoline or lighter, more efficient operation will result if speeds are kept slightly below those listed by reducing the tendency of light products to vaporize under suction conditions.

In case of emergency, speeds may be increased 30% (fire pumps - 100%) above those listed.

Continued operation of pumps above recommended speeds should be avoided.

JOB BREAKDOWN

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PLANT: Puget Sound
DEPARTMENT: RP&S - Docks
CLASSIFICATION: Pumper Helper B
OPERATION: A-9 Operation of Steam Reciprocating Pumps (Cont.)

IMPORTANT STEPS	KEY POINTS
7. Shut Down	The following procedures should be observed when shutting down a direct-acting steam pump: a. Close live steam supply valve. b. Close exhaust steam valve. c. Open bleeders on all steam cylinders. d. Close suction and discharge valves. e. Close off cooling water to glands, if any. f. Close off drip-type lubricators, if any. g. Release pressure on pump case through bleeder.

JOB BREAKDOWN

A-10
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PLANT: Puget Sound
DEPARTMENT: RP&S - Docks
CLASSIFICATION: Pumper Helper B
OPERATION: A-10 Operation of Valves and Plug Cocks

IMPORTANT STEPS	KEY POINTS
1. Check Packing	Leaking - Notify Pumper.
2. Lubricate	Use grease specified by Power Dept.
3. Keep Valve Free	Keep stem clean and greased and in good working condition. NOTE: Small sized valves of each of the listed types should be available for examination and dismantling.
4. Gate Valves	This type valve is commonly used since in open position it offers less restriction to flow and, when closed, provides a positive shut-off. In throttling or regulating service the gate valve is subject to excessive wear on disc and seats and, therefore, should be used only in wide open or closed positions. The rising stem type of valve is widely used due to the ease of determining whether open or closed. In locations where damage to threads of rising stem valves is likely, the non-rising stem valve is used. The position of the valve can only be determined by testing - clockwise rotation of the wheel closes the valve and counter-clockwise rotation opens the valve.
5. Globe Valves	Globe valves are used primarily in throttling service since the design of the valve tends to decrease the cutting action on seats and disc. Normally, the direction of the flow, indicated by an arrow on the body of the valve, is underneath the disc so that when the valve is in closed position the inlet pressure is shut off from the packing gland.

JOB BREAKDOWN

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PLANT: Puget Sound
DEPARTMENT: RP&S - Docks
CLASSIFICATION: Pumper Helper B
OPERATION: A-10 Operation of Valves and Plug Cocks (Cont.)

IMPORTANT STEPS	KEY POINTS
6. Check Valves	Check valves are designed to prevent back-flow through lines, but should never be depended upon to provide a positive shut-off. The direction of flow is usually indicated by an arrow on valve body. The common types of check valves used are the swing type and ball type.
7. Plug Valves	Plug valves, or plug cocks, are used extensively where quick opening and closing is desired or where the products being handled contain materials that will deposit on the working parts of other type valves and interfere with the operation of the valve. The lubricated type plug valve has the added advantages of the lubricant affording easier operation and providing a seal against leakage. Lubricants for each type of service are listed on the Lubrication Chart and must be selected in strict accordance with recommended practice.
8. Safety Valves	Safety valves are used for the protection of equipment against excessive pressure. The pressures at which the valves relieve are set by test at the Machine Shop and are based upon the normal operating pressure of the equipment that they protect. Changes in the adjustment of safety valves must never be made without specific authorization of the Foreman.

JOB BREAKDOWN

A-11

PLANT: Puget Sound
DEPARTMENT: RP&S - Docks
CLASSIFICATION: Pumper Helper B
OPERATION: A-11 Operation of Pressure Gauges

IMPORTANT STEPS	KEY POINTS
1. Bourdon Tube Type	Most pressure gauges use the principle of the Bourdon tube transmitted to an open face indicator.
2. Clean	Keep face of gauges wiped off and clean.
3. Control Inlet to Gauge	Open inlet to gauge one turn. On vibration or fluctuating pressure keep inlet pinched down to retard a wide variation; but, keep inlet open enough so that indicating pointer will show slight movement.
4. Use Proper Range	Do not use low pressure gauge for high pressure locations. Use gauge with an adequate protective range. Any time indicating pointer hits the "pin" the accuracy of the gauge is imperiled.
5. Care	When removing gauges during down periods store in a safe location. Gauge glasses are easily broken. Use wrench to remove or install. Flat jaw adjustable wrenches are best suited for this work.
6. Check Gauge	If reading correct.
7. Remove Gauge	If an acid or caustic service, wear gloves and face shield. Close off block valve, open bleeder slowly and bleed off pressure. Remove gauge slowly.
8. Install Gauge	Put gauge on - close bleeder, and open block valve slowly - check for leaks.

JOB BREAKDOWN

A-12

PLANT: Puget Sound
DEPARTMENT: RP&S - Docks
CLASSIFICATION: Pumper Helper B
OPERATION: A-12 Operation of Steam Traps

IMPORTANT STEPS	KEY POINTS
1. Function	Steam traps are used to remove condensate from the steam supply system. Condensate, if allowed to build up in the steam system, will result in "water hammer" and may cause severe damage to equipment and a dangerous hazard to personnel. Normally, condensate is routed to the drainage system, but in some sections of the plant the trap discharge is connected to a closed system for recovery and reuse.
2. Principle	Steam traps in some uses are the bucket type, open or inverted buckets. The principle of operation is similar in that as water enters the trap the bucket sinks and opens the outlet valve. When the trap is emptied, the bucket rises and closes the outlet valve. Impulse traps are used extensively.
3. Responsibility	It is the responsibility of each operator to check all steam traps for proper operation during his shift. Report to Pumper or make notation in log book of all faulty traps.
4. Test	To test operation of trap, determine whether hot or cold. If hot, open test valve or discharge and observe if intermittent discharge occurs. If continuous flow of dry steam is discharged, the trap operation is faulty. If trap is cold, operation is faulty.
5. By-Pass Trap	If steam trap is found to be faulty, it should be repaired promptly. Meanwhile, the inlet and outlet valves should be closed and the by-pass valve opened slightly to permit draining water without loss of excessive amount of steam.

JOB BREAKDOWN

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PLANT: Puget Sound
DEPARTMENT: RP&S - Docks
CLASSIFICATION: Pumper Helper B
OPERATION: A-13 Tank Fittings and Equipment

IMPORTANT STEPS	KEY POINTS
1. General Information	Many of the storage tanks in the RP&S Tank Farm here at Puget Sound have internal and external fittings which are a departure from tankage that was built several years ago. For example: Tank mixers, Automatic gauging and temperature measuring equipment, Jet mixing nozzles, motor operated valves, mixer baffles, floating roofs, cone bottoms, center line water draw offs and vertical, self-supporting flintube heaters. There are <u>No swing lines</u> in RP&S tankage, except Tk's 31 and 32.
2. Tank Mixers	Lightning, side entering mixers are provided in tanks where stratification may be expected or where agitation during heating may be advantageous. All mixer motors are 25 horsepower and are started and stopped from the switch gear near the tank.
3. Automatic Gauges	All tanks are equipped with ground level automatic gauging equipment on the side of the tank which is connected inside to a float. In addition to giving an indicated level at the tank, visible to the operator at ground level, the measurement is transmitted to the indicator panel located in the Blending Plant control room.
4. Tank Temperature	Two thermometers are provided in each tank. One thermometer is provided with a local reading (dial) on the outside shell of the tank, while the other thermometer feeds a signal into the gauging transmitter through a converter allowing remote indication of temperature on the panel located in Blending control room.

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PLANT: Puget Sound
DEPARTMENT: RP&S - Docks
CLASSIFICATION: Pumper Helper B
OPERATION: A-13 Tank Fittings and Equipment (Cont.)

IMPORTANT STEPS	KEY POINTS
5. Jet Mixing Nozzles	Jet nozzles are installed on all finished products tanks with the exception of Bunker Oil. The jets provide mixing when recirculating off-specification products for correction. The jet nozzles are provided in addition to the normal inlet nozzle and care should be exercised in their use when tank volumes are low. (Explain hazard from explosive mixture of vapors and air.) Due to blending rates, jet mixers cannot be used on gasoline tanks.
6. Water Draw-Off	Water collects in the bottom of all oil storage tanks due to condensation, entrained water from process units and receipt of ship's cargoes. Water bottoms should be kept as low as possible by drawing off frequently enough to prevent carry-over to process units and contamination of the final product when delivering to tankers and barges, tank cars and tank trucks. Special care should be taken to keep water drawn down on Diesel fuel component tankage to prevent carry-over of water to the salt filters when blending Diesel fuels. Excessive water loading of the salt filters will prevent proper brightening of Diesel fuels. Water draw-off valves are provided on all tanks. Some of our tanks have flat bottoms and some have cone bottoms sloping to a sump at the center, two types of water draw-offs are provided. For flat bottom tanks, piping

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PLANT: Puget Sound
DEPARTMENT: RP&S - Docks
CLASSIFICATION: Pumper Helper B
OPERATION: A-13 Tank Fittings and Equipment (Cont.)

IMPORTANT STEPS	KEY POINTS
6. Water Draw-Off (Cont.)	is provided inside the tank from the water draw-off valve to a point near the bottom of the shell. For cone bottom tanks, piping is provided inside the tanks from the draw-off valve to the center of the tank, terminating near the bottom of the sump. In using the draw-off valves, personnel should maintain close watch to prevent dumping of product since the valves discharge directly on the ground outside the tank.
7. Motor Operated Valves	The 24" gate valves on crude tankage for receipt of crude from Docks are motor operated, with switching gear located near the side of each tank. Special care should be exercised in the operation of these valves. As an example: When a tanker is discharging into one tank and it is known a second tank will be needed to complete the discharge, the motor on the second tank valve should be tried out to determine if the gate will open before the first tank is completely filled. Should there be a failure of the motor operator on the second tank gate, then this would give us time enough to open valve by hand or to shut the ship down and not overflow the first tank.
8. Floating Roof Tanks	A number of the tanks in RP&S have floating roofs. Evaporation losses are reduced by floating roof tanks and also help to keep the gum content low on certain unfinished products. Floating roofs are equipped with legs. When the tank is empty the roof rests on these legs from the tank bottom. The legs can be set at different heights so that roof will be high

JOB BREAKDOWN

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PLANT: Puget Sound
DEPARTMENT: RP&S - Docks
CLASSIFICATION: Pumper Helper B
OPERATION: A-13 Tank Fittings and Equipment (Cont.)

IMPORTANT STEPS	KEY POINTS
8. Floating Roof Tanks (Cont.)	enough to clear internal fittings, such as mixer blades and tank inlet nozzles, etc. The legs on a floating roof also afford a means for tank cleaning and repairs by the roof setting on the legs several feet above the bottom. When a floating roof is setting on its legs, <u>Not On Float</u> care should be exercised <u>not to pump</u> into a tank of 100,000 bbls. capacity or more at a rate in excess of 2,000 bbls. per hour until the roof is brought <u>On Float</u>. On tanks smaller than 100,000 bbls. capacity, do not pump into it at a rate exceeding 1,000 bbls. per hour until roof is brought <u>On Float</u>. Floating roof tanks are equipped with a roof drain in center of roof, connected to a "jack-knife" type ball jointed pipe inside the tank proper. This is connected to the roof drain valve, near the bottom of the shell on outside of tank.
9. Tank Heaters	Tank heaters are provided in those tanks, where the maintenance of low viscosity is essential to economical operation. Coils are provided in those tanks where heavy fouling is expected.
10. Mixer Baffles	Mixer baffles are installed under mixer blades. The baffle is a steel platform with legs sitting approximately one foot from the tank bottom. These baffles help to reduce the turbulence of the B.S.&W. in the tank bottom when mixers are being operated.

(For additional information on description & details of "Tank Fittings", see RP&S Operating Manual).

JOB BREAKDOWN

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PLANT: Puget Sound
DEPARTMENT: RP&S - Docks
CLASSIFICATION: Pumper Helper B
OPERATION: A-14 Hose Handling Procedure

IMPORTANT STEPS	KEY POINTS
1. Purpose of Hose	Flexible hose is used to connect lines on the ship or barge to the lines on the dock. This flexible hose connector allows a limited movement of the vessel while at berth due to wind, tide and change in draft.
2. Proper Handling	Proper care and handling of cargo hose will insure long and trouble free service. The following are essential rules which will prolong the useful life of the hose: a. When hose is being installed in the hose structures on dock such as replacement, etc. dollies or carriage to move the hose should be used. Never drag a cargo hose. b. There should be at least three supports for each hose suspension in the hose structure. c. After the hose is bolted to the dock riser and when not in use, the top end of the hose is to be fastened with a safety chain on the top side of hose structure. d. Never lift hose from the middle with both ends hanging down. This practice will damage both inside lining and outside covering. e. Limit the curvature of the hose to one ft. diameter to each inch of hose size. Example: an 8" hose should not be bent to less than eight feet inside diameter. f. The hose when connected should have ample slack with the curvature evenly distributed over the full length.

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PLANT: Puget Sound
DEPARTMENT: RP&S - Docks
CLASSIFICATION: Pumper Helper B
OPERATION: A-14 Hose Handling Procedure (Cont.)

IMPORTANT STEPS	KEY POINTS
2. Proper Handling (Cont.)	g. When lowering hose from hose structure to deck of vessel have enough slack on the lower saddle connections so that the top boom will not lower the hose straight down causing excessive bending. h. Avoid subjecting hose to unnecessary pressure by making sure line-up is set right before starting to load or discharge cargo. <u>Never close off against a hose unless it is an emergency.</u> i. Do not allow hose to rub against hose structure, against any part of the ship or against another hose in structure. j. Watch changes in ship's elevation and adjust hose supports to eliminate kinks, sharp bends to keep curvature evenly distributed. k. (On-the-job training will be given in Hose Handling Procedure).

JOB BREAKDOWN

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PLANT: Puget Sound
DEPARTMENT: RP&S - Docks
CLASSIFICATION: Pumper Helper B
OPERATION: A-15 Marine Terminology

IMPORTANT STEPS	KEY POINTS
1. General Information	The meaning of certain terms and words used by ship's personnel in connection with operations peculiar to the ship or barge and docks should be understood by all dock operators.
2. <u>Terms - Gear and Equipment</u>	<u>FORWARD</u>: In the direction of the front or bow of a vessel. <u>AFT</u>: The after part or stern of a vessel. The AFT or after part of a tanker will contain the Chief Engineers quarters as well as the Asst. Engineers and crew quarters, mess halls, galley, engine and boiler rooms, and pump room. <u>MIDSHIPS</u>: The middle part of a vessel and in the case of tankers are the quarters for the Master (Captain), Mates and Radio Operator, built above the deck of the ship. <u>WHEEL HOUSE</u>: This is found on the top deck, "midships" from where the vessel is controlled or navigated. <u>BRIDGE</u>: An elevated platform midships built forward and above the officers quarters, extending the full width of the ship's beam. Master, Mate and Pilot generally use bridge of ship while docking or undocking and while navigating a vessel in close quarters. <u>BEAM</u>: The widest part across the ship from Port to Starboard sides at Midships. <u>STARBOARD</u>: The right side of the vessel. <u>PORT</u>: The left side of the vessel. <u>AHEAD</u>: Used when the vessel is moved Forward.

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PLANT: Puget Sound
DEPARTMENT: RP&S - Docks
CLASSIFICATION: Pumper Helper B
OPERATION: A-15 Marine Terminology (Cont.)

IMPORTANT STEPS	KEY POINTS
2. <u>Terms - Gear and Equipment</u> - (Cont.)	<u>ASTERN</u>: Used when the vessel is moved in reverse. <u>LINE</u>: A hawser or cable used in mooring a vessel. There are a number of lines at different sections of a ship used for mooring purposes. These lines are: head, stern, spring, breast and heaving lines. <u>BITT</u>: Usually a specially constructed steel post anchored to the deck of the vessel or on Docks, about 3 feet high, used to secure ship's lines. <u>GANGPLANK</u>: A long narrow movable platform, or bridge, used in boarding or leaving a vessel. <u>BOOM</u>: A long pole or spar extending outward from a mast used to support hoisting gear. <u>TOP THE BOOM</u>: To place the boom at the correct angle in order to raise, lower or support cargo hose gear and other equipment. <u>BRIDLE</u>: Used in connection with a boom aboard ship or in the hose structure on dock to help separate and support hose, gear and other equipment. <u>ULLAGE</u>: The gauge taken on tanker and barge cargo tanks to determine amount of cargo. The ullage gauge measures the amount of empty space in cargo tanks, as ship and barge tables for capacities are calculated on the ullage basis. <u>BUNKERS</u>: Fuel oil aboard ship for burning in boilers.

JOB BREAKDOWN

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PLANT: Puget Sound
DEPARTMENT: RP&S - Docks
CLASSIFICATION: Pumper Helper B
OPERATION: A-15 Marine Terminology (Cont.)

