



Deployment / Distribution / Transportation  
Workforce Category

# LOGISTICS COMMUNITY OF INTEREST

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5716 ENGINEERING EQUIPMENT OPERATING SERIES  
Competency-Based Learning Map and Training Strategy

## Engineering Equipment Operating Competency-Based Learning Map Overview

The United States Marine Corps (USMC) Logistics Community of Interest (COI) developed this competency-based learning map to support 5716 Engineering Equipment Operating series professional development of technical competencies and training. This learning map is organized by a group of competencies, which together define successful performance in the 5716 Engineering Equipment Operating series. Competency-based learning maps are essential resources for career development and useful for identifying the knowledge and skillsets needed to meet and/or enhance their skills in this occupational series.

Learning maps are comprised of several components, described in Table 1 below:

**Table 1. Components of a Competency-Based Learning Map**

<b>Competency Titles and Definitions</b>	Describe the capabilities required within a position or job role
<b>Proficiency Target Levels</b>	Define different levels of required performance (Entry, Journeyman, Expert) within a competency area
<b>Behavioral Indicators (BIs)</b>	Examples of activities performed by an individual that illustrate how a competency is demonstrated at varying levels of proficiency: Entry, Journeyman, and Expert
<b>Training</b>	<p><b>Mandatory:</b> Training required to be completed based on Federal, State, or Marine Corps requirements/regulations</p> <p><b>Recommended:</b> Core, Core-Plus, and Sustainment training identified to enhance performance in competency areas</p> <ul style="list-style-type: none"> <li>• <b>Core:</b> Initial training that all personnel should have in related position from entry to senior levels</li> <li>• <b>Core-Plus:</b> Advanced training that is necessary for career progression that all mid-senior personnel should have in addition to the core training. Core-Plus training is recommended for personnel from Wage Grade (WG)/Wage Leader (WL)-10 to WL/Wage Supervisor (WS)-10</li> <li>• <b>Sustainment:</b> Training intended to maintain credentials or a good training course to have, but not necessary for career advancement</li> </ul>

## Engineering Equipment Operating Series Defined

The 5716 series covers nonsupervisory jobs which involve the operation of gasoline- or diesel-powered engineering and construction equipment with wheeled or crawler type traction. Jobs covered are those involving the operation of equipment such as graders, tractors with bulldozer or angledozer blades, front-end loaders, backhoes, trench diggers, and large industrial tractors with pan or scraper attachments. This equipment is used to perform such functions as cutting, moving, digging, grading, and rolling earth, sand, stone, and other materials, and to maintain ditches, road shoulders and beds, and fire lines.

## Competency Areas

Two competencies have been identified for the successful performance in the 5716 series:

1. Direction and Comprehension
2. Operation of Motor Vehicles

## Proficiency and Skill Band Definitions

The Proficiency Rating Scale (Table 2) below details the rating given for each level of proficiency and its corresponding definition. Proficiency levels describe the degree of competency required to perform a specific job successfully; these levels relate to the work required for a specific job. Different jobs require different levels of proficiency for successful performance. The proficiency levels provided in this learning map indicate the minimum proficiency target for successful performance.

**Table 2. Proficiency Rating Scale**

<b>1</b>	<b>Basic</b>	No Proficiency	Conceptual Knowledge Only/No Experience
<b>2</b>	<b>Applied</b>	Low Proficiency	Able to Apply with Help
<b>3</b>	<b>Intermediate</b>	Moderate Proficiency	Able to Apply Autonomously
<b>4</b>	<b>Advanced</b>	High Proficiency	Proficient/Able to Help Others
<b>5</b>	<b>Expert</b>	Very High Proficiency	Expert Knowledge

The USMC COIs have outlined a career progress structure that more accurately reflects the change in your abilities and responsibilities over time. That structure is called the Skill Level Structure (Table 3). It is associated with each occupational series and follows you from the time you are an entry-level employee until you attain the level of a management employee. Career progress in the USMC has traditionally been based on the federal government pay schedule system. The ratings within the pay schedule system are associated with Job Skill Levels within the 5716 series indicated as follows:

