

**101-23A-2004**  
**Determine Basic Hydraulics and Pipeline Operations**  
**Status: Approved**

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**Security Classification: U** - Unclassified

**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:** As a 923A-Petroleum Systems Technician Advisor assigned to Echelon above Brigade (EAB) in a contemporary operation environment with responsible to Determine Basic Hydraulics and Pipeline Operations. With access to operational order (OPORD), unit standing operating procedure (SOP), references, status reports, maps, overlays, computer/laptop with OPLOG Planner Program, quick logistics estimated tool (QLET) and approved current digitized automated support systems. Some iterations of this task should be performed in MOPP 4.

**Standards:** Determine Basic Hydraulics and Pipeline Operations ISO large scale combat operations in to include perform over pressure petroleum pipeline operations, perform petroleum backchaining petroleum pipeline operations, apply theory of hydraulics and pipeline design, perform glass pipeline demonstration, and apply introduction to hydraulics math IAW ATP 4-43, performance steps, and with an 100% accuracy utilizing a Go, No/GO criteria.

**Special Conditions:** None

**Safety Risk:** Low

**MOPP 4:** Sometimes

**Task Statements**

**Cue:** None

**DANGER**

None

**WARNING**

None

**CAUTION**

None

**Remarks:** None

**Notes:** The operational environment (OE) is a compilation of all the critical variables and actors that create the conditions, circumstances, and influences that can affect military operations today and in the near- and mid-term. All Army elements must be prepared to enter any environment and perform their missions while simultaneously dealing with a wide range of unexpected threats and other influences. Units must be ready to counter these threats and influences and, at the same time, be prepared to deal with various third-party actors, such as international humanitarian relief agencies, news media, refugees, and civilians on the battlefield. These groups may or may not be hostile to us, but they can affect the unit's ability to accomplish its mission.

## Performance Steps

1. Evaluate Basic Hydraulics and Pipeline Operations
2. Conduct Overpressure for Petroleum Pipeline Operations
3. Apply Backchaining for Petroleum Pipeline Operations
4. Apply Theory of Hydraulics and Pipeline Design
5. Perform Glass Pipeline Demonstration
6. Determine Waterfront and Terminal Operations
7. Process Introduction to Hydraulics Math

(Asterisks indicates a leader performance step.)

**Evaluation Guidance:** Students will understand how to implement Inland Petroleum Distribution System (IPDS) in order to meet the Army's Title X responsibility and how to operate a pipeline facility.

**Evaluation Preparation:** Students will review ATP 4-43 on how to construct IPDS and then perform practical exercises to ensure understanding of lesson.

<b>PERFORMANCE MEASURES</b>	<b>GO</b>	<b>NO-GO</b>	<b>N/A</b>
1. Evaluated Basic Hydraulics and Pipeline Operations			
2. Conducted Overpressure for Petroleum Pipeline Operations			
3. Applied Backchaining for Petroleum Pipeline Operations			
4. Applied Theory of Hydraulics and Pipeline Design			
5. Performed Glass Pipeline Demonstration			
6. Determined Waterfront and Terminal Operations			
7. Processed Introduction to Hydraulics Math			

**Supporting Reference(s):**

Step Number	Reference ID	Reference Name	Required	Primary	Source Information
	ADP 5-0	The Operations Process	Yes	No	
	ATP 4-43	Petroleum Supply Operations	Yes	Yes	
	DOD 4140.25-M	DOD Management of Bulk Petroleum Products, Natural Gas and Coal Volumes I - IV	Yes	No	
	FM 3-0 (FM 100-5)	Operations	Yes	No	
	FM 4-01.011	Unit Movement Operations	Yes	No	
	IPDS Student Handout Guide	IPDS Student Handout Guide	Yes	No	
	JP 4-03	Joint Bulk Petroleum and Water Doctrine	Yes	No	
	SP-IPDS-OG 2009	Inland Petroleum Distributon System (IPDS) Operations and Planning Guide (Army OPROJ-X-03-00-A)	Yes	No	
	STANAG 2115	Fuel Consumption Unit	Yes	No	
	TB MED 530/NAVMED P-5010-1/AFMAN 48-147_IP	Tri-Service Food Code	Yes	No	
	TM 10-5430-252-13&P	OPERATOR AND FIELD MAINTENANCE MANUAL INCLUDING REPAIR PARTS AND SPECIAL TOOLS LIST (RPSTL) FOR TANK ASSEMBLY, FABRIC, COLLAPSIBLE: PETROLEUM, 210,000 GALLON CAPACITY (NSN: 5430-01-557-2987(DEPOT)) AND (NSN: 5430-01-557-2990(IPDS))	Yes	No	
	TM 10-5430-269-13&P	Operator and Field Maintenance Manual Including Repair Parts and Special Tools List (RPSTL) for Tank Assembly, Fabric, Collapsible, 210,000 U.S. Gallon, Fuel NSN 5430-01-5535 (Depot) and NSN 5430-01-571-5512 (IPDS)	Yes	No	

**TADSS :** None

**Equipment Items (LIN):** None

**Materiel Items (NSN) :**

Step ID	NSN	LIN	Title	Qty
	7110-00-113-0448		Table, Office, 29-1/2 Inches High, 72 X 36 Inch Walnut Colored Plywood Top, Black Steel Frame	1
	7110-00-149-1624		Desk, Flat Top, Black, Metal, 3 Drawers, 45 X 30 X 29-1/2 Inches	1
	7110-00-782-3506		Chair, Rotary	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. a. Ensure that all necessary actions are taken to prevent, control, and abate environmental pollution related to fuel facilities, activities, and programs.

b. Comply with organization SOP/OPLAN/OPORD, local, state, federal, and host nation laws, as well as international environmental laws and treaties for the handling and disposal of fuel and hazardous materials (such as, used oil, contaminated fuel, and chemical test kits).

c. Before performing this task, read and comply with appropriate Material Safety Data Sheet (MSDS). Wear the appropriate personal protective equipment (PPE). Clean and secure the PPE upon completion of this task.