IMPORTANT STEPS	KEY POINTS
2. <u>Terms - Gear and Equipment -</u> (Cont.)	<u>JACOBS-LADDER</u>: A Wire or rope ladder placed over ship's side usually to allow pilot to board or leave the vessel in open waters or in the channel. <u>"SPOT" THE SHIP</u>: Berthing in the desired position for convenient connection of cargo hose, etc. <u>DRAFT</u>: The depth the vessel sinks in the water usually marked on the bow and stern of the ship in feet. <u>BALLAST</u>: Tanker ships without sufficient cargo, use water to improve stability and control of draft of the vessel. This ballast water will be discharged into dock ballast line prior to starting loading. <u>CENTER TANKS</u>: The main cargo tanks of a tanker, when extended from forward to near the after part of the vessel. Their position is designated by numbers, starting forward. <u>SUMMER OR WING TANKS</u>: Are those tanks on either port or starboard side of the center tanks. <u>STRIPPING</u>: When a ship is pumping at a slow rate, "stripping" all of the product from tank bottoms into the main discharge header in order to pump the ship "Dry" or empty. <u>CAPTAIN OR MASTER</u>: The captain is in full charge of all activities aboard ship. He signs the ships tender, notice of readiness and the bills of lading.

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PLANT: Puget Sound
DEPARTMENT: RP&S - Docks
CLASSIFICATION: Pumper Helper B
OPERATION: A-15 Marine Terminology (Cont.)

IMPORTANT STEPS	KEY POINTS
2. <u>Terms - Gear and Equipment</u> - (Cont.)	<u>MATES 1st, 2nd and 3rd:</u> The first mate (called "the Mate") plans and directs the loading and discharge of cargo. Attends to keeping mooring lines properly secured and is in direct contact with the Dock Operator. The mate signs for all ullages taken on cargo tanks and issues the all tanks "Dry" Notice. The Second and Third Mates may take over the above mentioned duties to relieve the First Mate. <u>CHIEF ENGINEER - 1st, 2nd and 3rd Asst's:</u> The Chief Engineer or his assistants attend to receiving of bunker fuel and fresh water. The R-67-A Receipt for fuel and water will be signed by the Chief Engineer or one of his Asst. Engineers.

JOB BREAKDOWN

A-16
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PLANT: Puget Sound
DEPARTMENT: RP&S - Docks
CLASSIFICATION: Pumper Helper B
OPERATION: A-16 Docks Resume

IMPORTANT STEPS	KEY POINTS
1. General Information	The Dock proper is an "L" head timber structure, extending from a causeway approximately 5600 feet north of "end dock" at Crandell Spit. The Dock proper is 640 feet long X 104 feet wide with a 14 foot roadway along north side of center line and a 40 foot well for pipeway through the center, servicing the three berth spots. The outside face of the Dock is dredged to a depth of 50 feet to accommodate up to 85,000 D.W.T. tankers. These large ships will arrive loaded with crude and since the larger tankers can berth at the outside face of the Dock, naturally smaller tankers such as a T-2 type can also be handled at this spot. This is known as No. 1 Berth and is equipped with connections to discharge crude and ballast, and to load any finished product for shipment. The shore side, or No. 2 Berth can accommodate a T-2 size tanker or a barge, equipped with connections to load all finished products and the discharge of ballast. No. 3 Berth on shore side, next to No. 2 Berth will accommodate one barge (only). Connections are available to load all finished products and discharge ballast.
2. Equipment	Nos. 1 and 2 Berths are equipped with cargo hose and hose structures with all necessary cables, supports, winches, etc. to raise, lower, connect, and disconnect hose to and from vessels. The barge or No. 3 Berth is equipped with a monorail for chain falls to handle barge hose. No cargo hose is provided at the barge berth as barges carry their own hose.

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PLANT: Puget Sound
DEPARTMENT: RP&S - Docks
CLASSIFICATION: Pumper Helper B
OPERATION: A-16 Docks Resume (Cont.)

IMPORTANT STEPS	KEY POINTS
2. Equipment (Cont.)	There is an air compressor with receiving tank on the Dock to supply air for winches on hose structures and power winches at the bitts for hawser handling. Two centrifugal pumps and meters are on Dock to inject Petrox into the premium and regular gasoline lines. A small vertical sump pump to handle hose drainage and washdown is installed and connects into ballast line. A "sending" scraper trap is connected into the 30" crude line for use of a "Pig" when necessary to free the inside walls of the crude receiving lines of wax, etc. Fresh water connections are provided at Nos. 1 and 2 Berths. A Dock office is located on No. 2 Berth platform opposite No. 1 Berth. This building contains office space with 2 desks, wash and toilet facilities, and a utility room for miscellaneous fittings, slings, etc., for connecting hose. The Dock office will also house a telephone. "Panic Switches" located at two levels at Nos. 1 and 2 Berths and one at No. 3 Berth enable the Dock operator to shut down all shipping pumps in case of an emergency, such as hose failure, overflowing of ships' tanks or should vessel drift away from Dock. Space is provided adjacent to the Dock office area for parking of a truck trailer of 3,000 gallon capacity. Petrox will be delivered to the Dock from storage on shore via this truck trailer.

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PLANT: Puget Sound
DEPARTMENT: RP&S - Docks
CLASSIFICATION: Pumper Helper B
OPERATION: A-16 Docks Resume (Cont.)

IMPORTANT STEPS		KEY POINTS
3.	Product Loading Facilities	The following product and utility lines are in the pipeway on Dock, sized to deliver the specified volume of products and utilities to the three berths.
	<u>PRODUCT</u>	<u>LINE SIZE</u> <u>RATE OF FLOW</u>
	Premium Gasoline	14" 7,270 bbl./hr.
	Regular Gasoline	14" 7,270 bbl./hr.
	Avjet	8" 2,220 bbl./hr.
	Avjet	8" 2,220 bbl./hr.
	448 Diesel	8" 2,000 bbl./hr.
	454 Diesel	8" 2,000 bbl./hr.
	Burner Oil	8" 2,140 bbl./hr.
	Fuel Oil 840 (Bunker)	12" 4,000 bbl./hr.
	Crude	30" 35,000 bbl./hr.
	Ballast	16" 5,700 bbl./hr.
	Effluent	24" 11,400 bbl./hr.
	Drinking Water	6" 500 bbl./hr.
	Steam	6" ---

4. Connections at Ship and Barge Berths The following risers, equipped with hose handling equipment are provided.

No. 1 Berth

<u>No.</u>	<u>Hose</u>	<u>Line Size</u>	<u>Product</u>
5		12"	Steam traced crude oil unloading risers.
1		12"	Ballast line connected to one 12" crude riser.
1		8"	Premium gaso. riser.
1		8"	Regular gaso. riser.
2		8"	448 Diesel Fuel
		8"	454 Diesel
		8"	Burner Oil

*These three risers are manifolded to two hoses so that two products can be loaded simultaneously.

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PLANT: Puget Sound
DEPARTMENT: RP&S - Docks
CLASSIFICATION: Pumper Helper B
OPERATION: A-16 Docks Resume (Cont.)

IMPORTANT STEPS		KEY POINTS	
4. Connections at Ship and Barge Berths (Cont.)	<u>No. Hose</u>	<u>Line Size</u>	<u>Product</u>
	1	* { 8" 8"	Avjet Avjet
*These two risers are manifolded to one hose.			
	1	12"	Ballast line to one 12" crude riser. Hose used for either crude or ballast.
	1	8"	Steam traced Bunker Oil No. 840 riser.
		1½"	Petrox lines to regular & premium gasoline risers.
		4"	Metered drinking water riser.
		1½"	Air line for hose handling hoists.
<u>No. 2 Berth</u>			
	1	8"	Premium gasoline.
	1	8"	Regular gasoline.
	2	* { 8" 8"	448 Diesel Fuel 454 Diesel
		8"	Burner Oil
*These three risers are manifolded to two hoses so that two products can be loaded simultaneously.			
	1	* { 8" 8"	Avjet Avjet
*These two risers are manifolded to one hose.			
	1	8"	Steam traced Bunker Oil No. 840 riser.
	1	8"	Ballast water riser.
		1½"	Petrox lines connected to reg. & prem. gaso. risers.

JOB BREAKDOWN

A-16
Page 5

PLANT: Puget Sound
DEPARTMENT: RP&S - Docks
CLASSIFICATION: Pumper Helper B
OPERATION: A-16 Docks Resume (Cont.)

IMPORTANT STEPS	KEY POINTS		
	Nos. Hose	Line Size	Product
4. Connections at Ship and Barge Berths (Cont.)		4"	Meter drinking water riser.
		1½"	Air line for hose handling hoists.

No. 3 Berth

No hose provided for product loading.

Line Size	Product
1-6"	Premium Gasoline
1-6"	Regular Gasoline
1-6"	454 Diesel
1-6"	431 Burner Oil
1-6"	Avjet A-1
1-6"	Avjet A-1
1-6"	448 Diesel
1-6"	840 Bunker Fuel Steam traced
1-4"	Ballast water riser
1-6"	Slop riser is provided

Other detailed equipment is installed on the Docks and this type of equipment will be thoroughly explained during "On The Job Training".

JOB BREAKDOWN

A-17
Page 1

PLANT: Puget Sound
DEPARTMENT: RF&S - Docks
CLASSIFICATION: Pumper Helper B
OPERATION: A-17 Blending Plant Resume

<u>IMPORTANT STEPS</u>	<u>KEY POINTS</u>
1. Scope	The following information describes in general the basic design of continuous automatic in-line blending facilities utilizing Proportioneers Inc. control equipment for simultaneous blending of the following products. Low Lead or Premium Gasoline including TEL & Dye. Regular Gasoline including TEL & Dye. One grade of Jet Fuel or Burner Oil. Either of two grades of Diesel fuel or one grade of Burner Oil including additive.
2. General	a. <u>Blending Pump Pad</u> contains component blending pumps. b. <u>Additive Pump Pad</u> contains TEL educator pumps, additive tank car or truck unloading pumps and dye and additive injection pumps. c. <u>TEL and Blend Control Building</u> contains two 8,500 gal. weigh tanks for TEL unloading and blending separated from a wash room, dye room and a control room containing remote valve and gauging equipment and Proportioneers Inc. blending control panel equipment. TEL unloading facilities are designed primarily for unloading from tank car with alternate unloading from tank truck. d. <u>Storage Tanks</u> for dye stock solutions and additives about 100 ft. away from TEL building. e. <u>Salt Filters</u>, two, size 12 ft. X 15 ft. for brightening Diesel fuels and Burner oil on the way to storage from blending.

JOB BREAKDOWN

A-17
Page 2

PLANT: Puget Sound
DEPARTMENT: RP&S - Docks
CLASSIFICATION: Pumper Helper B
OPERATION: A-17 Blending Plant Resume (Cont.)

IMPORTANT STEPS	KEY POINTS
2. General (Cont.)	f. <u>Continuous In-Line Blending</u> is used to combine the various components into the finished products. There are pumps for each component, all of which operate in parallel and discharge into the product header. The flow rate of each component into the header as measured by a displacement meter is controlled by a control valve operating from a differential unit located in the control room automatically maintaining the displacement meter flow rate at its correct pre-set flow. The displacement meter flow rate is transmitted electrically to the board and in return a pneumatic signal is sent to the control valve. g. <u>Proportioners Panel Equipment</u> designated as FB-2 with system shutdown on high and low flow limits is used in this plant design. Panel control equipment consists of four master panels with TEL controls on gasoline panels, ten gasoline component panels, two jet fuel component panels, four diesel fuel component panels and six pump panels. h. <u>Displacement Meter Accuracy</u> will be checked by a permanently located proving meter. i. <u>Finished Blends</u> are delivered to the tank farm. Manifolding is provided for recirculating finished products thru the blending system by means of the shipping pumps in order to alter or correct the blend's composition, if necessary. j. <u>Two Continuous Proportional Samplers</u> are provided for gasolines.

JOB BREAKDOWNA-17
Page 3

PLANT: Puget Sound
DEPARTMENT: RP&S - Docks
CLASSIFICATION: Pumper Helper B
OPERATION: A-17 Blending Plant Resume (Cont.)

IMPORTANT STEPS	KEY POINTS												
3. Product Blending	The following table shows the pumps used for gasoline blending.												
a. Regular Gasoline	<table><tr><th>Pump No.</th><th>Size GPM</th></tr><tr><td>Lt CR 24-N-G41</td><td>700</td></tr><tr><td>Hvy FC & Lt CR 24-N-G2</td><td>560</td></tr><tr><td>Lt FC & Hvy SR(DS) 24-N-G44</td><td>85</td></tr><tr><td>Butane 24-N-G35</td><td>140</td></tr><tr><td>Lt FC & Hvy SR(DS) 24-N-G6</td><td>150</td></tr></table>	Pump No.	Size GPM	Lt CR 24-N-G41	700	Hvy FC & Lt CR 24-N-G2	560	Lt FC & Hvy SR(DS) 24-N-G44	85	Butane 24-N-G35	140	Lt FC & Hvy SR(DS) 24-N-G6	150
Pump No.	Size GPM												
Lt CR 24-N-G41	700												
Hvy FC & Lt CR 24-N-G2	560												
Lt FC & Hvy SR(DS) 24-N-G44	85												
Butane 24-N-G35	140												
Lt FC & Hvy SR(DS) 24-N-G6	150												
b. Premium Gasoline	<table><tr><td>Lt FC & Lt CR 24-N-G4</td><td>380</td></tr><tr><td>Hvy CR, Hvy FC & Alkylate 24-N-G5</td><td>325</td></tr><tr><td>Lt FC & Alkylate 24-N-G1</td><td>420</td></tr><tr><td>Lt CR & Butane 24-N-G7</td><td>150</td></tr><tr><td>Lt CR & Butane 20-N-G43</td><td>140</td></tr></table>	Lt FC & Lt CR 24-N-G4	380	Hvy CR, Hvy FC & Alkylate 24-N-G5	325	Lt FC & Alkylate 24-N-G1	420	Lt CR & Butane 24-N-G7	150	Lt CR & Butane 20-N-G43	140		
Lt FC & Lt CR 24-N-G4	380												
Hvy CR, Hvy FC & Alkylate 24-N-G5	325												
Lt FC & Alkylate 24-N-G1	420												
Lt CR & Butane 24-N-G7	150												
Lt CR & Butane 20-N-G43	140												
c. Jet Fuel Blending	The following table shows the pumps used for jet fuel blending.												
d. Jet Fuel	<table><tr><td>Jet Distillate D.S. 24-N-G40</td><td>240</td></tr><tr><td>Dsl. Dist. D.S. 24-N-G13</td><td>100</td></tr></table>	Jet Distillate D.S. 24-N-G40	240	Dsl. Dist. D.S. 24-N-G13	100								
Jet Distillate D.S. 24-N-G40	240												
Dsl. Dist. D.S. 24-N-G13	100												
e. Diesel Fuel and Burner Oil Blending	The following table shows the pumps used for burner oil and diesel blending.												
f. Burner Oil	<table><tr><td>Burner Oil Dist-DS 24-N-G20</td><td>400</td></tr><tr><td>Diesel Dist D.S. 24-N-G21</td><td>500</td></tr><tr><td>Diesel Dist. D.S. 24-N-G13</td><td>100</td></tr><tr><td>Burner Oil Dist DS 24-N-G40</td><td>240</td></tr></table>	Burner Oil Dist-DS 24-N-G20	400	Diesel Dist D.S. 24-N-G21	500	Diesel Dist. D.S. 24-N-G13	100	Burner Oil Dist DS 24-N-G40	240				
Burner Oil Dist-DS 24-N-G20	400												
Diesel Dist D.S. 24-N-G21	500												
Diesel Dist. D.S. 24-N-G13	100												
Burner Oil Dist DS 24-N-G40	240												
g. 454 Diesel	<table><tr><td>FCCU Lt CGO (24-N-G19</td><td>400</td></tr><tr><td>(24-N-G20</td><td>400</td></tr><tr><td>Dsl. Dist. 24-N-G21</td><td>500</td></tr></table>	FCCU Lt CGO (24-N-G19	400	(24-N-G20	400	Dsl. Dist. 24-N-G21	500						
FCCU Lt CGO (24-N-G19	400												
(24-N-G20	400												
Dsl. Dist. 24-N-G21	500												

JOB BREAKDOWN

A-17
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PLANT: Puget Sound
DEPARTMENT: RP&S - Docks
CLASSIFICATION: Pumper Helper B
OPERATION: A-17 Blending Plant Resume (Cont.)

IMPORTANT STEPS		KEY POINTS	
3. Product Blending (Cont.)	h. <u>448 Diesel</u>	Pump No.	Size GPM
	Burner Oil Dist DS	<u>24-N-G18</u>	100
	FCCU Lt CGO	24-N-G20	400
	Diesel Dist.	24-N-G21	500
	Diesel Dist D.S.	24-N-G19	200

4. Additives

a. TMX-50 Lead Compound

The TEL Plant is designed to meet Dupont and Ethyl Corporation requirements. Currently, Dupont TMX-50 is being used as a direct replacement for tetraethyl lead.

The plant facilities are designed on a basis of two 8,500 gal. weigh tanks to be filled from tank cars located on an adjacent railroad spur tract.

The TEL equipment is designed to add a maximum of 3 c.c. TEL per gallon of gasoline at a blending rate of 800 GPM. Lead addition is not accurate when blending regular gasoline at 1500 GPM and premium at 1200 GPM.

