

**101-92F-1205**  
**Move Petroleum Products Using an Inland Petroleum Distribution System (IPDS)**  
**Status: Approved**

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**Distribution Restriction:** Approved for public release; distribution is unlimited.

**Destruction Notice:** None

**Foreign Disclosure: FD1** - This training product has been reviewed by the training developers in coordination with the Fort Lee, Va foreign disclosure officer. This training product can be used to instruct international military students from all approved countries without restrictions.

**Conditions:** In an operational Environment (OE) given the requirement to assemble, maintain, and move petroleum products using an Inland Petroleum Distribution System. Personnel and materials required to perform task: military occupational specialty (MOS)-qualified (92) Soldiers to assist, TPT (consisting of three Tank Farm Assemblies; two 5,000 barrel fabric tanks each; a Tanker-Truck Receipt Manifold; a Fuel Dispensing Assembly; a Transfer Hose Line Assembly; six Fire Suppression Equipment Setwith nitrogen containers, aqueous film forming foam (AFFF) solution, and dry chemical]; an Optional Tank Configuration and a Fuel Unit Support Assembly; an operational pipeline system with 800-gallons per minute (GPM) mainline pump station; 600-GPM pump; high-mobility multipurpose wheeled vehicle (HMMWV); outgoing cleaner barrel assembly; scraper; plug valve wrench; wrenches, repair clamps (over coupling clamp or half saddle clamp); tools (hose line installation and repair assembly, cutting and grooving machine, and pipeline tapping equipment); rags; brush; spill containers, fire extinguisher, risk management procedures, applicable Safety Data Sheets (SDS); personnel protective equipment (PPE) such as gloves, face shield/goggles, gloves, fire protection suits (coat, trousers, boots, hood, harness, and gloves); Facility Response Plan (FRP); Spill Prevention Control and Countermeasures (SPCC) plan; the units hazardous waste/hazardous material (HW/HM) management policy; Oil Discharge Contingency Plan (ODCP) (if required); daily pumping order; unit standing operating procedures (SOP); DD Form 2927 (Petroleum Sample); DA Form 3643 (Daily Issues of Petroleum Products); DA Form 2765-1 (Request for Issue or Turn-in),Maintain locally produced reports to track Petroleum Products Pump Station Hourly Operations and Petroleum Products Pump Station Operating Log; DA Form 5464-R (Petroleum Products Pipeline Leakage Report); DD Form 1970 (Motor Equipment Utilization Record) or DA Form 5987-E (Motor Equipment Dispatch (EGA)); DA Form 2404 (Equipment Inspection Maintenance Worksheet) or DA Form 5988-E (Equipment Inspection Maintenance Worksheet (EGA), and full access to all reference material. Some iterations of this task should be performed in MOPP 4.

**Standards:** Issue, receive, and transfer petroleum products from an IPDS according to the pumping order, making all entries on pump station and pipeline reports without damage to equipment, personnel, or the environment; maintaining accountability of petroleum products and performing maintenance on pipeline sections as required.

**Special Conditions:** None

**Safety Risk:** Low

**MOPP 4:** Sometimes

**Task Statements**

**Cue:** None

**DANGER**

None

**WARNING**

None

**CAUTION**

None

**Remarks:** None

**Notes:** None



## Performance Steps

1. Perform risk assessment measures according to health/safety task 101-92F-1160, per supervisor's guidance.
2. Employ Environmental Stewardship measures according to shared task 101-000-0003.
3. Prepare petroleum pump station and pipeline reports.

a. Maintain locally produced report to track Petroleum Products Pump Station Hourly Station Operation Log.

(1) For each report provide: date, unit name, pump station name, and pump station number, preferably at the beginning of the report.

(2) Develop columns to provide hourly operational data with the following information:

(a) Time - this block is used to fill in the actual times worked this day (if less than 24 hours) and year. The person in charge of shift signs here.

(b) Pump(s) - create a block per pump and provide each pump's serial number, suction pressure (psi), discharge pressure (psi), revolutions per minute (RPM), oil pressure, and water temperature.

(c) Station - enter the suction pressure, discharge pressure, and Gallons per minute (GPM) pumped.

(d) Remarks - provide the total hours of operations for each pump and any comments as required by local policies and procedures.

(e) Daily Total Pumped - enter barrels pumped for that day.

(f) In the pump station operators section enter the beginning time/date of shift and ending time/date of shift for each shift.

(g) Pump Station Operations - separate by shifts (From - To Hours), print or type name and grade of operator, and sign appropriate signature block for corresponding first, second, or third shift.

(h) Turn in completed form to your supervisor

b. Complete DA Form 5464-R.

(1) Enter the following information in blocks at top of form:

(a) Date.

(b) Time.

(c) To: (higher Headquarters' name).

(d) From: (unit designating report).

(e) Reported by (name and grade).

(f) Platoon and Section (of reporter).

(2) Enter location, cause, and disposition information in blocks at middle of form.

gallons. (a) Enter the following information in blocks under location of leak: pumping station number, joint number, and estimated spill amount in

(b) Enter cause of leak in "Apparent Causes of leak" block.

(c) Enter corrective actions taken in "Disposition" block.

(d) Enter any other preventive measures taken in "Precautions Taken" block.

(3) Turn in completed forms to your supervisor to obtain signatures and grade of section chief and platoon leader in appropriate blocks at bottom of form.

c. Develop a report to track the pump station's hourly operations.

(1) Enter date, unit, name of station for which this report is being made, pump station number, batch number, and time.

(2) Enter the following information per batch number and time:

(a) Origin or Destination - enter the following information as appropriate:

\_1\_ Storage tanks – enter tank number and time discharge valve was turned on or off.

\_2\_ Other – if batch was not taken from a storage tank, enter identification of storage device from which batch was taken.

(b) Line Temperature - enter line temperature in degrees Fahrenheit.

(c) Pump Station Pressure - enter pump station suction and discharge pressure (psi).

(d) Product or Grade - enter product or grade pumped per batch and time.

(e) Gallons this Hour - enter amount of gallons pumped this hour, per batch.