**Table 3. Skill Level Structure**

<b>Job Skill Level</b>	<b>Definition</b>	<b>Pay Plan</b>	<b>Beginning Grade</b>	<b>Target Grade</b>
1	Entry	WD/WG	5	8
2	Journeyman	WG/WL	8	10
3	Expert	WG/WL/WS	7	10

## Behavioral Indicators (BIs)

It is important to define how competencies are manifested at different skill levels. Behavioral Indicators are on-the-job examples of behaviors and activities that illustrate how a competency is demonstrated at varying skill levels and provide an objective description of the behavior that can be observed in an individual as evidence that they either have or do not have the skills at the required level needed for the competency. These are examples of what the competency could look like at varying skill levels and are not inclusive of all behaviors demonstrating the competency for each skill level. This information is provided as a tool to help guide evaluations of employee proficiency; however, it should not be used as a checklist for employees' behaviors.

## Licenses, Certifications, and Training

The Logistics COI has identified several licenses and certifications (Table 4) that are applicable to the 5716 series. They are either mandatory or recommended according to your command and billet. Work with your supervisor to ensure you meet command licensing and certification training requirements.

**Table 4. Certifications/Licenses**

Certification / License	Vendor
50-Ton Crane License with different variant	Base Licensing
988 Caterpillar (CAT) with attachment License	Base Licensing
Amphibious Assault Vehicle (AAV) License with different variant	Base Licensing
Backhoe with attachments License	Base Licensing
Cougar Mine Resistant Ambush Protected (MRAP) License with different variant	Base Licensing
Crawler/Dozer License	Base Licensing
Electric Cart License with different variant	Base Licensing
Excavator License	Base Licensing
Forklift License (up to 25,000lbs)	Base Licensing
High Mobility Multipurpose Wheeled Vehicle (HMMWV) License	Base Licensing
Husky License with different variant	Base Licensing
John Deere 624E with attachments License	Base Licensing
Joint Light Tactical Vehicle (JLTV) License with different variant	Base Licensing
KALMAR License	Base Licensing
Light Armored Vehicle (LAV) License with different variant	Base Licensing
Logistics Vehicle System Replacement (LVSR) License with different variant	Base Licensing
M60 Bridge Launcher License	Base Licensing
M9 Armored Combat Earthmover (ACE) License	Base Licensing
Motor Grader License	Base Licensing
MRAP Vehicle Buffalo License	Base Licensing
Medium Tactical Vehicle Replacement (MTVR) 7-Ton Truck License with different variant	Base Licensing

Certification / License	Vendor
P-19 Aircraft Rescue and Firefighting Vehicle License	Base Licensing
Runway Sweeper License	Base Licensing
Scraper License	Base Licensing
Scrubber Sweeper License	Base Licensing
Skid Steer with attachments License	Base Licensing
Tow Tractor License	Base Licensing
Tractor with attachment License	Base Licensing
Vibratory Compactor License	Base Licensing
Water Distributor License	Base Licensing
First Aid	Installation Specific
Forklift Operator License	Installation Specific
Occupational Safety and Health Administration (OSHA) 10 Certification	Installation Specific
Scooter Operator License	Installation Specific
Shop License (Station Operations)	Installation Specific
Shop Operator License	Installation Specific
Test Pond Operator License	Installation Specific
Test Track Operator License	Installation Specific
Straight Truck Operation License/ Commercial Driving License	Base Licensing /Georgia Department of Motor Vehicle

The Core and Sustainment training courses found in Tables 5-6 and Appendix A below are recommended and may not be inclusive of all training available. These courses are aligned to competencies throughout the learning map. Training titles and vendors are subject to change as the courses evolve. Additionally, several external resources (Defense Acquisition University (DAU), MarineNet, Learning Tree, Lynda.com, etc.) provide a variety of training opportunities available to all personnel for professional knowledge and skill enhancement.