The addition of TEL to the blending stream is controlled by means of a Proportioneer's Inc. "Loss-in-Weight" control system. This system utilizes a venturi meter in the blended gasoline header coupled to a "Chronoflo" transmitter which sends an electrical signal to the "Loss-in-Weight" control mechanism. This mechanism positions a control valve located in the TEL eductor suction line in such a manner that the flow of TEL compound to the eductor is proportional to the blended gasoline flow rate and at the concentration (C.C. per gal.) selected on the "speed changer dial". The TEL eductor pump takes suction on the

JOB BREAKDOWN

A-17
Page 5

PLANT: Puget Sound
DEPARTMENT: RP&S - Docks
CLASSIFICATION: Pumper Helper B
OPERATION: A-17 Blending Plant Resume (Cont.)

<u>IMPORTANT STEPS</u>	<u>KEY POINTS</u>
4. Additives (Cont.)	gasoline line and sends a 110 GPM stream to the eductor where it picks up the TEL compound and returns to the gasoline line.

b. Gasoline Dyes
Red and copper dye solutions are batched and stored in 330 bbl. tanks. The red dye solution is made by blending red liquid dye with Heavy CR gasoline. Copper dye solution is made by blending yellow liquid dye and red liquid dye with Hvy CR gasoline. The dye solutions are used in products as follows:

Premium
Red Dye 0.422# per 1,000 bbls.
TMD 2.0# per 1,000 bbls.

Regular
Red Dye 0.258# per 1,000 bbls.)*
Yellow Dye 0.423# per 1,000 bbls.)
TMD 1.0# per 1,000 bbls.
*For copper mix.

Yellow dye solution is blended in Tank 64 (181 bbls.) by mixing yellow liquid dye with Heavy CR gasoline. This dye is used as follows:

Low Lead Texaco
Yellow Dye 0.875# per 1,000 bbls.
TMD 2.0# per 1,000 bbls.

An eductor draws the liquid dye from its shipping container into the CRU gasoline and is discharged into the dye tank through a jet mixing nozzle. The proportions of dye and CRU gasoline are maintained during mixing by the use of the platform scale and a tank float gauge.

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JOB BREAKDOWN

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PLANT: Puget Sound
DEPARTMENT: RP&S - Docks
CLASSIFICATION: Pumper Helper B
OPERATION: A-17 Blending Plant Resume (Cont.)

IMPORTANT STEPS	KEY POINTS										
4. Additives (Cont.)	The dye solutions are injected by means of Proportioners EDB blenders. c. <u>448 Diesel</u> will be injected with <u>Texaco Rust Inhibitor 8410</u> at the rate of 2 gals. per 1,000 bbls. of product. d. <u>454 Diesel</u> will be injected with: <table><tr><td>Texaco Rust Inhibitor 8410</td><td>2 gals/1000 bbls.</td></tr><tr><td>Dupont Fuel Oil Additive No. 3</td><td>4.0 gals/1000 bbls.</td></tr><tr><td>Texaco Metal Deactivator</td><td>.473 gals/1000 bbls.</td></tr><tr><td>#543 Amoco Pour Depressant</td><td>12.3 gals/1000 bbls.</td></tr></table> e. <u>Burner Oil</u> will be injected with: <table><tr><td>Texaco Rust Inhibitor 8410</td><td>4 gals/1000 bbls.</td></tr></table> f. <u>Receipt of Additives</u> is either by tank cars or tank trucks and transferred to bulk storage by unloading pumps. Petrox is taken to the Dock by tank truck for blending into all gasolines being loaded in tankers and barges, whenever required. Petrox and exchange additives are pumped to tank car and tank truck loading and dribble blended into gasolines thru meters at the rate outlined in RP&S Additive Instruction Book.	Texaco Rust Inhibitor 8410	2 gals/1000 bbls.	Dupont Fuel Oil Additive No. 3	4.0 gals/1000 bbls.	Texaco Metal Deactivator	.473 gals/1000 bbls.	#543 Amoco Pour Depressant	12.3 gals/1000 bbls.	Texaco Rust Inhibitor 8410	4 gals/1000 bbls.
Texaco Rust Inhibitor 8410	2 gals/1000 bbls.										
Dupont Fuel Oil Additive No. 3	4.0 gals/1000 bbls.										
Texaco Metal Deactivator	.473 gals/1000 bbls.										
#543 Amoco Pour Depressant	12.3 gals/1000 bbls.										
Texaco Rust Inhibitor 8410	4 gals/1000 bbls.										
5. Chemicals	a. <u>Rock Salt</u> will be used as the coalescer packing for the salt filters. It is estimated that 27.3 tons will be required per vessel and that there will be two complete changeovers per year for each vessel. Salt will be supplied from 100# bags.										

JOB BREAKDOWN

A-17
Page 7

PLANT: Puget Sound
DEPARTMENT: RP&S - Docks
CLASSIFICATION: Pumper Helper B
OPERATION: A-17 Blending Plant Resume (Cont.)

IMPORTANT STEPS	KEY POINTS
6. Conclusion	The preceding information is a general description of the functions of the Blending Plant. The details will be given in the Job Breakdown for on the job training.

JOB BREAKDOWN

A-18
Page 1

PLANT: Puget Sound
DEPARTMENT: RP&S - Docks
CLASSIFICATION: Pumper Helper B
OPERATION: A-18 Liquified Petroleum Gases

IMPORTANT STEPS	KEY POINTS
1. General Information	L.P.G. (Liquified Petroleum Gases, Butane, Iso-butane, Propane and high vapor pressure unsaturates) are stored and shipped in specially constructed vessels (spheroids), tank cars and tank trucks.
2. Safety Precautions	Liquified Petroleum Gases are products which vaporize readily, and which must be kept under pressure to retain and handle them in a liquid form. As soon as pressure is released these liquids form gases, which are very similar to natural gas, although much heavier. <u>GREAT CARE MUST BE EXERCISED TO HAVE ALL TANK CONNECTIONS, TANK CAR AND TANK TRUCK FITTINGS MADE UP TIGHT BEFORE TRANSFERRING OR LOADING L.P.G.</u> Some valves on the L.P.G. system are the lubricated plug type cock. All cocks are to be kept properly conditioned and lubricated to prevent leaks. It must be remembered that vapor from L.P.G. is heavy and may travel long distances along the ground. <u>THESE GASES WILL ACCUMULATE IN LOW SPOTS, PITS OR SUMPS NEARBY. THEREFORE, UNDER SUCH CONDITIONS, THE AREA IS TO BE BLOCKED OFF AND DANGER SIGNS PUT UP UNTIL SUCH GAS AND VAPORS HAVE DISSIPATED.</u> <u>DO NOT PARK OR OPERATE A MOTOR VEHICLE WITHIN 100 FEET OF AN L.P.G. TANK CAR OR TANK TRUCK WHILE LOADING OR UNLOADING, OR MAKING, OR BREAKING OF HOSE CONNECTIONS.</u>

JOB BREAKDOWN

A-18
Page 2

PLANT: Puget Sound
DEPARTMENT: RP&S - Docks
CLASSIFICATION: Pumper Helper B
OPERATION: A-18 Liquefied Petroleum Gases (Cont.)

IMPORTANT STEPS	KEY POINTS
3. Odorant	L.P.G. is odorless, consequently it must be treated with a strong odorant for safety. The adopted standard for odorant is one pound of Ethyl Mercaptan for each 10,000 gals. L.P.G. A small drum is provided on the tank car and also on the tank truck rack for the odorant with connections into the liquid loading lines. The odorant drum is to be charged with necessary Ethyl Mercaptan with connections on drum closed off before loading starts.
4. Spheroids	A sphere tank is a pressure type vessel, built of extra heavy steel plate and equipped with special equipment. The relief valves on top of sphere are set at 75 p.s.i. in order to keep L.P.G. in a liquid state. There are five such spheres here at Puget Sound Works. Four 12,000 bbls. spheres serve to handle the Butane and Iso-butane production from the unit area and one 5,000 bbl. sphere to store Propane (L.P.G.) for shipment in tank cars and tank trucks. This is Sp 108. PRV's are set at 95#. Refer to "Sample Spheroids" Job Breakdown on special equipment, etc.
5. Tank Cars	L.P.G. tank cars do not have expansion domes or bottom outlets, and all connections for loading and unloading, sampling, safety relief valve, gauging and temperature devices are located under a protective housing at top center of the tank car.

JOB BREAKDOWN

A-18
Page 3

PLANT: Puget Sound
DEPARTMENT: RP&S - Docks
CLASSIFICATION: Pumper Helper B
OPERATION: A-18 Liquefied Petroleum Gases (Cont.)

IMPORTANT STEPS	KEY POINTS
5. Tank Cars (Cont.)	An L.P.G. car is never to be loaded over 92.5% to 95% of total water capacity, as it is necessary to leave outage, or room in the car to allow for expansion due to an increase in temperature. Outage is the difference between the liquid in the tank and the tank capacity when completely full.
6. Tank Trucks	L.P.G. tank trucks are of various sizes up to approximately 8,000 gallons. The gauging, loading, etc. devices are similar to those on an L.P.G. tank car. However, these connections are usually found at the rear of the truck. The trucks do not have an expansion dome and are to be loaded <u>only</u> to the capacities as outlined in the tank truck loading tables. Tank truck motors are to be stopped as soon as the truck is spotted at the loading rack and motors are not to be started up while trucks are being loaded, or while breaking hose connections, or while any venting is taking place.
7. Loading Hose	The hose used to load L.P.G. are a special type, flexible rubber covered, equipped with Boss connections. The liquid and vapor hose for loading tank cars are 2" size. Those for tank trucks are 2" and 1" size. This hose can also be used to unload tank cars and tank trucks. No hose should be connected to tank cars or trucks until it is established that brakes are set or wheels blocked.

JOB BREAKDOWN

A-19
Page 1

PLANT: Puget Sound
DEPARTMENT: RP&S - Docks
CLASSIFICATION: Pumper Helper B
OPERATION: A-19 Transmountain Pipe Line

IMPORTANT STEPS	KEY POINTS
1. General Information	The Transmountain Pipe Line running through a part of the refinery, has a take-off at the north end of the tank farm, near tank TK-3. A 16" line from that point is connected to the Transmountain take-off and runs to TK 1-2-3 and 15, and interconnects with our crude receiving system from the dock at the crude booster pump.
2. Purpose of Line	This 16" system is installed to receive Canadian crude. South of tank TK-3, the 6"-O-236, recovered oil line connects into the 16" system. Therefore, the 16" line affords a means of receiving recovered oil from the Effluent area and relieving tanks TK-12 and 13, off test and blow down when necessary.
3. Canadian Crude Receipt	The receipt of Canadian Crude thru the Transmountain line will be handled by the RP&S Department and the Transmountain Pipe Line people. In this connection it will be necessary to witness gauge receiving tanks with US Customs and seal closed certain valves as Canadian Crude is considered foreign oil. It is most important that the RP&S Dept. keep in close contact with the Transmountain Gauger, before, during and immediately after a crude receipt. Close attention is to be given to opening and closing gauges and temperatures on receiving tanks. It must be remembered that the company is paying duty on this crude and correct quantities received are most important. Do not break any tank gates seals until customs has given permission.

JOB BREAKDOWN

A-19
Page 2

PLANT: Puget Sound
DEPARTMENT: RP&S - Docks
CLASSIFICATION: Pumper Helper B
OPERATION: A-19 Transmountain Pipe Line (Cont.)

IMPORTANT STEPS	KEY POINTS
3. Canadian Crude Receipt (Cont.)	The step by step procedure to be followed when receiving via Transmountain Pipe Line will be covered during on-the-job training.

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JOB BREAKDOWN

A-20

PLANT: Puget Sound
DEPARTMENT: RP&S - Docks
CLASSIFICATION: Pumper Helper B
OPERATION: A-20 Departmental Operating Manual

IMPORTANT STEPS	KEY POINTS
1. General Information	An operating Manual has been prepared, covering the procedures to be followed in each phase of the operation of the RP&S-Docks Department. In order to thoroughly understand operations of the Department, it will be necessary to read and study the manual. During initial training, manuals will be issued to various personnel for training purposes. When training is completed, the manual will be available for reference at all times.

JOB BREAKDOWN

A-21

PLANT: Puget Sound
DEPARTMENT: RP&S - Docks
CLASSIFICATION: Pumper Helper B
OPERATION: A-21 First Aid Training

IMPORTANT STEPS	KEY POINTS
1. General Information	A First Aid Course will be given each employe during his training period. This training will be scheduled by your supervisor and conducted under the supervision of the Safety Department as a part of your job. This training will include: a. Artificial Respiration b. Control of Bleeding c. Treatment For Shock d. Treatment For Burns

JOB BREAKDOWN

A-22
Page 1

PLANT: Puget Sound
DEPARTMENT: RP&S - Docks
CLASSIFICATION: Pumper Helper B
OPERATION: A-22 Receipt of Foreign Crude

IMPORTANT STEPS	KEY POINTS
1. Foreign Crude Oil	The United States Government requires a duty to be paid on each barrel of foreign crude received at Puget Sound Plant, either by tanker or pipe line. Therefore, before receipt of a foreign crude cargo, a U.S. Custom's Inspector will witness gauge (by hand) opening and closing on any tank outlined to receive foreign crude and will seal off tank valves and line valves to be kept in the closed position, not to be used in connection with any single receipt of crude. The valve seals are not to be broken until an OK is given to do so by the Custom's Inspector.
2. Tanker Receipts	Before a crude tanker arrives, the Custom Inspector will be notified in time to open gauge RP&S tankage. When the Custom's Officer arrives in the plant, he will be given an outline of our proposed handling of the cargo. The RP&S Pumper will then assist the Custom's Officer to apply the various seals. Example: If the ship is to discharge into TK 1 and 2 and the V.P.S. is charging from TK 3, seal off the 24" tank gate on 30" crude receiving line at TK 3 and the 16" tank gates on Transmountain line at TK 1-2 and 3 and TK 15. Seal off the gates on the 12" crude charge line at TK 1 and 2. Since the 454 Diesel line and 6" slop lines tie into the sending trap header on crude line at docks, it will be necessary to seal off these two connections. From the above outline the tanker cargo can be directed into TK 1 and 2 thru the 30" crude line by opening the 24" valve on either tank with all inter-connecting lines and valves sealed off, with the V.P.S. charging from TK 3.

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JOB BREAKDOWN

A-22
Page 2

PLANT: Puget Sound
DEPARTMENT: RP&S - Docks
CLASSIFICATION: Pumper Helper B
OPERATION: A-22 Receipt of Foreign Crude (Cont.)

IMPORTANT STEPS	KEY POINTS
3. Transmountain Receipts	When a crude receipt is scheduled for delivery from Transmountain Pipe Line, the Custom's Officer is to be given an outline of the proposed handling. Receiving tankage is to be "Hand Gauged" and witnessed by the Customs. Various valves on our crude system are to be sealed during the delivery. Example: If TK-2 is selected to receive from Transmountain and the V.P.S. is charging from TK-1, the following valves are to be sealed in the closed position. 16" gates on Transmountain Line on TK-1, 3 and 15. 24" gate (off 30" receiving line) on TK-2. 12" gate (charge line) on TK-2. 6" gate on O-236 line (recovered oil) where this line ties into the 16" Transmountain line, south of TK-3. 12" gate on receiving pig trap bypass in tank farm. From the example described above, the Transmountain delivery can be directed into TK-2 by opening the 16" tank gate with the necessary interconnecting lines and valves sealed off with VPS charging from TK-1. Transmountain will handle the sealing and operation of their block valve.

JOB BREAKDOWN

A-22
Page 3

PLANT: Puget Sound
DEPARTMENT: RP&S - Docks
CLASSIFICATION: Pumper Helper B
OPERATION: A-22 Receipt of Foreign Crude (Cont.)

IMPORTANT STEPS	KEY POINTS
4. Things to Avoid	The following "Do Nots" are important when handling foreign crude receipts. 1. <u>Do Not</u> start receiving unless Customs or Transmountain Gauger has witness gauged receiving tankage and interconnecting tanks are sealed off. 2. <u>Do Not</u> break a seal where applied on any valve unless Customs or Transmountain has given O.K. 3. <u>Do Not</u> pump out of or into a crude receiving tank until after the completion of crude receipt. 4. <u>Do Not</u> open a sealed valve until Transmountain or Customs has witnessed the closing gauge and his O.K. given to break seal.
5. Special Line Ups	The receipt of foreign crude will present a number of special line-ups regarding sealing off of valves on interconnecting tanks and lines. Each time foreign crude is to be received, everyone concerned should thoroughly understand the procedure on "lining up".

JOB BREAKDOWN

A-23

PLANT: Puget Sound
DEPARTMENT: RP&S - Docks
CLASSIFICATION: Pumper Helper B
OPERATION: A-23 Significance of Tests

IMPORTANT STEPS	KEY POINTS
1. Purpose of Tests	All refined petroleum products are manufactured or processed to conform to certain tests.
2. Method of Testing	In order that RP&S-Docks Pumper Helper B may be familiar with the meaning of the tests and know how tests are made, a tour of the Laboratory will be arranged for RP&S-Docks personnel, to acquaint them with the purpose and method of performing the various product tests.
3. Related Information	Other related information concerning product tests will be given during basic training from the Basic Refining Manual.