(f) Total Pumped - create a column to record the total gallons or total barrels pumped per batch and time.

(g) Sample Number - record sample number per batch.

(3) Daily Totals - enter total amount of gallons or barrels pumped this 24-hour period.

(4) Remarks - enter any remarks concerning anything that may have occurred during the day. Be sure to identify by time which period with which remarks are associated.

(5) Pump Station Operations - enter the span of each shift worked (From - TO hours), the name and grade, and signature of each shift supervisor for first, second, and third shifts.

4. Operate terminal pumps in accordance with appropriate TMs.

Note: Some iterations of this task should be performed in MOPP.

In this task, as with any task involving extensive handling of petroleum products, make sure that equipment is on hand to contain and clean up spills. Use drip pans at any point that a spill is likely to occur (such as valves or nozzles). Continually observe equipment and take care while performing the task to minimize the possibility of petroleum spills. If a spill occurs, immediately stop operations and take steps to stop, contain, and clean up the spill. Report all spills immediately to your supervisor.

Prior to operating pumps, put on proper personal protection equipment (PPE) such as hearing protection, goggles, and gloves.

## DANGER

Failure to perform this task correctly may result in damage to equipment or injury or death to personnel.

a. Wear appropriate PPE as required.

## WARNING

Gloves, hearing protection, and goggles need to be worn when performing any fueling operations (Refer to step "a" above).

b. Operate pump station according to daily pumping orders.

(1) Complete pump station operations and pump station hourly operations reports as required.

(2) Maintain communication with dispatch office at all times.

c. Operate terminal (600-GPM) Pump IAW the TM.

(1) Start 600-GPM (Hoseline) pumps according to TM.

(2) Put pump on line.

(a) If multiple pumps are used, operate them all at the same RPM.

(b) Operate pump/s and perform during-operations PMCS according to TM.

(3) Take pump off-line IAW the TM.

(a) Shut down pump for a packed line IAW the TM.

\_1\_ Close main line valve leading into pump station when specified line pressure is reached. (If multiple pumps are used, take off line in reverse order that they were put on line).

\_2\_ Idle engine of pump and then close pump discharge valve. Allow pump engine/s to idle for about five minutes to cool and then stop engine/s.

(b) Shut down pump for a slacked line IAW the TM.

\_1\_ Turn SAFETY CONTROL switch on pump unit to OFF. If pump units do not have safety control switches, manually reduce pump engine speed to idle and close discharge valves.

\_2\_ Allow pumps to idle for five minutes and then stop engines.

\_3\_ Close suction valves and perform after-operations PMCS. Annotate any deficiencies on DA Form 2404 or DA Form 5988-E and turn in to your supervisor.

(4) Shut down 600-GPM pump IAW the TM.

(a) Allow pump to idle and cool down for 30 seconds.

(b) Once pump is shut down turn PANEL LIGHT switch to OFF position.

(c) Perform after-operations PMCS, annotate deficiencies on DA Form 2404 or DA Form 5988-E, and turn in to your supervisor.

5. Operate pipeline pump station 800-GPM pump in accordance to TM.

a. Start 800-GPM according to TM and as directed by supervisor.

b. Shut engine enclosure doors.

## WARNING

Both supply and return three-way fuel valves must be aligned to the same selected fuel supply (auxiliary or unit tank). Alignment to different supplies could cause engine overheating, shutdown from rapid fuel exhaustion, or fuel system overflow and the associated fire hazards.

## CAUTION

Never operate pumping assembly unless pump casing is filled to top of suction port. The pump will not prime when dry. Extended operation of a dry pump will destroy seal assembly and cause overheating which could seriously damage pump.

c. Prime 800-GPM pump IAW the TM.

d. Open pressure switch valve.

e. Open suction and discharge pressure gauge line valves.

f. Open suction and discharge transducer valves.

g. Open suction valve and four pump case vent valves.

h. Continue start-up process. If engine is started in temperatures below 40 degrees Fahrenheit, use starting aid.

(1) Put pump on line.

(a) Open discharge valve when desired suction pressure is reached. At the same time, increase pumps engine speed to designated RPM.

(b) If multiple pumps are used, operate them all at the same RPM.

(c) Operate pump and perform during-operations PMCS.

(2) Take 800-GPM pump off line.

(a) Shut down 800-GPM pump for a packed line.

\_1\_ Close main line valve leading into pump station when specified line pressure is reached.

\_2\_ If multiple pumps are used, take pumps off line in reverse order that they were put on line.

\_3\_ Idle engine of pump and then close pump discharge valve.

\_4\_ Allow pump engines to idle for about five minutes to cool and then stop engines.

(b) Shut down 800-GPM pump for a slack line.

\_1\_ Turn SAFETY CONTROL switch on pump unit to OFF. If pump units do not have safety control switches, manually reduce pump engine speed to idle and close discharge valves.

\_2\_ Allow pumps to idle for five minutes and then stop engines.

\_3\_ Close suction valves and perform after-operations PMCS. Annotate deficiencies on DA Form 2404 or DA Form 5988-E and turn in to your supervisor.

i. Shut down 800-GPM pump in accordance to TM.

(1) Complete DA Form 2404 or DA Form 5988-E and turn in to your supervisor.

(2) Complete operations log and turn in to your supervisor.

6. Perform pipeline scraper operations as directed by supervisor.

Note: Some iterations of this task should be performed in MOPP.

# CAUTION

Gloves, hearing protection, and goggles need to be worn when performing any fueling operations.

a. Wear appropriate PPE as required.

b. Launch Scraper.

(1) Drain the outgoing cleaner barrel.

Note: The pipeline dispatcher will schedule the actual scraper operation on a pumping order.

(a) Open bypass valve.

(b) Close side and mainline valve to block off launcher barrel from main pipeline.

(c) Open launcher assembly vent valve to relieve pressure.

(d) Open drain valve and drain fuel from launcher barrel end closure into an appropriate container. Dispose of waste fuel in an environmentally safe manner according to local policies and procedures.

(2) Insert scraper into outgoing cleaner barrel.

(a) Open safety vent and then open launcher barrel end closure.