**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. Safety is paramount to the successful execution of military operations. Enforce safety, and ensure safety procedures are incorporated into all aspects of operations. As a manager, verify that personnel are adequately trained to operate in all environments. Ensure personnel have all required safety equipment and gear. Provide access to the latest safety-proven procedures, fire fighting equipment, and safe chemical handling guide, including substitutions.

**Prerequisite Individual Tasks :** None

**Supporting Individual Tasks :** None

**Supported Individual Tasks :** None

**Supported Collective Tasks :** None

**Knowledges :**

<b>Knowledge ID</b>	<b>Knowledge Name</b>
K23401	Identify personnel and equipment requirements for petroleum operations (ROM, tank vehicles, AHS, MFS, IPDS, FSSP, FWD Aerial Systems)
K262	Knowledge of the assembly, operation, and disassembly of the Force Provider Bulk Fuel Storage and Distribution Subsystem
805C-K-0163	Physical Contact
805C-K-0148	Exceptional Family Member Program
805C-K-0147	Powers of Attorney
K23392	Know how to prepare petroleum monthly accounting summary for each type or grade of bulk fuel on hand
K22841	Knowledge of planning bulk water operations
551-K-0018	How to conduct a military briefing
K-101-E-0007	Knowledge of Class I NBC protection standards
K712	Know how to supervise petroleum transfer operations using the Inland Petroleum Distribution System (IPDS)
805C-K-0184	Army Policy on Accommodating Religious Practices
K-101-E-0071	Knowledge of bulk water purification and storage management
805C-K-0182	Army Core Values
805C-K-0179	Sexual Harassment Checklist
K22084	Know how the Topographic Engineering Center (TEC) at Fort Belvoir, VA can assist with bulk water operations
805C-K-0173	Affirmative Action
805C-K-0174	Army Sexual Harassment Policy
K-101-E-0145	Knowledge of bulk water distribution management
K25325	Knowledge of Exercise Design
K27407	Know how to determine Theater requirements
K605	Know what equipment is used with the IPDS and petroleum terminal
805C-K-0200	Diversity
805C-K-0199	Culture
K402	Understand the components and capabilities of the Inland Petroleum Distribution System (IPDS)
805C-K-0197	Interpersonal Relations
K403	Understand the construction procedures for installing the Inland Petroleum Distribution System (IPDS)
101-K-1002	How to Review Authorization Documents
K25324	Knowledge of Exercise Planning
K22581	Knowledge of movement requests in the Theater and Division
011-900K	Logistics operations and plans
805C-K-0130	Duties and Responsibilities of Unit Rear Detachments

**Skills :**

<b>Skill ID</b>	<b>Skill Name</b>
S3411	Ability to calculate the flex forecast and volume variance
S2848	Ability to plan bulk water operations
S1745	Identify the role of the Topographic Engineering Center (TEC) at Fort Belvoir, VA in planning bulk water operations
101-S-P10016	Ability to communicate and write effectively
S-101-E-0052	Ability to forecast materiel flow requirements
101-S-P10012	Ability to read, understand, and comply with unit's SOP and local policies
907-LOGCP-C10-S117	Preparing maintenance of the organizational structure and manpower requirements in support of the readiness and mobilization (full career level)
S1680	Supervise petroleum transfer operations using the Inland Petroleum Distribution System (IPDS)
805C-S-0459	Intepret unit mobilization orders
805C-S-0269	Communicate with other agencies for mobilization requirements
805C-S-0646	Properly conduct the mobilization briefing
907-LOGCP-C3-S029	Compute detailed analyses of complex logistics functions, work processes & workloads pertinent to readiness & mobilization (mid-career level)
101-S-P30014	Ability to develop a training program in accordance with unit's SOP
101-S-P30002	Ability to communicate with lower and higher echelon

S2490	Navigate Mobilization Data Information System (MDIS)
805C-S-0781	Identify the phases of mobilization
S2922	Ability to prepare petroleum monthly accounting summary for each type or grade of bulk fuel on hand
S-101-E-0101	Ability to assemble, operate, and disassemble the Force Provider Bulk Fuel Storage and Distribution Subsystem
S1653	Identify capabilities and components of the IPDS
S1679	Ability to supervise the assembly, operation, and disassembly of the Inland Petroleum Distribution System (IPDS)
S1080	Ability to direct installation of valves and pipeline for IPDS operations
S4976	Ability to interpret planning factors

**ICTL Data :**

<b>ICTL Title</b>	<b>Personnel Type</b>	<b>MOS Data</b>
923A Petroleum Technician WOAC	Warrant Officer	MOS: 923A, Skill Level: CW3, Duty Pos: QKS