JOB CONTENTS

Page 1

PLANT: Puget Sound
DEPARTMENT: RP&S - Docks
CLASSIFICATION: Pumper Helper B

TRAINEE:

B. ON THE JOB TRAINING

DATE

NAME

1. Draw water from RP&S tankage
2. Sample RP&S tankage and vessels
3. Lubrication valves and cocks
4. Operate sump pumps
5. Oil and slop spillage
6. Assist at Blending Plant
7. Dock Ships and Barges
8. Operate hose handling equipment-docks
9. Connect cargo and bunker hose
10. Sample tankers and barges
11. Load tanker cargoes
12. Load barge cargoes
13. Load bunkers
14. Unload tanker cargoes
15. Watch hose
16. Connect Petrox truck on Dock
17. Inject Petrox in Gasoline shipments -
Docks
18. Deliver water to vessels
19. Operate air compressor on Docks
20. Disconnect cargo hose
21. Operate M. O. valve, effluent line -
Docks
22. Draw water or oil from impounding
basins

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JOB CONTENTS

Page 2

PLANT: Puget Sound
DEPARTMENT: RP&S - Docks
CLASSIFICATION: Pumper Helper B

TRAINEE:

B. ON THE JOB TRAINING

DATE

NAME

- 23. Clean up in department
- 24. Line up and circulate effluent
and ballast lines
- 25. Heat tanks
- 26. Deliver steam to vessel
- 27. Unberth vessel
- 28. Operate tank mixers
- 29. Handle records and reports
- 30. Adjust valve packing

Employee Qualified: _____ Date _____

Signed: _____ (Foreman)

WA-TEX 001719

JOB BREAKDOWN

B-1

PLANT: Puget Sound
DEPARTMENT: RP&S - Docks
CLASSIFICATION: Pumper Helper B
OPERATION: B-1 Draw Water from RP&S Tankage

<u>IMPORTANT STEPS</u>	<u>KEY POINTS</u>
1. Draw Water	a. Check water gauge on tank and record in gauger's hand book with tank number and notation "DRAW WATER." b. Open draw-off valve slowly. Be sure no entrainment of oil is present. c. If draw-off stream shows oil, decrease flow from tank until no oil shows. d. If no oil shows after cracking open valve, then open valve wide. e. Watch discharge of water carefully and if oil appears, pinch down, or close off on draw-off until water and oil mixture appears. f. Close off on water draw-off. g. Take closing water gauge on tank and note in gauger's hand book. h. Only draw water from one draw-off at a time on tanks equipped with two draw-offs or more. At any time water is to be drawn from two draw-offs at the same time on a single tank, two operators are to be present, one at each draw-off valve.

WA-TEX 001720

JOB BREAKDOWN

B-2
Page 1

PLANT: Puget Sound
DEPARTMENT: RP&S - Docks
CLASSIFICATION: Pumper Helper B
OPERATION: B-2 Sample Tanks & Vessels

IMPORTANT STEPS	KEY POINTS
1. General Information	Samples are required from all blended tanks when completed and at times before they are completed. Sampling orders are given on the "blend order" and may be issued by RP&S Foreman, Assistant Foreman or Night Foreman. For routine sampling you may be required to take Top, Middle, Bottom or Average Samples and with "floating roof" tanks the samples must be taken through an opening on the roof called a "sample hatch." Do not sample these through the "gauge hatch." Top Sample is one taken within the area about 3 feet below top level of product -- (not at the surface). Middle Sample is one taken as close as possible to the center level of the product. Bottom Sample is taken 3' above the bottom by using the method prescribed. Average Sample is one taken starting at the bottom area and equally throughout the tank so that when the sample emerges there is still 1/2" to 1-1/2" of unfilled space remaining in the bottle. At this plant we have sample "buckets" constructed of cast aluminum in which the sample bottle is placed. A rubber stopper is fixed to a brass rod through the bucket bail and to this is attached a sample cord long enough to reach the tank bottom. Sample bottles <u>must be clean.</u>

JOB BREAKDOWN

B-2
Page 2

PLANT: Puget Sound
DEPARTMENT: RP&S - Docks
CLASSIFICATION: Pumper Helper B
OPERATION: B-2 Sample Tanks & Vessels (Cont.)

IMPORTANT STEPS	KEY POINTS
2. Safety Precautions	Movement of product within the tank must have been stopped at least 30 minutes before sampling from the tank roof. No transfers or no mixers turning in that time. Ground bare hand to top rail of tank before opening hatches. If strong gas fumes are present, report to Pumper. Do not go on roof of floating tanks unless authorized.
3. Prepare to Sample Tank	a. Get information as follows: 1. Number of samples required. 2. Area in tank (Top, Middle, etc.) b. Make out sample tags filling out information including Date, Time, and be sure to initial. c. Obtain required number of sample bottles (narrow necked) plus one to allow for breakage or bottle loss. Also needed are rubber stoppers for all gasoline samples and "sample bucket."
4. Sample Tank	a. Top Sample - Lower bottle in bucket through sample hatch 3' below product level and allow to fill. Pour about 1/2" to 1-1/2" from bottle. Stopper bottle firmly and tag. b. Middle Sample - Place rubber stopper on bucket in neck of sample bottle firmly.

JOB BREAKDOWN

B-2
Page 3

PLANT: Puget Sound
DEPARTMENT: RP&S - Docks
CLASSIFICATION: Pumper Helper B
OPERATION: B-2 Sample Tanks & Vessels (Cont.)

IMPORTANT STEPS	KEY POINTS
4. Sample Tank (Cont.)	1. Lower sampling device through sample hatch with sample cord till assembly reaches approximately mid-point of product. 2. Give sample cord a quick tug-- this should pull stopper from mouth of bottle. 3. Allow assembly to set at this level for 30 seconds. Bottle will be full. 4. Pull sample from tank and pour 1/2" to 1-1/2" of product from bottle. 5. Stopper firmly and tag. c. Bottom Sample - Lower assembly to tank bottom. Raise assembly about 3' from bottom and tug cord to remove stopper from mouth of bottle. Hold assembly at this position for about one minute. Pull sample from tank and repeat as in b.4. and b.5. d. Average Sample - Lower stoppered sample bottle to bottom of tank as in c. 1. Tug sharply on cord to remove stopper from bottle. 2. Raise bottle through product at a constant rate of speed until it emerges from the product with the sample bottle still lacking being full by 1/2" to 1-1/2". (This will take approximately 17 seconds.)

JOB BREAKDOWN

B-2
Page 4

PLANT: Puget Sound
DEPARTMENT: RP&S - Docks
CLASSIFICATION: Pumper Helper B
OPERATION: B-2 Sample Tanks & Vessels (Cont.)

IMPORTANT STEPS	KEY POINTS
5. Precautions with Samples	a. Samples for RVP are taken in brown bottles, generally, and must be stoppered firmly with a rubber stopper. Protect from the sun and temperature changes as much as possible and deliver to the Laboratory immediately after taking. In the case of Average Samples, none of the product is to be poured from the bottle by the RP&S Dept., but there must be room in the bottle for expansion. Samples must be taken by the above method to be accurate. Any deviation from this will result in a test report not representative of the product and require re-sampling resulting in much lost time. All gasoline samples are to be "rubber stoppered."
6. Butane or LPG Sample	a. Pressure Bombs - Pressure-type apparatus is used for taking samples of Butane and LPG from spheres, tank cars, and tank trucks. This equipment consists of a bomb furnished by the Laboratory. The bomb is affixed to a connection on the bottom of the sphere, or to the Butane loading pump bleeder by means of a flexible pressure hose and is in a vertical position. After opening the sphere or pump bleeder and both valves of the bomb, air is forced from the bomb until the LPG appears. Then close outlet valve on bomb first, then close inlet valve on bomb and finally bleeder valve on sphere or pump and remove the bomb from the hose line. Then release a small quantity to allow room for expansion.

JOB BREAKDOWN

B-2
Page 4

PLANT: Puget Sound
DEPARTMENT: RP&S - Docks
CLASSIFICATION: Pumper Helper B
OPERATION: B-2 Sample Tanks & Vessels (Cont.)

IMPORTANT STEPS	KEY POINTS
5. Precautions with Samples	a. Samples for RVP are taken in brown bottles, generally, and must be stoppered firmly with a rubber stopper. Protect from the sun and temperature changes as much as possible and deliver to the Laboratory immediately after taking. In the case of Average Samples, none of the product is to be poured from the bottle by the RP&S Dept., but there must be room in the bottle for expansion. Samples must be taken by the above method to be accurate. Any deviation from this will result in a test report not representative of the product and require re-sampling resulting in much lost time. All gasoline samples are to be "rubber stoppered."
6. Butane or LPG Sample	a. Pressure Bombs - Pressure-type apparatus is used for taking samples of Butane and LPG from spheres, tank cars, and tank trucks. This equipment consists of a bomb furnished by the Laboratory. The bomb is affixed to a connection on the bottom of the sphere, or to the Butane loading pump bleeder by means of a flexible pressure hose and is in a vertical position. After opening the sphere or pump bleeder and both valves of the bomb, air is forced from the bomb until the LPG appears. Then close outlet valve on bomb first, then close inlet valve on bomb and finally bleeder valve on sphere or pump and remove the bomb from the hose line. Then release a small quantity to allow room for expansion.

JOB BREAKDOWN

B-2
Page 5

PLANT: Puget Sound
DEPARTMENT: RP&S - Docks
CLASSIFICATION: Pumper Helper B
OPERATION: B-2 Sample Tanks & Vessels (Cont.)

IMPORTANT STEPS	KEY POINTS
7. Line Samples	A line sample is taken directly from a bleeder off a line or pump. Usually a quart sample bottle is filled from the line or pump bleeder <u>slowly</u> .

JOB BREAKDOWN

B-3
Page 1

PLANT: Puget Sound
DEPARTMENT: RP&S - Docks
CLASSIFICATION: Pumper Helper B
OPERATION: B-3 Lubricate Valves and Cocks

IMPORTANT STEPS	KEY POINTS
1. Use of Lubrication Chart	a. Lubrication of valves and cocks should be carried out according to standard TEXACO Inc. Lubrication Methods. b. A chart giving the correct lubricant for each piece of equipment, is posted in control room of Blending Plant, Dock Office, Tank Car Rack Shack and Tank Truck Rack Office. c. If recommended lubricant is not available, consult foreman for approval to use substitute.
2. Keep Adequate Supply on Hand	a. An adequate supply of lubricants should be on hand at all times. b. Notify Pumper when supply is low.
3. Grease Guns	a. Grease guns are available for use to lubricate valves and cocks. b. Gate Valves (Rising stem) are fitted with zerk connections on the yoke to lubricate stem with zerk gun. c. Cocks are fitted with button heads on the top of valve and are lubricated with pressure type guns.
4. Lubricate Cocks	a. Lubricate all cocks which may start to leak or are hard to open and close. b. If body or housing around cock is found leaking and cannot be stopped by lubrication, notify Pumper. c. Cocks can be "over greased" and good judgment should be used in this operation.

JOB BREAKDOWN

B-3
Page 2

PLANT: Puget Sound
DEPARTMENT: RP&S - Docks
CLASSIFICATION: Pumper Helper B
OPERATION: B-3 Lubricate Valves and Cocks (Cont.)

IMPORTANT STEPS	KEY POINTS
5. Lubricate Valves	a. Keep all rising stem valves well lubricated with light oil so that valve wheels are easy to operate. b. Lubricate fittings on yoke of valve by using zerk gun, also for ease of opening and closing. c. Gears on angle wheel type valves are to be kept greased with the proper lubricant.

JOB BREAKDOWN

B-4

PLANT: Puget Sound
DEPARTMENT: RP&S - Docks
CLASSIFICATION: Pumper Helper B
OPERATION: B-4 Operate Sump Pumps

IMPORTANT STEPS	KEY POINTS
1. General Information	a. There are a number of sump pumps at various locations in RP&S Dept., such as at the Docks, Truck Rack and Crude Booster Pumps. b. The sump pumps at Docks, Crude Booster Pumps and Tank Truck Rack discharge into the ballast line, while the other sump pumps discharge into slop oil lines. c. All sump pumps are electrically operated on float control.
2. Purpose of Pumps	The purpose of these pumps is to pump out sumps at the various collecting stations of slop oils such as cargo hose drainings, oil spills and leaks, and bleeds from pumps. <u>NOTE:</u> Close attention must be given to sumps connecting into the ballast line as these pits cannot be pumped down at the same time a ship is discharging ballast, or when Effluent Plant is circulating through ballast line. At these times the power to these sump pumps must be shut off. Care must be exercised to see that power is turned on again when the pumps are needed.

JOB BREAKDOWN

B-5
Page 1

PLANT: Puget Sound
DEPARTMENT: RP&S - Docks
CLASSIFICATION: Pumper Helper B
OPERATION: B-5 Oil & Slop Spillage

IMPORTANT STEPS

KEY POINTS

1. General Information This plant has been provided with two separate sewer systems for the disposal of slops and water run-off.
- The clean water sewer has three points at which it disappears below ground in the RP&S Dept. and can be checked quickly to determine the source of oily water appearing at Effluent Plant in the clean water system.

These points are at NE corner of the Booster Station road and 6th Street, 7th and "C" Street in west ditch of "C" Street and in 100' at "D" Street.

If oil is located at any of these points, it is a simple matter of tracing it back to its source. No oil is to be permitted in clean water sewer.

Do not drain any oil, slop or chemical to the ground or clean water sewer without permission from a Supervisor.

Clean water may be drained from impounding basins to the clean water sewer but only after samples from the basins have been run and O.K.'d by the Laboratory and Pollution Form R-500 has been processed by the RP&S Foreman.

KEEP OIL OUT OF DITCHES.

Four good reasons for doing so:

1. It is a fire hazard.
2. It is costly.
3. It contaminates Effluent Plant ponds.
4. It creates a mess.

JOB BREAKDOWN

B-5
Page 2

PLANT: Puget Sound
DEPARTMENT: RP&S - Docks
CLASSIFICATION: Pumper Helper B
OPERATION: B-5 Oil & Slop Spillage (Cont.)

IMPORTANT STEPS	KEY POINTS
1. General Information (Cont.)	Some evacuation of lines and pumps must be made via the oily water sewer. This also should be closely controlled. All impounding basins should be drained to the oily water sewers (this is an enclosed system) except in cases where ordered otherwise and only by order from RP&S Foreman, Assistant Foreman, or Night Foreman. Other sources of oil to the oily water sewer in the RP&S Dept. are PRV manifolds, salt filter drains, sampling station at Blending Plant, all product pump drains and sump at north end of Tank Car Rack. These <u>must</u> be checked thoroughly as soon as <u>oil</u> is reported showing in this system at Effluent Plant and a report made to RP&S or Night Foreman. Never leave a hose connected to a bleeder after draining.

WA-TEX 001731

JOB BREAKDOWN

B-6

PLANT: Puget Sound
DEPARTMENT: RP&S - Docks
CLASSIFICATION: Pumper Helper B
OPERATION: B-6 Assist at Blending Plant

IMPORTANT STEPS

KEY POINTS

1. General

At times the Pumper Helper B will be required to assist at the Blending Plant in the handling of dye and additive drums, operation of valves as directed by the Assistant Pumper, cleaning of screens on line strainers, operation of sump pumps, pump out TMD&FOA containers into storage and lubrication of valves and cocks, and such other work as the Assistant Pumper or Pumper may direct.

JOB BREAKDOWN

B-7
Page 1

PLANT: Puget Sound
DEPARTMENT: RP&S - Docks
CLASSIFICATION: Pumper Helper B
OPERATION: B-7 Dock, Ships and Barges

IMPORTANT STEPS

KEY POINTS

1. General Information All ships and barges carry hawsers or lines for securing the vessel at dock-side. These lines are both manila rope and steel cables. These lines are known as Bow, Stern, Spring and Breast lines used at various positions on the vessel and securing to Bitts or Capstans on the dock to hold the vessel at the desired location while berthed. The size and number of ships mooring lines used will depend on the size of the vessel. Hand lines of small diameter with a hard knot on one end are used by the ship to "heave" onto the dock slab with other end of line attached to the hawser aboard ship when vessel is a few feet from dock-side. The order in which hawsers are to be taken from the vessel will be given by the Docking Pilot aboard ship.

Air pressure should be built up before vessel reaches the dock.

2. Safety Precautions

Be sure that you wear your "hard hat" when taking lines.

Never step into the bight of a line.

Wear heavy gloves when taking wire lines which are often frayed because sharp points can easily pierce hands.

Keep hands clear of rope being taken on power capstan.

When throwing off lines; be sure "messenger" rope is over side before taking eye of hawser off bitt.

Always wear life jackets when taking or throwing off lines.

JOB BREAKDOWN

B-7
Page 2

PLANT: Puget Sound
DEPARTMENT: RP&S - Docks
CLASSIFICATION: Pumper Helper B
OPERATION: B-7 Dock, Ships and Barges (Cont.)

IMPORTANT STEPS	KEY POINTS
3. Secure Mooring Lines	a. Catch hand line when thrown from vessel, watching out for heaving line knot. b. Pull hand line with hawser attached, to dock platform. c. Place hawser loop on mooring bitt or capstan. d. Unfasten hand line while hawser is still slack. e. Return hand line to ship. f. Complete taking all necessary lines from vessel and have ship or barge "spotted" correctly to handle cargo hose for loading or unloading when all slack is out of mooring lines and vessel is "along-side."
4. Put Out Gangplank	a. After vessel is moored and properly secured, put out gangplank. Vessel crew will assist with this operation. b. Allow no one to go aboard vessel from dock until gangplank is out and properly secured. c. No one is to board or leave a vessel while berthed, other than via gangplank. d. No one is to board a foreign vessel until quarantine flag is down.
5. Connect Static Line	a. A static line assembly is installed on one of the hose structure columns at Berths 1 and 2 and at the west end of Berth 3. Each assembly consists of an "ON" and "OFF" switch, with an insulated cable 50 feet long. Attached to the end of cable is a grounding clamp. This installation is grounded in the scill below the water at dock-side.