(b) Insert scraper into launcher barrel. Using side valve handle, push scraper as far as it will go beyond side valve into launcher barrel.

Note: Unless scraper is pushed completely to front of barrel, it will not launch.

(3) Open appropriate valves to launch scraper.

(a) Close and tighten end closure, close safety vent valve, and close drain valve.

(b) "Set" scraper indicator by pushing flag down.

(c) Slowly open side valve all the way.

(d) Close launcher assembly vent valve when barrel is full.

(e) Slowly open mainline valve when told by dispatcher to launch scraper.

(f) Slowly close bypass valve.

(g) Watch scraper indicator that shows when scraper has been launched. The flag will pop up when scraper is launched. Notify dispatcher the moment scraper is launched.

(h) Open bypass valve after scraper has been carried out of launcher barrel by flow of fuel.

Note: Always operate with "wet" barrel leaving side valve, mainline, and bypass valves open.

c. Observe pipeline during scraper operations.

(1) Take corrective actions if scraper does not launch (Flag does not pop up).

Note: Do not place another scraper in the line to free the first scraper.

(a) Recheck valves according to performance measure 6b.

(b) Inform supervisor and wait for further instructions if scraper still does not launch.

(2) Monitor scraper during operations.

(a) Monitor scraper location by either listening for its movement through pipeline or by logging volume of liquid pumped through pipeline. The scraper travels 1 mile for each 8,185 gallons pumped through pipeline.

(b) Calculate time required for scraper to travel to receiving station.

\_1\_ Calculate total volume needed to move scraper between launcher and receiver by multiplying distance between them by 8,185 gallons.

\_2\_ To estimate travel time in minutes from launcher to receiver, divide volume calculated in (a) above by flow rate of pipeline.

\_3\_ Inform receiving station of expected arrival time of scraper.

(c) Take corrective action if scraper becomes stuck.

\_1\_ Increase pressure in line to free scraper as directed by dispatcher.

\_2\_ Inform your supervisor and wait for further instructions if increasing pressure does not free scraper.

Note: Do not place another scraper in the line to free the first scraper.

d. Receive scraper: Open appropriate valves to receive scraper into incoming cleaner barrel.

Note: Prior to receiving scraper, side valve, mainline valve, and bypass valves must be open.

(1) Close bypass valve.

(2) Set scraper indicator.

(3) Open bypass valve after scraper has entered receiver assembly. You will know when this happens because the flag will pop up.

(4) Close mainline and side valves on receiver barrel.

(5) Open receiver barrel vent valve and drain valve. Drain fuel into a suitable container. Dispose of fuel in an environmentally sound manner according to locally established procedures.

e. Remove scraper from incoming cleaner barrel: Open appropriate valves to remove scraper.

(1) Open safety vent and then open receiver barrel.

(2) Remove scraper and strainer from within barrel.

(3) Clean receiver barrel and strainer. Put strainer back in receiver barrel.

(4) Close and tighten end closure and close safety vent.

Note: Tighten safety vent valve hand tightly only.

(5) Close drain valve.

(6) Open side valve slowly to fill receiver assembly with fuel and then close receiver barrel vent.

(7) After receiver barrel is full, open mainline valve and close bypass valve.

(8) During normal pumping operations, leave all valves open. The system should be run with a "wet" barrel.

7. Maintain petroleum pipeline sections as directed by Supervisor.

a. Wear appropriate PPE as required.

b. Perform services on pipeline valves.

(1) Gate Valves:

(a) Lubricate threads with fine film of motor oil, which is non-soluble in water.

Note: Do not use grease; it can harden and collect sand and dirt threads.

(b) Replace valve if necessary.

\_1\_ Close valve completely to keep fuel in line.

\_2\_ Remove hand wheel nut and hand wheel on non-rising stem gate valves. Skip this step on rising stem gate valves.

\_3\_ Remove packing nuts, packing flange, and gland.

\_4\_ Remove old packing from stuffing box with a packing tool and clean stuffing box.

\_5\_ Cut a new piece of graphite spiral or graphite rings to fit stuffing box. Use old packing as a cutting guide. If rings are used, cut rings so that ends meet exactly.

\_6\_ Coil new piece of graphite into stuffing box or place rings on top of one another in such a way that ends of each layer meet on opposite side of stem from previous layer. Force packing down firmly in place.

\_7\_ Put gland, packing flange, and packing nuts back in place. Alternate tightening nuts. Back off on nuts until they are a little more than hand tight.

\_8\_ Put hand wheel and hand wheel nuts back in place. Tighten nut.

\_9\_ Open valve and check for leaks. If necessary, adjust packing nuts to stop a leak.

(2) Glove Valve replace packing.

(a) Make sure valve is closed.

(b) Remove hand wheel nut and hand wheel.

(c) Remove packing nut and gland.

(d) Remove old packing with a packing tool or hook.

(e) Cut a new piece of graphite spiral or ring to fit. Use old packing as a cutting guide. Cut rings so that ends meet exactly.

(f) Coil new piece of graphite in place or place rings on top of one another so that ends of each layer meet on opposite side of stem from previous layer. Force packing down firmly in place.

(g) Put gland and packing nut back in place. Tighten nut.

(h) Put hand wheel and hand wheel nut back in place. Tighten nut.

(3) Plug valves (Non-rising Stem) Gate Valve.

(a) Check lubricant to make sure it is free of dirt, sand, and any foreign matter that could clog lubrication grooves or act as an abrasive between plug and body of valve.

(b) Remove lubricant screw.

(c) Add lubricant and replace screw. Tighten screw to force lubricant down into all parts of valve. One or two sticks or a few strokes of a grease gun should be all that is needed.

Note: Do not over do it because any excess lubricant will pass into the line.

(d) Operate valve for a moment to check lubrication. The valve is properly lubricated if plug turns easily.

(4) Check valves by tightening cover nuts regularly.

(5) Pressure Reducing Valve.

(a) Inspect small strainer on pilot tube at least every 3 months. If this strainer becomes clogged, valve will malfunction. Clean strainer when necessary.

(b) Remove diaphragm and inspect it once a year for wear and breaks in synthetic rubber material.

Note: If diaphragm ruptures or breaks open, valve will close automatically.

(c) Conduct patrols on pipeline to check for damage, leaks, and indication of pilferage.

\_1\_ Notify supervisor of any leaks on pipeline and fill out DA Form 5464-R (Petroleum Products Pipeline Leakage Report).

\_2\_ Maintain communication with dispatch office at all times.

(d) Perform temporary repairs as required using half saddle clamp, repair clamp, and over coupling clamp.

Note: The repair clamp and the over coupling clamp are components of IPDS system. It is not necessary to stop pumping operations while repair clamps are being installed.

\_1\_ Install Half Saddle Clamp.

\_a\_ Place saddle half of clamp around pipeline to cover leak with gasket and saddle.

\_b\_ Place clamp stirrups around pipeline and align through saddle half.

\_c\_ Place nuts on ends of stirrups and tighten nuts.

\_2\_ Install Repair Clamp.

\_a\_ Place one half under pipeline at hole.

\_b\_ Put bolts in upper half of clamp, with longer bolts in center.

\_c\_ Place upper half of clamp over bottom half and align bolts.

\_d\_ Place nuts on bolts and tighten center bolts first.

\_3\_ Install Over Coupling Clamp.

Note: Before installing over coupling clamp, move pipe and coupling back and forth and up and down to seal gasket and stop leak. If this action does not stop leak, install over coupling clamp over faulty coupling.

\_a\_ Dig a hole under leaking coupling, large enough to hold large over coupling.

\_b\_ Swing five bolts away from over coupling clamp.

\_c\_ Open over coupling clamp, lubricate all exposed gasket surfaces, and slide it over leaking coupling.

\_d\_ Swing five bolts back into place.

\_e\_ Tighten bolts in order, as marked on top of over coupling clamp.

(e) Perform permanent repairs such as replacing damage pipeline section and coupling.

Note: All major repairs will be under direct supervision of pipeline dispatch OIC. No work requiring connecting/replacing components will be done without authorization of pipeline dispatch OIC.

\_1\_ Position fire extinguisher and spill containers.

\_2\_ Close valves on both sides of pipe section.

\_3\_ Drain and recover product remaining in damaged section of line.

Note: Using tapping machine, tap into pipeline and remove fuel. Identify components listed below.

\_4\_ Hot Tap (Drilling) Machine with Ratchet Crank.

\_a\_ The Hot Tapping Machine consists of the following components:

QUANTITY	Description
1	Hot Tap (Drilling) Machine with Ratchet Crank
1	Plug 2-inch, HH, NPT
1	Bleed Valve
1	Pipe Saddle, 6-inch, with 2-inch Valve Assembly (Tee, Ball Valves, 2-inch Cam Lock Adapter).

\_b\_ Safety Considerations. Any operation involving work on pipe containing liquid fuels under pressure is potentially hazardous. Therefore, it is necessary that correct procedures be followed in the use of this equipment to maintain a safe working environment.

\_c\_ Operate Tapping Machine as directed by supervisor. When installing threaded piping components, always use Teflon tape sealant on threads prior to making connection. This will ensure a tight seal.

Note: Do not travel more than 3 ½ inches after the pilot tip touches the pipe. If this distance is exceeded, hole saw or pilot drill will damage or penetrate the bottom of the pipe.

\_5\_ Remove couplings and gaskets from pipe section to be replaced.

\_6\_ Hold new pipe in alignment with existing pipeline.

\_7\_ Replace couplings and gaskets as necessary. If old couplings and gaskets are damaged replace, them using the following procedures:

\_a\_ Swab ends of pipe sections.

\_b\_ Clean ends of pipe sections with a wire brush to remove flaking paint and scale.

\_c\_ Smooth out the inside of pipe grooves with a file.

\_d\_ Clean both halves of new split ring coupling (6-inch repair clamp for IPDS) with a wire brush.

\_e\_ Slip round gasket over one end of one pipe section.

Note: IPDS couplings have pre-inserted gaskets.

\_f\_ Align ends of pipe section.

\_g\_ Slide gasket into place over ends of two pipe sections.

\_h\_ Grease a 1- to 2-inch are on each end of both halves of new split ring coupling with automotive and artillery grease.

\_i\_ Place one half of split ring coupling (6-inch repair clamp for IPDS) over bottom half of gasket on pipe.

\_j\_ Coat coupling bolts with a thin film of grease and put them in coupling over bolts.

\_k\_ Slide other half of split ring coupling (6-inch repair clamp for IPDS) over two bolts.

\_l\_ Hold two halves of coupling together and attach nuts to bolts.

\_m\_ Alternate tightening each nut two turns at a time so that the coupling halves close evenly and do not pinch the gasket.

(f) Test pipeline to ensure it does not leak. Open gate valves slowly to put pressure back on new section. Observe new section closely for leaks.

(g) Repair/replace pipeline sections as necessary.

8. Perform Transfer Operations.

a. Perform before-, during-, and after-operations PMCS on system's components according to appropriate technical manual (TMs). Annotate on DA Form 2404 or DA Form 5988-E any faults found while performing PMCS.

## WARNING

**OVERFILLING FABRIC TANKS** – Do not overfill the fabric collapsible tanks. A spill through the vent or possibly a rupture and major spill could result.

**DISPENSING ASSEMBLY OPERATING PRESSURE** – Make sure that pressure control valves are functioning. High pressure can result in hose whip, splash back, and spills.

**GROUNDING AND BONDING** – The system dispensing valve must be grounded and bonded to the receipt vessel prior to opening the vessel and dispensing fuel. Static electricity could cause a fire or explosion.

**NO SMOKING** – Enforce no smoking rules on all personnel, including drivers from the outside the TPT.

**VEHICLE DISCONNECT** – Make sure vehicles are disconnected from the dispensing assembly before moving.

**STOP VEHICLE ENGINES** – Stop all vehicle engines while loading fuel.

b. Make an intra-terminal transfer through manifold as prescribed in pumping order.