WA-TEX 001734

JOB BREAKDOWN

B-7
Page 3

PLANT: Puget Sound
DEPARTMENT: RP&S - Docks
CLASSIFICATION: Pumper Helper B
OPERATION: B-7 Dock, Ships and Barges (Cont.)

IMPORTANT STEPS	KEY POINTS
5. Connect Static Line (Cont.)	b. The static line must be connected to the vessel before any hoses are put aboard. c. With the static line switch in the "OFF" position, fasten the grounding clamp to a clean metal surface on the vessel. This surface or projection must be a part of or welded to the hull of the vessel. d. Throw switch to the "ON" position. The ground indicator light should come on. If it does not, turn the switch off, reset the ground clamp on the vessel and turn the switch on again. If necessary, repeat until good ground is indicated by the light coming on. e. Keep static line attached to vessel until all hoses are disconnected. f. To remove the static line, first turn the switch "OFF", then remove the ground clamp. Coil the static line and hang it on the bracket near the switch.

JOB BREAKDOWN

B-8
Page 1

PLANT: Puget Sound
DEPARTMENT: RP&S - Docks
CLASSIFICATION: Pumper Helper B
OPERATION: B-8 Operate Hose Handling Equipment-Docks

IMPORTANT STEPS	KEY POINTS
1. General Information	Berths numbers one and two have structures to handle and support cargo hose. These structures are equipped with air driven winches, fitted with steel cables and in turn are rigged in the structures and attached to saddles (collars) which are fastened to the hose. Three supporting cables are attached to each hose and serve as a means of raising and lowering.
2. Number One Berth	The hose handling structure at number one Berth has one bay for handling 12" hose and two bays for handling 8" hose. Vertical line risers through a slot in the concrete slops basin terminate with an Emsco swivel joint. Block valves in the risers are provided to control the flow of product. Drain valves are provided above the block valves to drain hose after use. Hose attached to the swivel joints are of such a length and location that with extremes in tides and with the ship either empty or loaded, the hose will not bend more than the minimum radius (1' of bend to each 1" of hose size). To handle the 12" hose an inverted U boom is provided at the top of the structure which suspends the outboard support cables. In the storage position the boom is raised to provide clearance from the ship.
3. Number One and Two Berths	The 8" cargo hose at Berths one and two are lighter and easier to handle than the 12" hose and therefore, no overhead boom has been provided.

JOB BREAKDOWN

B-8
Page 2

PLANT: Puget Sound
DEPARTMENT: RP&S - Docks
CLASSIFICATION: Pumper Helper B
OPERATION: B-8 Operate Hose Handling Equipment-Docks
(Cont.)

IMPORTANT STEPS	KEY POINTS
3. Number One and Two Berths (Cont.)	When stored in structures all hose are equipped with a ring attached to the upper collar, near top and a safety chain with snap is fastened to the hose structure. The safety chain is to be attached to each hose when stored.
4. Number Three Berth	At number three Berth a monorail and hoist has been provided to raise the smaller barge hose into position for connecting to the product manifold. No loading hose is provided at number three Berth as barges generally carry their own.
5. Air Compressor	An electric motor driven air compressor is located in the Dock office to supply air for the winches on the hose structures and to operate the seven powered mooring capstans.
6. Lower 12" Hose	- Start air compressor and allow pressure to build up. - Unsnap safety chains on hose to be used, being sure that brake on boom is set securely. - Release brake on boom allowing hose to be boomed out until the chain braces support the boom in the out-board position. - Lower hose to ships deck using all three winches as required, avoiding unnecessary bending and kinking. - Raise end of hose into place for connecting, using top cable through a snatch block secured to ship's manifold. - Support hose on vessel with hose stand.

JOB BREAKDOWN

B-8
Page 3

PLANT: Puget Sound
DEPARTMENT: RP&S - Docks
CLASSIFICATION: Pumper Helper B
OPERATION: B-8 Operate Hose Handling Equipment-Docks
(Cont.)

IMPORTANT STEPS	KEY POINTS
7. Lower 8" Hose	a. Start air compressor and allow pressure to build up. b. Unsnap safety chain, being sure brake on winch is set securely. c. Release brake on winch and lower hose, to ship's deck, using all three winches as required, avoiding unnecessary bending and kinking. d. Raise end of hose into place for connecting; using top cable through a snatch block secured to ship's manifold. e. Support hose on vessel with hose stand.
8. Raise and Store Hose	a. In order to raise and store hose, the reverse procedure is followed, having first drained the hose into the sump. b. After all cable adjustments have been made and hose properly stored, shut down air compressor.
9. Safety Precautions	a. Never stand directly under hose while being lowered or raised for storing. b. Never walk under hose when connected to ship's manifold. Use walkway provided on board ship.

JOB BREAKDOWN

B-9
Page 1

PLANT: Puget Sound
DEPARTMENT: RP&S - Docks
CLASSIFICATION: Pumper Helper B
OPERATION: B-9 Connect Cargo and Bunker Hose

IMPORTANT STEPS	KEY POINTS
1. General Information	When not in use all cargo hose at the Dock will be stored in an upright position in the hose structures with hose connected to the various Dock risers.
2. Tools & Material	Have wrenches ready for use when vessel arrives, also necessary bolts, gaskets, slings, etc. Air pressure must be built up before vessel arrives.
3. Unsnap Cargo Hose	Just after arrival of a tanker, the safety chains on hose structure connected to the top side of the cargo hose are to be unsnapped, first making sure that the dogs on the winch gears are in place to prevent the hose from falling to the Dock slab.
4. Drain Hose	Check the 1" drain valve on hose riser in the open position to be sure hose is empty and will not cause a spill on vessel's deck when connecting.
5. Lower Hose to Ship Deck	The hose structures are equipped with winches, cables, hose saddle, etc., and air operated guns which enables the lowering and raising of cargo hose to desired positions. Operator on hose structure will lower the hoses one at a time to the deck of the vessel at a safe rate of speed and to prevent unnecessary bending and kinking of the hose.
6. Remove Blind Flange	The blind flange connected to the end of the hose will then be removed.

JOB BREAKDOWN

B-9
Page 2

PLANT: Puget Sound
DEPARTMENT: RF&S - Docks
CLASSIFICATION: Pumper Helper B
OPERATION: B-9 Connect Cargo and Bunker Hose (Cont.)

IMPORTANT STEPS	KEY POINTS
7. Connect Cargo Hose To Vessel's Manifold	The vessel crew is to remove all blind flanges from their connections aboard. The winch operator on the hose structure will then place the hose in position signaled by one of the men on deck and then connect flange on hose to nozzle on vessel, designated by the mate or bargemen, using fittings as required.
8. Take Up Hose Slack	When all cargo hose have been connected to vessel's manifold which are to load or discharge cargo all supporting cables should be tightened enough to take out all slack.
9. Support Hose	The base should be properly supported to take unnecessary strain off hose flanges and vessel manifold connections. There will be cases when vessels are equipped with "A" frames where block and tackle can be used to support hose. In such cases for the most part, the ship's boom will not be required for hose support. Hose stand is to be used if no other support provided.
10. Check Dock and Ship Connections	A check should then be made of connections on deck that hoses are hooked up to the correct vessel nozzles, gaskets are in place, bolts properly tightened and that the hose have no sharp bends or kinks (1' per inch - example 8" = 8') and will not chafe or rub on hose structure when loading or discharge gets under way.
11. Connect Bunker Hose	Procedure same as connecting cargo hose.

JOB BREAKDOWN

B-9
Page 3

PLANT: Puget Sound
DEPARTMENT: RP&S - Docks
CLASSIFICATION: Pumper Helper B
OPERATION: B-9 Connect Cargo and Bunker Hose (Cont.)

IMPORTANT STEPS	KEY POINTS
12. Connect Fresh Water Hose	The hose for delivering fresh water to a ship is furnished by the vessel and connected by a member of the vessel's crew to our dock connections.

JOB BREAKDOWN

B-10
Page 1

PLANT: Puget Sound
DEPARTMENT: RP&S - Docks
CLASSIFICATION: Pumper Helper B
OPERATION: B-10 Sample Tankers and Barges

IMPORTANT STEPS	KEY POINTS
1. Prepare To Take Sample	a. Have available necessary sample bottles, corks, sample line, lead weights, wipers and sample tags. b. Fill out sample tag, showing date, name of vessel, product and compartment number. <u>NOTE:</u> Sample tags can be made out prior to the arrival of all crude vessels when type of crude and number of compartment aboard are known. c. Loosen hatch cover carefully releasing any pressure which may be present in ship's tank. d. Remove hatch cover after pressure released and place to one side of hatch. e. Attach sample card and weight to sample bottle. f. Lower bottle into compartment through approximately three-quarters of the oil depth and then raise to top of hatch. <u>NOTE:</u> Care should be used when lowering and raising sample bottle so as not to strike tank stairs or cross members and break bottle. g. Pour small amount of product from bottle if completely full and insert stopper.

JOB BREAKDOWN

B-10
Page 2

PLANT: Puget Sound
DEPARTMENT: RP&S - Docks
CLASSIFICATION: Pumper Helper B
OPERATION: B-10 Sample Tankers and Barges (Cont.)

IMPORTANT STEPS	KEY POINTS
1. Prepare To Take Sample (Cont.)	h. Remove sample line from bottle. i. Wipe bottle clean and tag. j. Store in sample station to be taken to Laboratory at first opportunity. <u>NOTE:</u> On sampling heavy fuels and crudes a bucket containing middle distillate may be used to aid in cleaning clingage from outside of bottle.

JOB BREAKDOWN

B-11
Page 1

PLANT: Puget Sound
DEPARTMENT: RP&S - Docks
CLASSIFICATION: Pumper Helper B
OPERATION: B-11 Load Tanker Cargoes

IMPORTANT STEPS	KEY POINTS
1. General Information	Tankers handled here at Puget Sound Plant for loading out cargo are placed in two classifications i.e. "Clean Oil" ships and "Black Oil" ships. The "Clean Oil" ships load gasolines, Jet Fuels and Middle Distillates. The "Black Oil" vessels load heavy Bunker Fuel Cargoes. "Clean Oil" cargo is never loaded in a "Black Oil" ship unless tanks or compartments aboard such a vessel have been satisfactorily cleaned in order to handle Clean Oil cargo. However, "Black Oil" may be loaded in a "Clean Oil" ship after all tanks have been stripped "Dry", without cleaning, if it is required that such a vessel change from one service to the other. Tankers in crude oil service are also considered "Black Oil" ships. When all tanks aboard have been pumped dry, such a vessel could load heavy Fuel Oil Cargo, without cleaning tanks.
2. Prepare to Load	a. Loading orders are issued before the vessel arrives. b. Helper A to inspect cargo tanks and O.K. for loading. c. Notify Assistant Pumper to set line-up to ship and notify truck and tank car racks that loading to Docks is about to begin and make notation on car and truck loading report. d. Post cargo identification card in proper holder. e. Check loading plan and establish procedure. (Pump or gravitate).

JOB BREAKDOWN

B-11
Page 2

PLANT: Puget Sound
DEPARTMENT: RP&S - Docks
CLASSIFICATION: Pumper Helper B
OPERATION: B-11 Load Tanker Cargoes (Cont.)

IMPORTANT STEPS	KEY POINTS
3. Start Cargo Aboard Vessel	a. Notify mate in charge to line-up ship's manifold to receive cargo. b. Check that hoses are connected to correct ship nozzles and that hoses are properly supported. c. Check bleeder valve on Dock riser in closed position. d. Open Dock riser valve. e. Notify Assistant Pumper to start shipping pumps, (if required). f. Note starting time on Dock Log. g. Caution Mate to observe that product is being received in tanks as per outline aboard ship. h. Open valve on pressure gauge, Dock riser and observe pressure. <u>NOTE:</u> Do not exceed 100# loading pressure at Dock side. If pressure above 100#, notify Assistant Pumper to shut down on one pump if two are being used to load same product. If only one pump in use on each product loading, and pressure exceeds 100#, have Assistant Pumper to pinch down on discharge of manifold. i. Adjust loading hose if necessary as weight of oil in hose may cause strain on loading connections.

JOB BREAKDOWN

B-11
Page 3

PLANT: Puget Sound
DEPARTMENT: RP&S - Docks
CLASSIFICATION: Pumper Helper B
OPERATION: B-11 Load Tanker Cargoes (Cont.)

IMPORTANT STEPS	KEY POINTS
3. Start Cargo Aboard Vessel (Cont.)	j. Take starting line sample from each product going aboard and tag. <u>NOTE:</u> Take additional line sample after compartment has reached a 3' level.
4. Load Vessel	a. Adjust cargo hose as required as draft of vessel increases. b. Call Mate's attention to any slack mooring lines as vessel loads. <u>NOTE:</u> If there is a danger that vessel may pull away from Dock due to slack lines and action has not been taken to correct such a condition aboard ship, notify Assistant Pumper to stop loading pumps and shut ship down. Then notify RP&S Pumper. Should a vessel pull away from berth while loading due to a sudden squall, or excessive movement caused by passing traffic to a point where loading hose would be damaged, push "panic" button on Dock, as this action will shut down all loading pumps at ship-ping manifold. Pay-out all slack possible on supporting cables and close off Dock risers. c. Establish loading rate by checking with Assistant Pumper and advise Mate.

JOB BREAKDOWN

B-11
Page 4

PLANT: Puget Sound
DEPARTMENT: RP&S - Docks
CLASSIFICATION: Pumper Helper B
OPERATION: B-11 Load Tanker Cargoes (Cont.)

IMPORTANT STEPS	KEY POINTS
4. Load Vessel (Cont.)	d. Take sample and mark Name of ship, Product, Compartment Number and "Starting ship sample." e. Observe surface of water frequently for oil seepage while vessel is loading. If oil observed on water notify mate and RP&S Pumper at once.
5. Topping Out Cargo	a. Work closely with loading mate when "topping out" ship's compartments. <u>NOTE:</u> The ship will determine amount of outage to be left as each tank is "topped out" and will handle their own valves. When switching and closing off from one compartment to another, the mate may request that our pumping rate be reduced. This may be handled by shutting down the shipping pumps and allow the ship to "top out" by gravity feed or by pinching down on the discharge valve at shipping manifold. b. Take one quart average sample from each ship tank when filled and at times when not necessary to stand-by Dock risers.
6. Shut Down Loading	a. Just before last tank aboard is "topped out" and on a predetermined signal from the Mate, notify Assistant Pumper to shut down pumps. b. Start closing off Dock riser valve(s) slowly to avoid excessive line shock.

JOB BREAKDOWN

B-11
Page 5

PLANT: Puget Sound
DEPARTMENT: RP&S - Docks
CLASSIFICATION: Pumper Helper B
OPERATION: B-11 Load Tanker Cargoes (Cont.)

IMPORTANT STEPS	KEY POINTS
6. Shut Down Loading (Cont.)	<u>NOTE:</u> Minimum closing times for Dock Line valves: Gasolines - 60 seconds Middle Dists and Jet Fuels - 1 - 1/2 minutes. Bunker Fuel Oil - 45 seconds. Drinking Water - 30 seconds. c. Close Dock valve(s) completely after required elapse of time. d. Notify ship to close their loading manifold. e. Notify Assistant Pumper ship has finished loading. f. Note finishing loading time on Dock log.

JOB BREAKDOWN

B-12
Page 1

PLANT: Puget Sound
DEPARTMENT: RP&S - Docks
CLASSIFICATION: Pumper Helper B
OPERATION: B-12 Load Barge Cargoes

IMPORTANT STEPS	KEY POINTS
1. General	After barge is correctly spotted, static line attached and hose connected, the next steps are to be followed.
2. Prepare to Load	a. After tanks have been inspected and o.k.'d by Pumper Helper A and all fires and stoves are out aboard barge and tug is moored at extreme end of Pier head, notify Assistant Pumper to line up shipping manifold at Blending Plant. b. Notify Bargeman to line up Barge manifold to receive cargo and establish loading plan and procedure (pump or gravitate). c. Check bleeder valve on Dock riser in closed position. d. Open loading valve on Dock. e. Note opening draft on Dock Log.
3. Load Barge	a. Notify Assistant Pumper to start shipping pump. b. Caution Bargeman that cargo is about to start aboard. c. Open pressure gauge on riser and check pressure. d. Do not exceed over 100# at Dock side. Should pressure exceed 100# have Assistant Pumper adjust manifold at shipping pump. e. Note starting time on Dock Log. f. Check water surface frequently for traces of oil. g. Keep in touch with Assistant Pumper and establish loading rate.

JOB BREAKDOWN

B-12
Page 2

PLANT: Puget Sound
DEPARTMENT: RP&S - Docks
CLASSIFICATION: Pumper Helper B
OPERATION: B-12 Load Barge Cargoes (Cont.)