- (1) Draw samples as required, complete DD Form 2927.
- (2) Open appropriate valves on manifold and tanks for transfer.
- (3) Draw off all free bottom water from tanks.
- (4) Operate pipeline / terminal pumps as directed by supervisor.
- (5) Complete pump station hourly operations report on transfer operations.

c. Receive / issue product through manifold as prescribed in pumping order.

- (1) Open appropriate valves on manifold and tanks for transfer.
- (2) Draw off all free bottom water from tanks.
- (3) Operate pipeline / terminal pumps as directed by supervisor.
- (4) Complete pump station hourly operations report on transfer operations.
- (5) Complete DA Form 3643 and DA Form 2765-1 for accountability of product.

Note: The routing and procedures to transfer from any other tank would be the same except for the valve positions between the tank and the pump.

d. Close valves after operation according to pumping order.

e. Complete and turn in DA Form 3643, DA Form 2765-1, DA Form 2404 or DA Form 5988-E, and pump station hourly operations report to your supervisor.

f. Report completion of transfer to operations office.

## WARNING

Equipment must be grounded and bonded at time of installation to prevent explosion and fire.

## CAUTION

Equipment damage can result if downstream pressure exceeds 125 psi.

9. Prepare Fire Suppression unit.

a. Prepare Fire Suppression Equipment System (FSES).

Note: All dry chemical (purple K powder [PKP]) and AFFF system piping and components should be considered charged (under pressure) until the system is deactivated. Ensure that all systems are depressurized and cleared before uncoupling nozzles or hoses. Place protective covers on high pressure nitrogen cylinders prior to installing, removing, or transporting the cylinders. Should eyes become irritated by contact with either agent, flush immediately with clean, fresh water and seek medical aid. After spillage of either fire fighting agent, the area should be decontaminated immediately by flushing with water. Caution must be taken when connecting or disconnecting the nitrogen cylinders as they are charged to 2,400 pounds per square inch (psi). The complete fire suit must be worn when fighting any large scale petroleum fire. Pressure relief holes are drilled in the threaded portion of each filler cap. If pressure is heard escaping through these holes while the cap is being removed, stop removal until all pressure has escaped. Fight the fire from the top of the berm, never go inside the berm. Never turn your back on the fire. If you must abandon the firefighting effort, back away facing the fire. At least three personnel are required to operate the TAU. Wear a medically approved respirator when filling the PKP tank.

(1) Perform before-operations PMCS according to appropriate TM.

(2) Record any deficiencies on DA Form 2404 or DA Form 5988-E.

b. Assembly and preparation of FSES.

## CAUTION

Always fill the dry chemical tank first and ensure the dry chemical funnel is completely dry prior to use to ensure that no water is introduced into the tank. Any moisture in the dry chemical can cause it to clog due to caking.

(1) Assemble FSES.

(a) The dry chemical tank is filled with 450 pounds of dry chemical prior to shipment. Check dry chemical for "caking."

(b) Remove cap from dry chemical tank. Stir dry chemical to break up any lumps and loosen if it is packed for shipping.

(c) Check dry chemical for hard lumps that would prevent system from operating. If lumps are found, remove one and drop it from a height of four inches onto a hard surface. If lump completely breaks apart, dry chemical is only packed from settling and is in satisfactory condition. If lump does not break apart completely, caking is present and dry chemical must be replaced.

(d) Using dry chemical funnel, top off or refill dry chemical tank with dry chemical if needed according to TM.

## CAUTION

The foam liquid and water mixture is subject to freezing. If freezing weather conditions exist, do not service the AFFF tank until the power cord is connected to a power source.

(e) Replace cap and tighten hand tight.

## CAUTION

Be careful not to damage the AFFF tank lining with metal hose ends or connections. The lining can be scratched or scored resulting in corrosion of the AFFF tank. Foam liquid will freeze, but the plastic container(s) used for shipment will expand safely with the ice. The foam liquid can be used after it thaws.

(f) Remove cap from AFFF tank.

(g) Insert a hose against bottom of AFFF tank and add water to within nine inches (23 centimeters [cm]) of fill collar top. Pour in required amount of foam liquid according to TM. Fill AFFF tank with water until foam liquid and water mixture is 4.5 inches (11.4 cm) from top of fill collar. No further mixing of solution is required after initial filling. Replace fill cap and tighten hand tight.

(h) If freezing weather exist, or is expected, connect AFFF tank heater power cord to power source.

(i) Check that system valves are in proper ready state position.

**-AFFF AND DRY CHEMICAL VALVES SHOULD BE CLOSED.**  
**-PURGE VALVES SHOULD BE CLOSED.**  
**-CHARGE VALVES SHOULD BE OPENED.**  
**-NITROGEN CYLINDER VALVES SHOULD BE CLOSED.**

(2) Preparation of FSES.

(a) Put on protective clothing.

(b) Determine if auxiliary hose reel cart is needed.

Note: The fire suppression equipment trailer set holds 150 feet (46 meters) of twin agent hose assembly and the auxiliary mobile hose reel cart will give you a maximum reach of 300 feet (91 meters). Flow rate with 300 feet (91 meters) of hose will be reduced.

(c) Check dry chemical powder for caking. It should crumble easily and pour freely between spread fingers. It should be within 4 inches of filler neck when full.

(d) Check nitrogen cylinders for at least 1,750 psi (minimum required).

(e) Check AFFF tank, solution should be within two inches of bottom of fill collar.

(f) Discharge nozzles should easily open and close with no binding.

(g) Check valves for ready position.

10. Operate Fire Suppression Unit during a fire.

a. Connect remote hose reel if needed. Pull entire length of hose off reel on TAU. Remove nozzle assembly from first hose and connect remote hose to it. Attach nozzle assembly to remote hose reel.

b. Open both nitrogen cylinder valves. The AFFF tank will take one to two seconds to pressurize, dry chemical tank should pressurize within ten seconds.

c. Rotate dry chemical tank ball valve rod and AFFF tank ball valve rod to full open position. The system hose assemblies will pressurize within ten seconds.

d. Remove lock pin and fire hose nozzles from nozzle bracket.

e. Pull all hose assembly from drum.

f. Approach fire from upwind. Lean toward fire and aim fire hose nozzles toward left side base of fire. Squeeze dry chemical fire hose valve lever (right hand) and apply dry chemical by sweeping across base of fire to right.

g. Release dry chemical fire hose nozzle valve lever and squeeze AFFF fire hose nozzle valve lever (left hand) and apply AFFF by sweeping to left covering dry chemical.

h. When headway is gained on fire, continue side by side sweeping across base of fire while alternating dry chemical (right hand, sweep right) and covering with AFFF (left hand, sweep left) until fire is extinguished.

Note: Continuous flow of fire fighting agents can only be maintained for less than two minutes.

i. When area clears, extinguish any smoldering pockets that may re-ignite fuel.

## CAUTION

Hose assembly clean out must take place immediately after tanks have been completely or partially discharged.

j. Engineer fire fighting detachment must verify that fire is totally extinguished.

11. Return Fire Suppression Unit back to operational ready status.

a. Completely unwind hose assembly from drum. If auxiliary mobile hose reel cart was used, both hose assemblies must be unwound.

b. Close dry chemical and AFFF tank ball valve rods.

c. Remove retaining clips and close charge ball valves.

d. Remove retaining clips and open both purge ball valves.

e. Slowly squeeze fire hose nozzle valve levers one at a time until each hose is cleared. The fire hose nozzle should discharge gas only for ten seconds.

f. Turn each nitrogen cylinder valve hand wheel fully counterclockwise (open). Lower quick release lever.

g. Rotate cross shaft until flat is horizontal. Turn hand wheel fully clockwise (closed).

h. Squeeze both fire hose nozzle valve levers to relieve system pressure.

i. Remove wing nut and flat washer. Remove crank from storage position and place on rewind brake shaft.

j. Using crank, wind hose assembly onto drum.

k. Secure fire hose nozzle to nozzle bracket with lock pin.

l. Secure crank to auxiliary mobile hose reel cart or trailer mounted extinguisher assembly with wing nut and flat washer.

m. Notify unit maintenance for unit recharge if nitrogen cylinders are below 1,750 psi.

n. Replenish agents as required by refill table.

o. Perform after-operations PMCS according to appropriate TM.

p. Record any deficiencies of system on DA Form 2404 or DA Form 5988-E. Report any deficiencies to your supervisor.

12. Turn in all completed forms (DA Form 3643, DA Form 2765-1, DA Form 5464-R, DA Form 2404 or DA Form 5988-E), pump station operations and pump station hourly operations reports to your supervisor, as required.

(Asterisks indicates a leader performance step.)

**Evaluation Guidance:** Score the Soldier GO if all performance measures are passed. Score the Soldier NO-GO if any performance measure is failed. If the Soldier scores NO-GO, show the Soldier what was done wrong and how to do it correctly.

**Evaluation Preparation:** See task Conditions and Standards.

PERFORMANCE MEASURES	GO	NO-GO	N/A
1. Performed risk assessment measures according to health/safety task 101-92F-1160, per supervisor's guidance.			
2. Employed Environmental Stewardship measures according to shared task 101-000-0003.			
3. Prepared petroleum pump station and pipeline reports.			
4. Operated terminal pumps in accordance with appropriate TMs.			
5. Operated pipeline pump station 800-GPM pump in accordance to TM.			
6. Performed pipeline scraper operations as directed by supervisor.			
7. Maintained petroleum pipeline sections.			
8. Performed Transfer Operations.			
9. Prepared Fire Suppression unit.			
10. Operated Fire Suppression Unit during a fire.			
11. Returned Fire Suppression Unit back to operational ready status.			
12. Turned in all completed forms (DA Form 3643, DA Form 2765-1, DA Form 5464-R, DA Form 2404 or DA Form 5988-E), pump station operations and pump station hourly operations reports to your supervisor, as required.			