IMPORTANT STEPS	KEY POINTS
3. Load Barge (Cont.)	h. Take one quart starting line sample 15 minutes after barge has been loading, tag and identify. i. Take one quart sample first compartment aboard (receiving each product) when approximately two feet in compartment, tag and identify. j. Work closely with Bargeman. k. Adjust hose when necessary due to rise and fall of tide, and draft of barge.
4. Topping Out	a. Use extreme care when topping out, as barge compartments are smaller than tanker compartments and are easier to overflow. b. When topping out last two barge compartments, notify Assistant Pumper to stop shipping pump and allow barge to fill by gravity. c. Caution Bargeman to allow plenty of time on topping out to close dock valve slowly to eliminate line shock. d. Close off Dock riser when signal given by Bargeman. e. Open bleeder on upper side of Dock riser and allow hose to drain (possibly into barge). f. Have Bargeman close off his manifold. g. Note finishing time and closing draft in Dock Log. h. Notify Pumper Helper A barge is ready to gauge.

JOB BREAKDOWN

B-13
Page 1

PLANT: Puget Sound
DEPARTMENT: RP&S - Docks
CLASSIFICATION: Pumper Helper B
OPERATION: B-13 Load Bunkers

IMPORTANT STEPS	KEY POINTS
1. General Information	Ship's bunkers are placed in two classifications. Steam driven vessels use heavy bunker fuel and motor driven vessels use Diesel fuel. The heavy bunker fuel and the diesel fuel will be manufactured at this refinery to satisfactorily meet ship requirements.
2. Order to Load	a. When bunkers are needed aboard a vessel the chief engineer must request RP&S to deliver bunkers. b. When request is approved by the Shipping Department, order will then be issued to RP&S Department.
3. Prepare To Load Upon Receipt Of Order	a. Take one quart average sample from each ship's compartment to receive bunkers if oil is present. b. Connect bunker hose to ship's manifold. c. Notify Assistant Operator to make line-up to Dock, who will notify tank truck rack and have loader make notation on truck loading report that vessel will take bunkers. <u>NOTE:</u> If truck is loading Fuel Oil, finish loading before starting to ship. O.K. to load trucks while vessel is receiving bunkers. d. Get start up approval from engineer in charge to receive cargo.

JOB BREAKDOWN

B-13
Page 2

PLANT: Puget Sound
DEPARTMENT: RP&S - Docks
CLASSIFICATION: Pumper Helper B
OPERATION: B-13 Load Bunkers (Cont.)

IMPORTANT STEPS	KEY POINTS
3. Prepare To Load Upon Receipt of Order (Cont.)	e. Discuss shut down procedure, such as the ship will gauge their own tanks while receiving and will notify operator on Docks in plenty of time to shut down loading pump and close dock valve when bunkers are aboard. <u>NOTE:</u> In some cases bunker quantities may be gauged out ashore to a stop gauge, and in such cases the RP&S will handle shut down without notification from the ship. f. Ship's bunker tanks are not usually gauged by RP&S-Docks Department, but in some cases this may be required. The chief engineer aboard handles this phase to his own satisfaction. <u>NOTE:</u> When large quantities of bunkers are loaded aboard, the engineer may request that our shore tank be witnessed gauged by a member of his department since the ship will be charged with the amount of bunkers delivered from our shore tank and not on the quantity received in the ship's tanks.
4. Load Bunkers	a. Have ship open necessary valves aboard to receive bunkers. b. Open valve on Dock bunker riser. c. Notify Operator at Blending Plant to start shipping pump. d. Open valve on bunker pressure gauge riser at Dock.

JOB BREAKDOWN

B-13
Page 3

PLANT: Puget Sound
DEPARTMENT: RP&S - Docks
CLASSIFICATION: Pumper Helper B
OPERATION: B-13 Load Bunkers (Cont.)

IMPORTANT STEPS	KEY POINTS
4. Load Bunkers (Cont.)	e. Observe pressure reading as soon as bunkers are going aboard. <u>CAUTION: DO NOT EXCEED 100 POUNDS ON PRESSURE GAUGE AT ANY TIME WHILE BUNKERS ARE BEING LOADED.</u> f. Notify operator at Blending Plant to pinch down on discharge valve of shipping manifold should pressure exceed 100# at Dock-side. g. Take one quart sample from Dock bleeder 15 minutes after bunkers are started aboard. h. Notify operator at Blending Plant to standby shipping pump in order to shut down just before loading is completed. i. Ship will signal Dock Operator in time to shut down shipping pump. j. Notify Blending Plant to shut down pump <u>AT ONCE.</u> k. Close valve on Dock riser as soon as the gauge shows pressure drop. l. In the case of Hvy fuel, connect air hose to Dock riser and clear bunker hose into ship's tank. Open valve on air line slowly, so as not to blow fuel out of ship's tank hatch. m. In the case of Diesel fuel, have ship close their manifold. Then open drain on upper side of Dock riser and allow hose to vent into Dock sump.

JOB BREAKDOWN

B-13
Page 4

PLANT: Puget Sound
DEPARTMENT: RP&S - Docks
CLASSIFICATION: Pumper Helper B
OPERATION: B-13 Load Bunkers (Cont.)

IMPORTANT STEPS	KEY POINTS
4. Load Bunkers (Cont.)	n. Take one quart sample from each ship compartment which has re- ceived bunkers and tag. o. Disconnect hose and store. <u>NOTE:</u> Shipping Department will handle receipt, R-67A.

JOB BREAKDOWN

B-14
Page 1

PLANT: Puget Sound
DEPARTMENT: RP&S - Docks
CLASSIFICATION: Pumper Helper B
OPERATION: B-14 Unload Tanker Cargoes

IMPORTANT STEPS	KEY POINTS
1. General	For the most part all loaded tankers received will contain crude oil to be discharged. It is expected a number of these vessels will be under charter to TEXACO Inc., flying foreign flags and manned with foreign crews. At times there will be a language barrier, but the Master, First Mate and Chief Engineer generally speak good English. Unloading of cargo can start after hose are connected and U.S. Customs has cleared the cargo.
2. Prepare To Discharge Cargo	a. Notify Assistant Pumper to line-up tankage to receive ship. b. Take required samples from cargo tanks aboard. c. Tag and store in sample room. d. Request ship to set their line-up aboard for discharge.
3. Start Discharge Of Cargo	a. Check the vent valves on Dock risers to be sure they are in closed position and then open Dock riser valves as required. b. Give mate O.K. to start one cargo pump and let run for approximately two minutes. If it is determined right-of-way is open into RP&S tankage have mate start remainder of cargo pumps, spaced at one minute intervals. c. Record starting time in Dock log.

JOB BREAKDOWN

B-14
Page 2

PLANT: Puget Sound
DEPARTMENT: RP&S - Docks
CLASSIFICATION: Pumper Helper B
OPERATION: B-14 Unload Tanker Cargoes (Cont.)

IMPORTANT STEPS	KEY POINTS
3. Start Discharge Of Cargo (Cont.)	d. Open valve on pressure gauge. Dock riser(s) and observe. Do not exceed 120#. (There should be no trouble in this respect as RP&S Pumper will have crude booster pumps on line right after start up of cargo.) e. Adjust cargo hose if needed as weight of oil in hose may cause strain on ship and Dock connections.
4. Unload Vessel	a. Adjust cargo hose when needed as draft of vessel decreases to relieve strain and kinks. b. Call Mate's attention to any slack lines which may cause vessel to surge because of a sudden squall or Marine traffic passing Docks.
5. Stripping Vessel	a. When the discharge is near completion, the ship may stop one or more main cargo pumps and then start the stripping pump. b. Notify Assistant Pumper before stripping begins. c. Notify Assistant Pumper to have booster pump shut down just before the completion of cargo discharge.
6. Finish Cargo Discharge	a. When stripping is taking place in the last ship's tank stand by to close off Dock risers when ship is empty. b. Have Mate close ship's manifold <u>first</u> and immediately afterwards close Dock riser valves.

JOB BREAKDOWN

B-14
Page 3

PLANT: Puget Sound
DEPARTMENT: RP&S - Docks
CLASSIFICATION: Pumper Helper B
OPERATION: B-14 Unload Tanker Cargoes (Cont.)

IMPORTANT STEPS	KEY POINTS
6. Finish Cargo Discharge (Cont.)	c. Close off pressure gauges and open Dock riser bleeders into slop oil sump. d. Record draft of vessel and time cargo finished discharging in Dock log. e. Open bleeder on Pig Trap and bleed off any air which may have accumulated in Crude line while vessel was stripping. f. Notify Assistant Pumper vessel has completed discharge of cargo.

JOB BREAKDOWN

B-15
Page 1

PLANT: Puget Sound
DEPARTMENT: RP&S - Docks
CLASSIFICATION: Pumper Helper B
OPERATION: B-15 Watch Hose

IMPORTANT STEPS	KEY POINTS
1. Safety Precautions	a. Too much care cannot be taken on the handling and use of cargo hose, as to excessive bending, kinking, rubbing or chaffing against another object. b. Never shut off Dock riser against hose while vessel discharging. <u>NOTE:</u> Have vessel close their discharge valve first if necessary. c. Never allow ship to close their manifold against hose while loading.
2. Watch Hose	a. A hose watcher is to be on Docks at all times when a ship(s) or barge has hose connected. b. Raise or lower hose with air winches as required to avoid kinking or excessive bending as elevation of vessel changes due to tide and amount of product aboard. c. Keep hose clear of other hose connected, or those in the structure from contact with each other by using air winches or extra slings to snub off. d. Slack off on necessary cables to release undue strain on hose should ship move while berthed, fore, aft or away from side of Dock.
3. Watch Ship's Lines	a. Keep slack out of ship's hawsers and cables while vessel has hose connected, by notifying Mate in charge of such condition. b. Shut vessel down if slack is not taken up when such a condition may become dangerous and cause damage to cargo hose.

JOB BREAKDOWN

B-16

PLANT: Puget Sound
DEPARTMENT: RP&S - Docks
CLASSIFICATION: Pumper Helper B
OPERATION: B-16 Connect Petrox Truck On Dock

IMPORTANT STEPS	KEY POINTS
1. General Information	Parking space is provided on Dock next to the Wharf Office for the Petrox trailer. The trailer is to be spotted on the Dock in a position to afford convenient hookup to the suction of the Petrox injection pumps.
2. Safety Precaution	a. Set chocks. b. Place WARNING in front of truck. <u>"TRUCK CONNECTED - DO NOT STRIKE OR MOVE."</u>
3. Connect Truck	a. Remove cap on truck unloading line. b. Connect the suction of the Petrox pumps to the unloading connection on the truck with the flexible connector provided. c. Make-up tight on both connections to avoid leaks.

JOB BREAKDOWN

B-17
Page 1

PLANT: Puget Sound
DEPARTMENT: RP&S - Docks
CLASSIFICATION: Pumper Helper B
OPERATION: B-17 Inject Petrox In Gasoline Shipments -
Docks

IMPORTANT STEPS	KEY POINTS
1. General Information	Certain barge loadings of gasoline over Docks may require the injection of Petrox.
2. Prepare To Inject	a. Check barge order for amount of gasoline to be loaded. b. Determine number gallons Petrox to inject. Refer to RP&S additive instruction book for rate of injection. c. Gauge Petrox truck and open outlet valve. d. Open suction and discharge valves on Petrox pump. e. Open inlet valve on meter.
3. Inject Petrox	a. Start gasoline aboard barge and determine loading rate as quickly as possible. b. Contact Assistant Pumper to check gauges on shipping rate to barge. c. Start Petrox pump and open outlet valve on meter allowing Petrox to enter gasoline stream. d. Adjust flow indicator or meter to correct setting by adjusting outlet of meter. e. Take gauge on Petrox trailer as a check against flow thru meter. f. Continue the Petrox injection while barge is loading, adjusting the flow at a slightly higher rate than required compared to the gasoline loading rate, so that the total amount of Petrox will be injected into the cargo before barge begins to "top-out".

JOB BREAKDOWN

B-17
Page 2

PLANT: Puget Sound
DEPARTMENT: RP&S - Docks
CLASSIFICATION: Pumper Helper B
OPERATION: B-17 Inject Petrox In Gasoline Shipments -
Docks (Cont.)

IMPORTANT STEPS	KEY POINTS
3. Inject Petrox (Cont.)	g. Gauge Petrox trailer and when re- quired amount of Petrox has been injected close outlet valve on meter and stop pump. h. Close all valves on meter, pump and tank trailer. i. Take closing gauge on tank trailer. j. Record opening and closing gauges on Petrox trailer on Dock log, showing amount injected, starting and stopping times and the operator is to sign his name.

JOB BREAKDOWN

B-18
Page 1

PLANT: Puget Sound
DEPARTMENT: RP&S - Docks
CLASSIFICATION: Pumper Helper B
OPERATION: B-18 Deliver Water To Vessels

IMPORTANT STEPS	KEY POINTS
1. General Information	a. The ship furnishes their own drinking or fresh water hose. A member of the crew will make the connection to our Dock. No written order from our Shipping Department is required to deliver water, however, when fresh water is requested by the ship, the Dock operator should notify his supervisor of such request. Since the water is metered, there is a charge for this service based on so much per ton and the ship's credit will have to be established. b. When approval has been o.k.'d to deliver water to the vessel.
2. Deliver Water	a. Take opening reading on water meter and record on form R-67A. b. Have ship connect hose to Dock riser. c. Open gate on Dock at ship's request. d. Close gate on Dock at ship's request when water delivery finished. e. Ship crew will disconnect hose.
3. Prepare R-67A	a. Take closing reading on water meter and insert on R-67A. b. Make necessary calculations on R-67A and fill out all information required. c. Have ship's engineer sign receipt and give one copy to ship. d. Send original and one copy of R-67A to Shipping Department. The thin tissue stays in book.

JOB BREAKDOWN

B-18
Page 2

PLANT: Puget Sound
DEPARTMENT: RP&S - Docks
CLASSIFICATION: Pumper Helper B
OPERATION: B-18 Deliver Water To Vessels (Cont.)

IMPORTANT STEPS	KEY POINTS
4. Safety Precautions	The drinking water line to the Docks also serves as a fire water line for the Dock approach and the Pier Head. In case of fire on approach or Dock proper while water is being delivered to a vessel, close off on water delivery <u>AT ONCE</u> so the fire fighting forces can take full advantage of the maximum water pressure.

JOB BREAKDOWN

B-19
Page 1

PLANT: Puget Sound
DEPARTMENT: RP&S - Docks
CLASSIFICATION: Pumper Helper B
OPERATION: B-19 Operate Air Compressor on Dock

IMPORTANT STEPS	KEY POINTS
1. General Information	No air line is provided to the Dock from the plant proper, but an electric driven air compressor is installed in the sample room of the Dock office to provide air for the operation of winches, air guns, etc. In the event this compressor fails, a portable compressor can be obtained from the plant and is a suitable substitute.
2. Operate Compressor	a. Turn switch to "ON" position and compressor will start. b. After 10 to 15# pressure is built up in tank (by gauge), open bleeder valve on tank and drain out any accumulated water or oil. Then close bleeder. c. Pressure on system should build to 120# at which point it shuts down automatically. When air pressure is reduced by use to 105 to 110#, the compressor starts again automatically. d. Do not shut off switch on this equipment as long as hoses are coupled to vessels--unless in an emergency. e. DO SHUT OFF switch when you are through using air. f. Check piping for air leaks occasionally and report any found. g. If pressure does not come up in tank, block off valve to air lines. If pressure still does not build in tank, notify your Supervisor.

JOB BREAKDOWN

B-19
Page 2

PLANT: Puget Sound
DEPARTMENT: RP&S - Docks
CLASSIFICATION: Pumper Helper B
OPERATION: B-19 Operate Air Compressor on Dock (Cont.)

IMPORTANT STEPS	KEY POINTS
2. Operate Compressor (Cont.)	h. Be sure you start compressors in time to build air pressure before vessel arrives. i. Check operation of compressor daily -- up to full pressure and automatic shutdown.

JOB BREAKDOWN

B-20
Page 1

PLANT: Puget Sound
DEPARTMENT: RP&S - Docks
CLASSIFICATION: Pumper Helper B
OPERATION: B-20 Disconnect Cargo Hose

IMPORTANT STEPS	KEY POINTS
1. Drain Hose	a. When finished loading or discharging a vessel and before disconnecting hose, it must be drained. b. If connection on vessel is below the dock connection, open vent in line and let hose drain into ship. c. If connection on vessel is above dock connection and the product in hose is heavy Fuel Oil, hook-up air hose and clear hose into ship tank. d. When hose contains crude, gasolines and middle distillates and it is impossible to empty hose into ship's tank by venting, close valve on ship's manifold, open vent line on dock connection and drain hose into dock sump.
2. Release Pressure	a. Bleed off pressure before disconnecting hose and this can be done by following the outline above for draining hose by venting into ship or dock sump. Vent valve is to be left open.
3. Disconnect Hose	a. Hook upper cable on Hose structure into steel ring near ship end of hose. b. Take slight strain on cable. c. Place drain tub under ship manifold connection. d. Unflange hose from ship manifold, being careful not to let the hose swing to one side when last bolt removed causing an accident.

JOB BREAKDOWN

B-20
Page 2

PLANT: Puget Sound
DEPARTMENT: RP&S - Docks
CLASSIFICATION: Pumper Helper B
OPERATION: B-20 Disconnect Cargo Hose (Cont.)