**Supporting Reference(s):**

Step Number	Reference ID	Reference Name	Required	Primary
	AR 200-1	ENVIRONMENTAL PROTECTION AND ENHANCEMENT	Yes	No
	ATP 3-34.5	Environmental Considerations	No	No
	ATP 4-43	Petroleum Supply Operations	No	No
	ATP 5-19 (Change 001 09/08/2014 78 Pages)	RISK MANAGEMENT	Yes	No
	DA FORM 2404	EQUIPMENT INSPECTION AND MAINTENANCE WORKSHEET	Yes	No
	DA FORM 3643	DAILY ISSUES OF PETROLEUM PRODUCTS	Yes	No
	DA FORM 5464-R	PETROLEUM PRODUCTS PIPELINE LEAKAGE REPORT (LRA)	Yes	No
	DA FORM 5987-E	MOTOR EQUIPMENT DISPATCH (EGA)	Yes	No
	DA FORM 5988-E	Equipment Inspection Maintenance Worksheet	Yes	No
	DD FORM 1970	MOTOR EQUIPMENT UTILIZATION RECORD (AVAILABLE ON DOD WEB SITE)	Yes	No
	DD FORM 2927	PETROLEUM AND LUBRICANTS SAMPLE IDENTIFICATION TAG	Yes	No
	MIL-STD-3004D w/change 1	Department of Defense Standard Practice Quality Assurance/Surveillance For Fuels, Lubricants and Related Products	No	No
	TM 10-3835-231-13	OPERATORS, UNIT, AND DIRECT SUPPORT MAINTENANCE MANUAL FOR TACTICAL PETROLEUM TERMINAL MODEL TPT-1 (NSN 3835-01-288-4604)	Yes	No
	TM 10-4210-235-13	OPERATORS, UNIT, AND DIRECT SUPPORT, MAINTENANCE MANUAL FOR FIRE SUPPRESSION EQUIPMENT SET MODEL FSES-1 (NSN 4210-01-370-4912)	Yes	No
	TM 10-4320-307-10	OPERATORS MANUAL FOR PUMPING ASSEMBLY (MAINLINE) DIESEL ENGINE DRIVEN, 800 GPM (NSN 4320-01-193-3430)	Yes	No
	TM 10-4320-324-14	OPERATORS, UNIT, DIRECT SUPPORT, AND GENERAL SUPPORT MAINTENANCE MANUAL FOR PUMPING ASSEMBLY, FLAMMABLE LIQUID, BULK TRANSFER DIESEL ENGINE DRIVEN, WHEEL MTD, 350 GPM, 275 FT HEAD, MODEL 13229E8400 (9740)	Yes	No
	TM 10-4320-374-13&P	OPERATION AND FIELD MAINTENANCE MANUAL INCLUDING REPAIR PARTS AND SPECIAL TOOLSLIST (RPSTL) FOR PUMP ASSEMBLY: DIESEL-ENGINE-DRIVEN (DED), 600 GPM FUEL PUMP ASSEMBLY (NSN 4320-01-546-6128) WATER PUMP ASSEMBLY (4320-01-546-6140)	Yes	No
	TM 10-5430-239-12&P	OPERATOR'S AND UNIT MAINTENANCE MANUAL (INCLUDING REPAIR PARTS AND	Yes	No
	TM 5-3835-220-13&P	OPERATOR, UNIT, AND INTERMEDIATE DIRECT SUPPORT MAINTENANCE MANUAL (INCLUDING REPAIR PARTS AND SPECIAL TOOLS LIST) FOR TACTICAL PETROLEUM TERMINAL MODEL WBEI-10002 (NSN 3835-01-182-1976)	Yes	No
	TM 5-4320-305-10	OPERATORS MANUAL FOR PUMP UNIT, CENTRIFUGAL, HOSELINE, 600 GPM, DED, MODEL US612ACD-1 (NSN 4320-01-193-3429) (REPRINTED W/BASIC INCL C1-3)	Yes	No
	TM 5-4330-263-13&P	OPERATOR AND FIELD MAINTENANCE MANUAL WITH REPAIR PARTS AND SPECIAL TOOLS LIST FOR FILTER/SEPARATOR, LIQUID FUEL, 50-GPM (NSN: 4330-01-483-1068) 100-GPM (4330-01-525-3659) 350-GPM (4330-01-529-0584)	No	No
	TM 9-6230-210-13&P	OPERATOR, UNIT, AND DIRECT SUPPORT, MAINTENANCE MANUAL INCLUDING REPAIR PARTS AND SPECIAL TOOLS LIST FOR FLOODLIGHT SET, TRAILER MOUNTED HIGH-LITE CORPORATION MODEL HLT-3K-5K-MIL SERIAL NUMBERS 6301A THRU	Yes	No

**TADSS :** None

**Equipment Items (LIN):**

LIN	Name
T05741	Testing Kit Petroleum: Aviation Fuel Contamination
T49255	Truck Lift Fork: Diesel Driven 4000 Lb Capacity Rough Terrain
P00309	PUMP CENTRF HOSELINE
EA3500	Terminal, Tactical Petroleum

#### Material Items (NSN) :

Step ID	NSN	LIN	Title	Qty
	4930-00-438-9030		Manifold, Fueling	1
	3835-01-288-5904		STRAINER ASSEMBLY,S	1
	3835-01-288-4644		RECEIVER ASSEMBLY,S	1
	3835-01-288-4650		LAUNCHER ASSEMBLY,S	1

**Environment:** Environmental protection is not just the law but the right thing to do. It is a continual process and starts with deliberate planning. Always be alert to ways to protect our environment during training and missions. In doing so, you will contribute to the sustainment of our training resources while protecting people and the environment from harmful effects. Refer to the current Environmental Considerations manual and the current GTA Environmental-related Risk Assessment card.

**Safety:** In a training environment, leaders must perform a risk assessment in accordance with current Risk Management Doctrine. Leaders will complete the current Deliberate Risk Assessment Worksheet in accordance with the TRADOC Safety Officer during the planning and completion of each task and sub-task by assessing mission, enemy, terrain and weather, troops and support available-time available and civil considerations, (METT-TC). Note: During MOPP training, leaders must ensure personnel are monitored for potential heat injury. Local policies and procedures must be followed during times of increased heat category in order to avoid heat related injury. Consider the MOPP work/rest cycles and water replacement guidelines IAW current CBRN doctrine.

#### Prerequisite Individual Tasks :

Task Number	Title	Proponent	Status
101-92F-1153	Operate Fuel System Supply Point (FSSP)	101 - Quartermaster (Individual)	Approved

#### Supporting Individual Tasks :

Task Number	Title	Proponent	Status
101-92F-1408	Account for Petroleum Products	101 - Quartermaster (Individual)	Approved
101-92F-1405	Perform Quality Surveillance on Petroleum Products	101 - Quartermaster (Individual)	ArmyU Review
101-92F-1160	React to Petroleum Products Health / Safety Hazards	101 - Quartermaster (Individual)	Approved

**Supported Individual Tasks :** None

**Supported Collective Tasks :** None

#### Knowledges :

Knowledge ID	Knowledge Name
101-K-P10012	Knowledge of safety procedures when handling petroleum products
101-K-P10011	Knowledge of unit's SOP and local policy requirements and their location
101-K-P10010	Knowledge of Personal Protective Equipment (PPE) and its usage
101-K-P10008	Knowledge of Material Safety Data Sheets (MSDS)
101-K-P10007	Knowledge of Risk Management procedures and control measures
K626	Knowledge of the Twin Agent Unit (TAU) characteristics and features
101-K-P10021	Knowledge of the different types of fire extinguishers
K625	Knowledge of Preventive Maintenance Checks and Services (PMCS) procedures on Twin Agent Unit (TAU) IAW appropriate TM
K624	Know how to assemble, operate, and return to operational status a Tactical Petroleum Terminal (TPT) Fire suppression Set (Twin Agent Unit)
101-K-P10019	Knowledge of firefighting equipment and its uses
K623	Understanding of major components and layout/setup for an Tactical Petroleum Terminal (TPT) system
101-K-P10017	Know how to read and interpret appropriate Field Manuals and Technical Manuals
K630	Know how to perform operator Preventive Maintenance Checks and Services on Petroleum pumps 50-,100-, 220-, 350-, and 600-GPM
101-K-P10016	Knowledge of the Environmental Stewardship Protection Program measures
K629	Knowledge of characteristics and features of Petroleum pump units (50-, 100-, 220-, 300-, 350-, and 600-GPM)