IMPORTANT STEPS	KEY POINTS
3. Disconnect Hose (Cont.)	e. Catch any drainings from end of hose into tub. f. <u>Bolt blank flange on end of hose.</u> g. Raise end of hose as required with attached cable to release strain on boom supports.
4. Store Hose	a. Remove any rope slings and pads on hose. b. Raise hose in an upright position in Hose structure, careful not to cause excessive bending of hose. c. Connect safety chain on topside of hose. d. Adjust all cables to take up any slack. <u>NOTE:</u> Vent valve to each hose to remain open until hose again placed in service. e. Record on Dock form Hose number and amount of time used. f. Note on Dock form if hose is damaged or unsafe for use.
5. Barge Hose	a. Barges normally carry their own hose. b. When loading or discharging is completed, the Barge boom stores hose on deck. c. Draining and disconnecting is the same as on tankers.

JOB BREAKDOWN

B-11
Page 5

PLANT: Puget Sound
DEPARTMENT: RP&S - Docks
CLASSIFICATION: Pumper Helper B
OPERATION: B-11 Load Tanker Cargoes (Cont.)

IMPORTANT STEPS	KEY POINTS
6. Shut Down Loading (Cont.)	<u>NOTE:</u> Minimum closing times for Dock Line valves: Gasolines - 60 seconds Middle Dists and Jet Fuels - 1 - 1/2 minutes. Bunker Fuel Oil - 45 seconds. Drinking Water - 30 seconds. c. Close Dock valve(s) completely after required elapse of time. d. Notify ship to close their loading manifold. e. Notify Assistant Pumper ship has finished loading. f. Note finishing loading time on Dock log.

JOB BREAKDOWN

B-12
Page 1

PLANT: Puget Sound
DEPARTMENT: RP&S - Docks
CLASSIFICATION: Pumper Helper B
OPERATION: B-12 Load Barge Cargoes

IMPORTANT STEPS	KEY POINTS
1. General	After barge is correctly spotted, static line attached and hose connected, the next steps are to be followed.
2. Prepare to Load	a. After tanks have been inspected and o.k.'d by Pumper Helper A and all fires and stoves are out aboard barge and tug is moored at extreme end of Pier head, notify Assistant Pumper to line up shipping manifold at Blending Plant. b. Notify Bargeman to line up Barge manifold to receive cargo and establish loading plan and procedure (pump or gravitate). c. Check bleeder valve on Dock riser in closed position. d. Open loading valve on Dock. e. Note opening draft on Dock Log.
3. Load Barge	a. Notify Assistant Pumper to start shipping pump. b. Caution Bargeman that cargo is about to start aboard. c. Open pressure gauge on riser and check pressure. d. Do not exceed over 100# at Dock side. Should pressure exceed 100# have Assistant Pumper adjust manifold at shipping pump. e. Note starting time on Dock Log. f. Check water surface frequently for traces of oil. g. Keep in touch with Assistant Pumper and establish loading rate.

JOB BREAKDOWN

B-12
Page 2

PLANT: Puget Sound
DEPARTMENT: RP&S - Docks
CLASSIFICATION: Pumper Helper B
OPERATION: B-12 Load Barge Cargoes (Cont.)

IMPORTANT STEPS	KEY POINTS
3. Load Barge (Cont.)	h. Take one quart starting line sample 15 minutes after barge has been loading, tag and identify. i. Take one quart sample first compartment aboard (receiving each product) when approximately two feet in compartment, tag and identify. j. Work closely with Bargeman. k. Adjust hose when necessary due to rise and fall of tide, and draft of barge.
4. Topping Out	a. Use extreme care when topping out, as barge compartments are smaller than tanker compartments and are easier to overflow. b. When topping out last two barge compartments, notify Assistant Pumper to stop shipping pump and allow barge to fill by gravity. c. Caution Bargeman to allow plenty of time on topping out to close dock valve slowly to eliminate line shock. d. Close off Dock riser when signal given by Bargeman. e. Open bleeder on upper side of Dock riser and allow hose to drain (possibly into barge). f. Have Bargeman close off his manifold. g. Note finishing time and closing draft in Dock Log. h. Notify Pumper Helper A barge is ready to gauge.

JOB BREAKDOWN

B-13
Page 1

PLANT: Puget Sound
DEPARTMENT: RP&S - Docks
CLASSIFICATION: Pumper Helper B
OPERATION: B-13 Load Bunkers

IMPORTANT STEPS	KEY POINTS
1. General Information	Ship's bunkers are placed in two classifications. Steam driven vessels use heavy bunker fuel and motor driven vessels use Diesel fuel. The heavy bunker fuel and the diesel fuel will be manufactured at this refinery to satisfactorily meet ship requirements.
2. Order to Load	a. When bunkers are needed aboard a vessel the chief engineer must request RP&S to deliver bunkers. b. When request is approved by the Shipping Department, order will then be issued to RP&S Department.
3. Prepare To Load Upon Receipt Of Order	a. Take one quart average sample from each ship's compartment to receive bunkers if oil is present. b. Connect bunker hose to ship's manifold. c. Notify Assistant Operator to make line-up to Dock, who will notify tank truck rack and have loader make notation on truck loading report that vessel will take bunkers. <u>NOTE:</u> If truck is loading Fuel Oil, finish loading before starting to ship. O.K. to load trucks while vessel is receiving bunkers. d. Get start up approval from engineer in charge to receive cargo.

JOB BREAKDOWN

B-13
Page 2

PLANT: Puget Sound
DEPARTMENT: RP&S - Docks
CLASSIFICATION: Pumper Helper B
OPERATION: B-13 Load Bunkers (Cont.)

IMPORTANT STEPS	KEY POINTS
3. Prepare To Load Upon Receipt of Order (Cont.)	e. Discuss shut down procedure, such as the ship will gauge their own tanks while receiving and will notify operator on Docks in plenty of time to shut down loading pump and close dock valve when bunkers are aboard. <u>NOTE:</u> In some cases bunker quantities may be gauged out ashore to a stop gauge, and in such cases the RP&S will handle shut down without notification from the ship. f. Ship's bunker tanks are not usually gauged by RP&S-Docks Department, but in some cases this may be required. The chief engineer aboard handles this phase to his own satisfaction. <u>NOTE:</u> When large quantities of bunkers are loaded aboard, the engineer may request that our shore tank be witnessed gauged by a member of his department since the ship will be charged with the amount of bunkers delivered from our shore tank and not on the quantity received in the ship's tanks.
4. Load Bunkers	a. Have ship open necessary valves aboard to receive bunkers. b. Open valve on Dock bunker riser. c. Notify Operator at Blending Plant to start shipping pump. d. Open valve on bunker pressure gauge riser at Dock.

JOB BREAKDOWN

B-13
Page 3

PLANT: Puget Sound
DEPARTMENT: RP&S - Docks
CLASSIFICATION: Pumper Helper B
OPERATION: B-13 Load Bunkers (Cont.)

IMPORTANT STEPS	KEY POINTS
4. Load Bunkers (Cont.)	e. Observe pressure reading as soon as bunkers are going aboard. <u>CAUTION: DO NOT EXCEED 100 POUNDS ON PRESSURE GAUGE AT ANY TIME WHILE BUNKERS ARE BEING LOADED.</u> f. Notify operator at Blending Plant to pinch down on discharge valve of shipping manifold should pressure exceed 100# at Dock-side. g. Take one quart sample from Dock bleeder 15 minutes after bunkers are started aboard. h. Notify operator at Blending Plant to standby shipping pump in order to shut down just before loading is completed. i. Ship will signal Dock Operator in time to shut down shipping pump. j. Notify Blending Plant to shut down pump <u>AT ONCE.</u> k. Close valve on Dock riser as soon as the gauge shows pressure drop. l. In the case of Hvy fuel, connect air hose to Dock riser and clear bunker hose into ship's tank. Open valve on air line slowly, so as not to blow fuel out of ship's tank hatch. m. In the case of Diesel fuel, have ship close their manifold. Then open drain on upper side of Dock riser and allow hose to vent into Dock sump.

JOB BREAKDOWN

B-13
Page 4

PLANT: Puget Sound
DEPARTMENT: RP&S - Docks
CLASSIFICATION: Pumper Helper B
OPERATION: B-13 Load Bunkers (Cont.)

IMPORTANT STEPS	KEY POINTS
4. Load Bunkers (Cont.)	n. Take one quart sample from each ship compartment which has re- ceived bunkers and tag. o. Disconnect hose and store.
<u>NOTE:</u> Shipping Department will handle receipt, R-67A.	

JOB BREAKDOWN

B-14
Page 1

PLANT: Puget Sound
DEPARTMENT: RP&S - Docks
CLASSIFICATION: Pumper Helper B
OPERATION: B-14 Unload Tanker Cargoes

IMPORTANT STEPS	KEY POINTS
1. General	For the most part all loaded tankers received will contain crude oil to be discharged. It is expected a number of these vessels will be under charter to TEXACO Inc., flying foreign flags and manned with foreign crews. At times there will be a language barrier, but the Master, First Mate and Chief Engineer generally speak good English. Unloading of cargo can start after hose are connected and U.S. Customs has cleared the cargo.
2. Prepare To Discharge Cargo	a. Notify Assistant Pumper to line-up tankage to receive ship. b. Take required samples from cargo tanks aboard. c. Tag and store in sample room. d. Request ship to set their line-up aboard for discharge.
3. Start Discharge Of Cargo	a. Check the vent valves on Dock risers to be sure they are in closed position and then open Dock riser valves as required. b. Give mate O.K. to start one cargo pump and let run for approximately two minutes. If it is determined right-of-way is open into RP&S tankage have mate start remainder of cargo pumps, spaced at one minute intervals. c. Record starting time in Dock log.

JOB BREAKDOWN

B-14
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PLANT: Puget Sound
DEPARTMENT: RP&S - Docks
CLASSIFICATION: Pumper Helper B
OPERATION: B-14 Unload Tanker Cargoes (Cont.)

IMPORTANT STEPS	KEY POINTS
3. Start Discharge Of Cargo (Cont.)	d. Open valve on pressure gauge. Dock riser(s) and observe. Do not exceed 120#. (There should be no trouble in this respect as RP&S Pumper will have crude booster pumps on line right after start up of cargo.) e. Adjust cargo hose if needed as weight of oil in hose may cause strain on ship and Dock connections.
4. Unload Vessel	a. Adjust cargo hose when needed as draft of vessel decreases to relieve strain and kinks. b. Call Mate's attention to any slack lines which may cause vessel to surge because of a sudden squall or Marine traffic passing Docks.
5. Stripping Vessel	a. When the discharge is near completion, the ship may stop one or more main cargo pumps and then start the stripping pump. b. Notify Assistant Pumper before stripping begins. c. Notify Assistant Pumper to have booster pump shut down just before the completion of cargo discharge.
6. Finish Cargo Discharge	a. When stripping is taking place in the last ship's tank stand by to close off Dock risers when ship is empty. b. Have Mate close ship's manifold <u>first</u> and immediately afterwards close Dock riser valves.

JOB BREAKDOWN

B-14
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PLANT: Puget Sound
DEPARTMENT: RP&S - Docks
CLASSIFICATION: Pumper Helper B
OPERATION: B-14 Unload Tanker Cargoes (Cont.)

IMPORTANT STEPS	KEY POINTS
6. Finish Cargo Discharge (Cont.)	c. Close off pressure gauges and open Dock riser bleeders into slop oil sump.
	d. Record draft of vessel and time cargo finished discharging in Dock log.
	e. Open bleeder on Pig Trap and bleed off any air which may have accumulated in Crude line while vessel was stripping.
	f. Notify Assistant Pumper vessel has completed discharge of cargo.

JOB BREAKDOWN

B-15
Page 1

PLANT: Puget Sound
DEPARTMENT: RP&S - Docks
CLASSIFICATION: Pumper Helper B
OPERATION: B-15 Watch Hose

IMPORTANT STEPS	KEY POINTS
1. Safety Precautions	a. Too much care cannot be taken on the handling and use of cargo hose, as to excessive bending, kinking, rubbing or chaffing against another object. b. Never shut off Dock riser against hose while vessel discharging. <u>NOTE:</u> Have vessel close their discharge valve first if necessary. c. Never allow ship to close their manifold against hose while loading.
2. Watch Hose	a. A hose watcher is to be on Docks at all times when a ship(s) or barge has hose connected. b. Raise or lower hose with air winches as required to avoid kinking or excessive bending as elevation of vessel changes due to tide and amount of product aboard. c. Keep hose clear of other hose connected, or those in the structure from contact with each other by using air winches or extra slings to snub off. d. Slack off on necessary cables to release undue strain on hose should ship move while berthed, fore, aft or away from side of Dock.
3. Watch Ship's Lines	a. Keep slack out of ship's hawsers and cables while vessel has hose connected, by notifying Mate in charge of such condition. b. Shut vessel down if slack is not taken up when such a condition may become dangerous and cause damage to cargo hose.

JOB BREAKDOWN

B-16

PLANT: Puget Sound
DEPARTMENT: RP&S - Docks
CLASSIFICATION: Pumper Helper B
OPERATION: B-16 Connect Petrox Truck On Dock

IMPORTANT STEPS	KEY POINTS
1. General Information	Parking space is provided on Dock next to the Wharf Office for the Petrox trailer. The trailer is to be spotted on the Dock in a position to afford convenient hookup to the suction of the Petrox injection pumps.
2. Safety Precaution	a. Set chocks. b. Place WARNING in front of truck. <u>"TRUCK CONNECTED - DO NOT STRIKE OR MOVE."</u>
3. Connect Truck	a. Remove cap on truck unloading line. b. Connect the suction of the Petrox pumps to the unloading connection on the truck with the flexible connector provided. c. Make-up tight on both connections to avoid leaks.

JOB BREAKDOWN

B-17
Page 1

PLANT: Puget Sound
DEPARTMENT: RP&S - Docks
CLASSIFICATION: Pumper Helper B
OPERATION: B-17 Inject Petrox In Gasoline Shipments -
Docks

IMPORTANT STEPS	KEY POINTS
1. General Information	Certain barge loadings of gasoline over Docks may require the injection of Petrox.
2. Prepare To Inject	a. Check barge order for amount of gasoline to be loaded. b. Determine number gallons Petrox to inject. Refer to RP&S additive instruction book for rate of injection. c. Gauge Petrox truck and open outlet valve. d. Open suction and discharge valves on Petrox pump. e. Open inlet valve on meter.
3. Inject Petrox	a. Start gasoline aboard barge and determine loading rate as quickly as possible. b. Contact Assistant Pumper to check gauges on shipping rate to barge. c. Start Petrox pump and open outlet valve on meter allowing Petrox to enter gasoline stream. d. Adjust flow indicator or meter to correct setting by adjusting outlet of meter. e. Take gauge on Petrox trailer as a check against flow thru meter. f. Continue the Petrox injection while barge is loading, adjusting the flow at a slightly higher rate than required compared to the gasoline loading rate, so that the total amount of Petrox will be injected into the cargo before barge begins to "top-out".

JOB BREAKDOWN

B-17
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PLANT: Puget Sound
DEPARTMENT: RP&S - Docks
CLASSIFICATION: Pumper Helper B
OPERATION: B-17 Inject Petrox In Gasoline Shipments -
Docks (Cont.)

IMPORTANT STEPS	KEY POINTS
3. Inject Petrox (Cont.)	g. Gauge Petrox trailer and when required amount of Petrox has been injected close outlet valve on meter and stop pump. h. Close all valves on meter, pump and tank trailer. i. Take closing gauge on tank trailer. j. Record opening and closing gauges on Petrox trailer on Dock log, showing amount injected, starting and stopping times and the operator is to sign his name.

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JOB BREAKDOWN

B-18
Page 1

PLANT: Puget Sound
DEPARTMENT: RP&S - Docks
CLASSIFICATION: Pumper Helper B
OPERATION: B-18 Deliver Water To Vessels

IMPORTANT STEPS	KEY POINTS
1. General Information	a. The ship furnishes their own drinking or fresh water hose. A member of the crew will make the connection to our Dock. No written order from our Shipping Department is required to deliver water, however, when fresh water is requested by the ship, the Dock operator should notify his supervisor of such request. Since the water is metered, there is a charge for this service based on so much per ton and the ship's credit will have to be established. b. When approval has been o.k.'d to deliver water to the vessel.
2. Deliver Water	a. Take opening reading on water meter and record on form R-67A. b. Have ship connect hose to Dock riser. c. Open gate on Dock at ship's request. d. Close gate on Dock at ship's request when water delivery finished. e. Ship crew will disconnect hose.
3. Prepare R-67A	a. Take closing reading on water meter and insert on R-67A. b. Make necessary calculations on R-67A and fill out all information required. c. Have ship's engineer sign receipt and give one copy to ship. d. Send original and one copy of R-67A to Shipping Department. The thin tissue stays in book.

JOB BREAKDOWN

B-18
Page 2

PLANT: Puget Sound
DEPARTMENT: RP&S - Docks
CLASSIFICATION: Pumper Helper B
OPERATION: B-18 Deliver Water To Vessels (Cont.)

IMPORTANT STEPS	KEY POINTS
4. Safety Precautions	The drinking water line to the Docks also serves as a fire water line for the Dock approach and the Pier Head. In case of fire on approach or Dock proper while water is being delivered to a vessel, close off on water delivery <u>AT ONCE</u> so the fire fighting forces can take full advantage of the maximum water pressure.

JOB BREAKDOWN

B-19
Page 1

PLANT: Puget Sound
DEPARTMENT: RF&S - Docks
CLASSIFICATION: Pumper Helper B
OPERATION: B-19 Operate Air Compressor on Dock

IMPORTANT STEPS	KEY POINTS
1. General Information	No air line is provided to the Dock from the plant proper, but an electric driven air compressor is installed in the sample room of the Dock office to provide air for the operation of winches, air guns, etc. In the event this compressor fails, a portable compressor can be obtained from the plant and is a suitable substitute.
2. Operate Compressor	a. Turn switch to "ON" position and compressor will start. b. After 10 to 15# pressure is built up in tank (by gauge), open bleeder valve on tank and drain out any accumulated water or oil. Then close bleeder. c. Pressure on system should build to 120# at which point it shuts down automatically. When air pressure is reduced by use to 105 to 110#, the compressor starts again automatically. d. Do not shut off switch on this equipment as long as hoses are coupled to vessels--unless in an emergency. e. DO SHUT OFF switch when you are through using air. f. Check piping for air leaks occasionally and report any found. g. If pressure does not come up in tank, block off valve to air lines. If pressure still does not build in tank, notify your Supervisor.

JOB BREAKDOWN

B-19
Page 2

PLANT: Puget Sound
DEPARTMENT: RP&S - Docks
CLASSIFICATION: Pumper Helper B
OPERATION: B-19 Operate Air Compressor on Dock (Cont.)

IMPORTANT STEPS	KEY POINTS
2. Operate Compressor (Cont.)	h. Be sure you start compressors in time to build air pressure before vessel arrives. i. Check operation of compressor daily -- up to full pressure and automatic shutdown.

JOB BREAKDOWN

B-20
Page 1

PLANT: Puget Sound
DEPARTMENT: RP&S - Docks
CLASSIFICATION: Pumper Helper B
OPERATION: B-20 Disconnect Cargo Hose

IMPORTANT STEPS	KEY POINTS
1. Drain Hose	a. When finished loading or discharging a vessel and before disconnecting hose, it must be drained. b. If connection on vessel is below the dock connection, open vent in line and let hose drain into ship. c. If connection on vessel is above dock connection and the product in hose is heavy Fuel Oil, hook-up air hose and clear hose into ship tank. d. When hose contains crude, gasolines and middle distillates and it is impossible to empty hose into ship's tank by venting, close valve on ship's manifold, open vent line on dock connection and drain hose into dock sump.
2. Release Pressure	a. Bleed off pressure before disconnecting hose and this can be done by following the outline above for draining hose by venting into ship or dock sump. Vent valve is to be left open.
3. Disconnect Hose	a. Hook upper cable on Hose structure into steel ring near ship end of hose. b. Take slight strain on cable. c. Place drain tub under ship manifold connection. d. Unflange hose from ship manifold, being careful not to let the hose swing to one side when last bolt removed causing an accident.

JOB BREAKDOWN

B-20
Page 2

PLANT: Puget Sound
DEPARTMENT: RP&S - Docks
CLASSIFICATION: Pumper Helper B
OPERATION: B-20 Disconnect Cargo Hose (Cont.)

IMPORTANT STEPS	KEY POINTS
3. Disconnect Hose (Cont.)	e. Catch any drainings from end of hose into tub. f. <u>Bolt blank flange on end of hose.</u> g. Raise end of hose as required with attached cable to release strain on boom supports.
4. Store Hose	a. Remove any rope slings and pads on hose. b. Raise hose in an upright position in Hose structure, careful not to cause excessive bending of hose. c. Connect safety chain on topside of hose. d. Adjust all cables to take up any slack. <u>NOTE:</u> Vent valve to each hose to remain open until hose again placed in service. e. Record on Dock form Hose number and amount of time used. f. Note on Dock form if hose is damaged or unsafe for use.
5. Barge Hose	a. Barges normally carry their own hose. b. When loading or discharging is completed, the Barge boom stores hose on deck. c. Draining and disconnecting is the same as on tankers.

JOB BREAKDOWN

B-21

PLANT: Puget Sound
DEPARTMENT: RP&S - Docks
CLASSIFICATION: Pumper Helper B
OPERATION: B-21 Operate M. O. Valve-Effluent Line-Docks

IMPORTANT STEPS

KEY POINTS

1. General

The effluent line near the end of the Dock is equipped with a motor operated valve. This valve has a local control switch and can also be remotely controlled from the Blending Plant. It will be necessary to open and close this valve at the request of the effluent operator in order to discharge water from that area.

2. Operation Of Valve

To operate the valve push the open or close button to operate the valve as desired. When the effluent plant has finished discharging water, close valve.

JOB BREAKDOWN

B-22
Page 1

PLANT: Puget Sound
DEPARTMENT: RP&S - Docks
CLASSIFICATION: Pumper Helper B
OPERATION: B-22 Draw Water Or Oil From Impounding Basins

IMPORTANT STEPS	KEY POINTS
1. General Information	The crude oil tanks, the FCCU charge tanks and the straight run naphtha tanks are diked individually. The remaining RP&S atmospheric storage tanks are diked in two groups. One group, intermediate feed stocks and blending components drain to a common retention pond or basin located on the northeast side of 7th and "C" Streets. The other group, final product and shipping tankage drains to a common retention basin located on the north side of 7th Street and east of "A" Street. There is also a caustic impounding basin at 6th & "C" Streets which will contain any caustic spills or leaks. When any of these basins require draining, an average quart sample is to be taken from the basin and tagged for pH and phenols and taken to the Laboratory. The results will be given to the Foreman of RP&S Dept. who will fill out and process a Pollution Form R-500.

He will then tell you how to dispose of the drainage and at what rate.

Drain basins in the individually diked areas and from the impounding basins are tied by valve connections to both the oily and clean water sewer systems. All drain valves are to be in the CLOSED POSITION except when basins or dikes are drained down. When sufficient water or oil has accumulated to warrant draining, the operator at the Effluent area is to be notified and all drainage, be it clean or oily water, is to be emptied into the oily water sewer system. There may be times during the rainy season when the accumulation of clean water is sufficient with no oil present that the impounding basin drainings be emptied into the clean water sewer.

JOB BREAKDOWN

B-22
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PLANT: Puget Sound
DEPARTMENT: RP&S - Docks
CLASSIFICATION: Pumper Helper B
OPERATION: B-22 Draw Water Or Oil From Impounding Basins
(Cont.)

IMPORTANT STEPS	KEY POINTS
1. General Information (Cont.)	Oil spills on RP&S tankage will be given special attention as to each individual case.
2. Drain Impounding Basins	a. Notify operator at Effluent area that a basin is to be drained, state approximate quantity of water and oil (if any) to be dumped to sewer. b. Open gate into oily water sewer and check clean water outlet valve in the closed position. c. Absolutely <u>NO OIL</u> is to be turned to clean water sewer. d. Allow basin to empty if time will permit. e. When finished drawing water on basin, close gate into oily water sewer. f. Notify Effluent Operator.

JOB BREAKDOWN

B-23

PLANT: Puget Sound
DEPARTMENT: RP&S - Docks
CLASSIFICATION: Pumper Helper B
OPERATION: B-23 Clean Up In Department

IMPORTANT STEPS	KEY POINTS
1. Housekeeping	a. Good housekeeping is most essential throughout the entire refinery and especially so in the RP&S Department. A clean and orderly department is our best defense against accidents and fires. b. Keep all rags picked up in tank farm, docks, loading racks, etc. c. Deposit oily rags in metal containers provided in the department. d. Do not allow filled or empty sample bottles to sit out in open areas. e. Wash down any oil spills at once, on tank car rack, tank truck rack, blending plant or dock slab. f. Extra clothing not in use is to be kept in employee's locker. g. Any large amounts of trash, etc. that would require a truck for clean up, notify the Pumper. h. Pumps and manifolds are to be kept wiped down. i. Wipe up all spillage of oil around sample and gauge hatches on tankage.

JOB BREAKDOWN

B-24
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PLANT: Puget Sound
DEPARTMENT: RP&S - Docks
CLASSIFICATION: Pumper Helper B
OPERATION: B-24 Line-Up And Circulate Effluent And
Ballast Lines

IMPORTANT STEPS	KEY POINTS
1. General Information	a. During cold weather it will be necessary to circulate the effluent and ballast lines on the Docks to prevent freezing. It will be required to work closely with the Effluent Area operator on lining up and keeping a continuous flow thru the two lines. b. An 8" fire water line is connected to the effluent line at the east end of the wharf and this line extends to the west end of the pier and is there connected into an extension of the ballast line. 8" valve at east end of 8" line to be left open at all times! c. A vertical sump pump with collection tank for handling hose drainings, etc. discharges to the waste treatment plant via the ballast line. During cold weather when water is being circulated through the effluent fire main and ballast line to prevent freezing, the pump must be switched to manual operation so the oily water will not be injected into the circulating water except when it is diverted into the ballast tank. A high level audible alarm is provided to alert personnel that the tank is getting full.
2. Prepare To Circulate Effluent And Ballast Lines	a. Contact Effluent operator and advise condition of ballast line, if it was last used for slops or just water. Effluent operator will then know how to handle receipt from ballast line on his end. b. Have Effluent operator to notify Docks when his line-up is made.

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JOB BREAKDOWN

B-24
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PLANT: Puget Sound
DEPARTMENT: RP&S - Docks
CLASSIFICATION: Pumper Helper B
OPERATION: B-24 Line-Up And Circulate Effluent And
Ballast Lines (Cont.)

IMPORTANT STEPS	KEY POINTS
2. Prepare to Circulate Effluent And Ballast Lines (Cont.)	c. Switch Dock sloop pump to manual control and close discharge of pump. d. Switch "off" sump pumps at booster station and truck rack.
3. Circulate Effluent And Ballast Lines	a. When Effluent operator advises line-up made and ready to start circulating pump, then open block valve between fire main and ballast line extension at west end of wharf. b. Circulate the system as required as long as temperature is near or below freezing (32° F).
4. Shut Down Circulation Of Effluent And Ballast Lines	a. Notify Effluent operator to stop pump and block off his system. b. Do not close 8" block valve on fire main at east end of wharf. c. Close block valve between fire line and ballast line extension at west end of wharf. d. Return sloop sump pump to automatic control and open discharge into ballast line. e. Switch "on" sump pumps at truck rack and booster station.

JOB BREAKDOWN

B-25

PLANT: Puget Sound
DEPARTMENT: RP&S - Docks
CLASSIFICATION: Pumper Helper B
OPERATION: B-25 Heat Tanks

IMPORTANT STEPS	KEY POINTS
1. Turn Steam On	a. Notify Boiler House before turning steam on tank. b. Open valves and bleeders wide on steam coil outlets. c. Crack steam into line to tank inlet header allowing header to warm up. d. Open valve wide on line to inlet header with coil inlet valves closed. e. Crack open coil inlet valves slowly, allowing steam to enter tank coils. f. Bleed off condensed steam at outlet. g. Close bleeders at outlet allowing flow to go to steam trap. h. Open coil inlet valves wide.
2. Turn Steam Off	a. Close coil inlet valves. b. Close valve on line to inlet header. c. Open bleeder, releasing pressure on inlet header. d. Open bleeders on outlet coils. e. Open bleeder and drain steam-trap.
3. Safety Precautions	a. Refer to Standing Instructions for maximum temperature on product in fiberglas bottom tanks.

JOB BREAKDOWN

B-26

PLANT: Puget Sound
DEPARTMENT: RP&S - Docks
CLASSIFICATION: Pumper Helper B
OPERATION: B-26 Deliver Steam To Vessel

IMPORTANT STEPS	KEY POINTS
1. General Information	In some instances ships and barges require steam while berthed at our docks. Ship may or may not supply their own hose. However, in all cases an inspection of the hose is to be made before it's use to make certain the hose is in good condition and safe to use.
2. Get Approval	Get approval from the Foreman or Assistant Foreman before making delivery of steam.
3. Connect Hose	Connect hose to dock riser with all connections made up tight.
4. Deliver Steam	a. Notify Boilerhouse. b. Contact ship personnel that steam is ready for delivery. c. Crack open dock valve slowly after ship has their line-up set. d. Open dock valve as desired after hose has warmed up.
5. Close Off Steam	a. Close dock valve and then have ship close their valve. b. Open bleeder and release pressure. c. Disconnect hose and store. d. Notify Boilerhouse finished with steam to vessel.
6. Receipt For Delivery	a. A charge for delivery of steam will be made. b. Record on Form R-67A, the length of time steam supplied to vessel, pressure, and line size. c. Sign R-67A and have Engineer or Mate aboard sign. d. Give copy of receipt to ship.

JOB BREAKDOWN

B-27

PLANT: Puget Sound
DEPARTMENT: RP&S - Docks
CLASSIFICATION: Pumper Helper B
OPERATION: B-27 Unberth Vessel

IMPORTANT STEPS	KEY POINTS
1. Unhook Hawsers	When the vessel is ready to sail from our dock, the ship's hawsers are slackened by ship's crew, and when instructed by ship's officer or pilot, release hawsers from mooring bitts as directed by pilot.
2. Safety Precautions	When unberthing a vessel <u>DO NOT</u> stand on outside edge of Dock or cluster or between the line and the ship. Keep feet clear of lines at all times.

JOB BREAKDOWN

B-28

PLANT: Puget Sound
DEPARTMENT: RP&S - Docks
CLASSIFICATION: Pumper Helper B
OPERATION: B-28 Operate Tank Mixers

IMPORTANT STEPS

KEY POINTS

1. Start Mixer
 - a. Make sure level of oil in tank to be mixed is above the mixer propeller as on RP&S tankage book.
 - b. Check mixer for lubrication.
 - c. Throw electric switch to "ON" position starting mixer.
 - d. Check mixer after starting for any unusual noises indicating mechanical trouble.
 - e. Check shaft packing gland for leaks.
2. Run Mixer
 - a. Run mixer as long as instructed, usually the length of time depends on how long it requires to thoroughly mix contents of tank.
3. Stop Mixer
 - a. Open electric switch to "OFF" position.
 - b. Check shaft packing gland for leaks after mixer has stopped.

JOE BREAKDOWN

B-29
Page 1

PLANT: Puget Sound
DEPARTMENT: RP&S - Docks
CLASSIFICATION: Pumper Helper B
OPERATION: B-29 Handle Records & Reports

IMPORTANT STEPS	KEY POINTS
1. Dock Log	a. A log book is kept on the Dock. All information relating to a tanker or barge is to be recorded such as, name of vessel, time docked, draft, fore and aft, time started to load (unload), time finished, sailing time and tug boats used. b. Also record in the log any unusual happenings in connection with a ship or barge, such as damage to docks, hose or line failures and reason for any shutdowns. c. This log book is to be kept in the Dock office for reference by the supervisor.
2. Form R-67-A	a. TEXACO Receipt to be filled out on all fresh water deliveries. b. When a water delivery is finished, the opening and closing meter readings are to be inserted, showing the number of gallons delivered to ship or barge and all other captions filled in on this form. c. Have Engineer in charge sign, giving the ship the yellow copy. The original and orange copy are sent to Accounting Department and the thin tissue copy stays in book.
3. Cargo Identification Card	a. A number of cards identifying all products handled over our docks are kept in the Dock office. In compliance with a Coast Guard regulation, these cards are to be posted at the loading site and removed when loading is complete.

JOB BREAKDOWN

B-29
Page 2

PLANT: Puget Sound
DEPARTMENT: RP&S - Docks
CLASSIFICATION: Pumper Helper B
OPERATION: B-29 Handle Records & Reports (Cont.)

IMPORTANT STEPS	KEY POINTS
4. Cargo Hose Report	a. Each time a cargo hose is used a record is to be kept of the number of hours each hose was in service. This information is to be recorded on "Cargo Hose Report." b. The condition of the hose should be noted on the report and should any damage occur during cargo handling, this information should also be noted. c. This report is to be kept in Dock office.
5. Petrox Injection	a. Some shipments of gasoline will require the injection of Petrox on the Docks from the trailer storage. b. Record opening gauge of trailer in log book. c. Record closing gauge on tank trailer in log book.

JOB BREAKDOWN

B-30

PLANT: Puget Sound
DEPARTMENT: RP&S - Docks
CLASSIFICATION: Pumper Helper B
OPERATION: B-30 Adjust Valve Packing

IMPORTANT STEPS	KEY POINTS
1. General Information	Rising stem and other wheel valves are designed to operate with a minimum of effort and are provided with a packing material encasing the stem. This material is held in place by a packing gland secured to the top section or "yoke" of the valve by two or more bolts in some instances. In others, the packing is held in place by a nut through which the valve stem protrudes. This nut has internal threads and matches the external threads on the upper body of the valve, making it a simple matter of tightening the nut to tighten the packing. Loosening packing will make the valve easier to operate but may cause leaking of product. Tightening packing will in most cases stop leaks around stem of valve.
2. Tighten Packing	a. With suitable wrench pull each nut down a thread at a time being sure the pressure is equalized on each bolt.
3. Test Valve	When leaking stops, open and close valve slightly to test operation. If product continues to leak and bolts or packing nut is taken up to maximum adjustment, report condition to Pumper.