K628	Knowledge of the Twin Agent Unit (TAU) functions and controls
K627	Describe safety precautions taken when suppressing a Petroleum fire using a Twin Agent Unit (TAU)
101-K-1371	Knowledge how prepare/use DA 2404/598-E, to identify the rcorred faults on unit equipment
101-K-P10018	Knowledge of Preventive Maintenance Checks and Services (PMCS) procedures
K7913	Recognize Inhalation Hazards
101-K-P10022	Know how to operate and prepare the TAU for operations
101-K-M002	Know how to identify risks and hazards.
K641	Know how to prepare petroleum accountability forms (DA Form 3643, 2765-1, and DD Form 1898)
101-K-P10032	Know how to complete DA Form 2404, 5988-E, 5987-E, 3643, DD Form 1970 and 1898
101-K-1093	Knowledge of Class III POL storage procedures
101-K-M020	Know what information is required for each data element on the required forms and documents.
101-K-0017	Knowledge of SOP/Operations Order Requirements for Handling/Disposal of Hazardous Materials
K599	Know how to perform personal protective measures when handling petroleum products
K596	Knowledge of petroleum products fire hazards and sources of ignition
K598	Know how to identify petroleum products health hazards
K597	Know how to perform first aid for petroleum products related injuries
K-101-E-0118	Know how to emplace and operate pumps IAW appropriate TM
101-K-P10046	Knowledge of how to lift heavy petroleum equipment
K620	Know how to interpret Tactical Petroleum Terminal (TPT) and Fix facility manifold systems
K621	Know how to perform scraper operations
K622	Know how to perform pipeline maintenance
K615	Know how to perform operator Preventive Maintenance Checks and Services on 800-GPM mainline pump
K616	Know how to operate 600-GPM Pump
K439	Understand the procedures for directing sampling and gauging of petroleum products
K617	Know how to operate 800-GPM mainline Pump
K618	Know how properly set valves within Tactical Petroleum Terminal (TPT) or Fix facility
031-K-627-021	Knowledge of Occupational Safety and Health Administration (OSHA) 29 CFR 1910.120 requirements
K612	Knowledge of characteristics and features of 600-GPM Petroleum pump
K613	Know how to perform operator Preventive Maintenance Checks and Services on 600-GPM Petroleum pump
K614	Knowledge of characteristics and features of 800-GPM mainline pump

**Skills :**

<b>Skill ID</b>	<b>Skill Name</b>
101-S-P10018	Ability to read and interpret appropriate Field Manuals and Technical Manuals
101-S-P10017	Ability to apply Environmental Stewardship Protection Program measures
S1601	Ability to perform scraper operations
S1597	Ability to properly set valves within Tactical Petroleum Terminal (TPT) or Fix facility
101-S-P10013	Ability to apply safety procedures when handling petroleum products
101-S-P10012	Ability to read, understand, and comply with unit's SOP and local policies
101-S-P10011	Ability to wear Personal Protective Equipment (PPE)
101-S-M018	Ability to complete data elements on the required forms and documents.
101-S-P10007	Ability to apply Risk Management procedures and control measures
S1595	Ability to perform Preventive Maintenance Checks and Services (PMCS) on 600-GPM petroleum pump unit IAW appropriate TM
S1606	Ability to perform Preventive Maintenance Checks and Services (PMCS) on petroleum pump units (50, 100, 220, 300, 350, and 600 GPM) IAW appropriate TM
S1602	Ability to perform pipeline maintenance
101-S-1057	Ability to follow OSHA standards in storage area
S1599	Ability to operate petroleum 600-GPM pump unit IAW appropriate TM
101-S-P10033	Ability to complete DA Form 2404, 5988-E, 5987-E, 3643, DD Form 1970 and 1898
S1607	Ability to operate petroleum pump units (50-, 100-, 220-, 300-, 350-, and 600-GPM) IAW appropriate TM
S1596	Ability to perform Preventive Maintenance Checks and Services (PMCS) on 800-GPM mainline pump unit IAW appropriate TM
S1578	Ability to perform first aid for petroleum products related injuries
S-101-E-0094	Ability to emplace and operate pumps IAW appropriate TM
101-S-P10023	Ability to prepare and operate Twin Agent Unit (TAU)
101-S-P10021	Ability to identify the different types of fires
S1604	Ability to assemble, operate/suppress a fire, and return a Fire suppression unit (Twin Agent Unit) to operational status
101-S-P10022	Ability to identify the type of fire extinguisher to be used based on type of fire
101-S-P10019	Ability to perform Preventive Maintenance Checks and Services (PMCS)
101-S-P10047	Ability to lift heavy petroleum equipment
S1611	Ability to prepare petroleum accountability forms (DA Form 3643, 2765-1, and DD Form 1898)

S1577	Ability to identify petroleum products fire hazards and sources of ignition
S1603	Ability to perform transfer operations using an Tactical Petroleum terminal (TPT) according to pumping orders
551-S-0078	Ability to maintain communications using a military radio network
101-S-10009	Ability to determine safety measures from Material Safety Data Sheets (MSDS)
S0199	Recognizing risks and hazards
S1579	Ability to identify petroleum products health hazards
S1605	Ability to perform Preventive Maintenance Checks and Services (PMCS) on Twin Agent Unit (TAU) IAW appropriate TM
101-S-1324	Ability to use DA2404/5988-E, Equip Inspection/ Maintenance Worksheet to inspect a vehicle
S1600	Ability to operate petroleum 800-GPM mainline pump unit IAW appropriate TM

**ICTL Data :**

<b>ICTL Title</b>	<b>Personnel Type</b>	<b>MOS Data</b>
92F Petroleum Supply Specialist SL10	Enlisted	MOS: 92F, Skill Level: SL1, Duty Pos: QFQ