**Table 5. 5716 Core Training**

Core (All Levels)	
<ul style="list-style-type: none"> <li>• 320/345B Excavators</li> <li>• 980G Wheel Loader</li> <li>• Class "A" Licensing</li> <li>• C-Series Backhoe Loaders</li> <li>• Driver Training Series: Extreme Weather Driving</li> <li>• Driver Training Series: Night Driving</li> <li>• Forklift Hazard Perception Challenge - Advanced Safety Awareness</li> <li>• Forklift Hazard Perception Challenge - Basic Safety Awareness</li> <li>• Forklift Hazard Perception Challenge - DVD Training</li> <li>• Forklift Hazard Perception Challenge - Intermediate Safety Awareness</li> </ul>	<ul style="list-style-type: none"> <li>• Forklift Operator Safety Training</li> <li>• Forklift Training</li> <li>• Hazardous Waste Operations and Emergency Response (HAZWOPER) (Initial)</li> <li>• H-Series Motor Graders</li> <li>• Medium Wheel Loaders</li> <li>• Resource Conservation and Recovery Act (RCRA) 40-Hour</li> <li>• Straight Truck Solutions: Loading &amp; Unloading</li> <li>• The Forklift Workshop - DVD Training</li> <li>• Vehicle Inspections: Tractor Trailers</li> </ul>

**Table 6. 5716 Sustainment Training**

Sustainment (All Levels)	
<ul style="list-style-type: none"> <li>HAZWOPER Refresher</li> </ul>	<ul style="list-style-type: none"> <li>RCRA Refresher</li> </ul>

## Competency Model

A competency model is a group of competencies that together define successful performance in a particular occupation. The Logistics COI has adapted this model from the Department of the Navy (DON) Office of Civilian Human Resources (OCHR) for the 5716 series. The competency model, to include definitions, corresponding BIs, minimum proficiency target levels, and training has been provided in the charts below.

COMPETENCY	DEFINITION		
<b>1. Direction and Comprehension</b>	Understands, interprets, and carries out instructions involving tasks, decisions, policies, procedures, and directives for the kind of mobile equipment being operated.		
MINIMUM PROFICIENCY TARGET LEVELS			
Job Skill Level: Entry WD/WG 5-8	Job Skill Level: Journeyman WG/WL 8-10	Job Skill Level: Expert WG/WL/WS 7-10	
<b>2</b>	<b>3</b>	<b>5</b>	
BEHAVIORAL INDICATORS			
<b>Entry</b>	<ul style="list-style-type: none"> <li>Accomplishes work, orally or in writing, in accordance with instructions provided by work leaders, supervisors, and motor vehicle dispatchers.</li> <li>Follows state, federal, local, and safety regulations (e.g., safety data sheet, first aid instructions, hazardous materials, and driving on public roads at highway speeds.).</li> <li>Follows federal, state, and local commercial motor vehicle laws, rules, and regulations concerning transportation permits, legal and extra-legal loads, load distribution, and securing.</li> <li>Follows heavy mobile equipment trade requirements to accomplish assigned tasks.</li> <li>Reports accidents and/or mishaps in accordance with current regulations.</li> <li>Follows maintenance standards, manufacturer's specifications, and standard operating procedures.</li> <li>Reports any observed or identified violations in accordance with established guidelines.</li> <li>Follows established practices to provide continuously safe and reliable operation of engineering equipment.</li> <li>Understands and follows hand/arm signals and/or oral and two-way radio instructions from ground guides.</li> <li>Transmits messages on a two-way radio (e.g., respond to radio dispatch instructions, notify dispatcher of change in route) to inform on the status of job assignments or problems encountered.</li> </ul>		
<b>Journeyman</b>	<ul style="list-style-type: none"> <li>Accomplishes work, orally or in writing, in accordance with instructions provided by work leaders, supervisors, and motor vehicle dispatchers.</li> <li>Follows state, federal, local, and safety regulations (e.g., safety data sheet, first aid instructions, hazardous materials, and driving on public roads at highway speeds.).</li> <li>Follows federal, state, and local commercial motor vehicle laws, rules, and regulations concerning transportation permits, legal and extra-legal loads, load distribution, and securing.</li> </ul>		

	<ul style="list-style-type: none"> <li>• Follows heavy mobile equipment trade requirements to accomplish assigned tasks.</li> <li>• Reports accidents and/or mishaps in accordance with current regulations.</li> <li>• Follows maintenance standards, manufacturer's specifications, and standard operating procedures.</li> <li>• Reports any observed or identified violations in accordance with established guidelines.</li> <li>• Follows established practices to provide continuously safe and reliable operation of engineering equipment.</li> <li>• Understands and follows hand/arm signals and/or oral and two-way radio instructions from ground guides.</li> <li>• Transmits messages on a two-way radio (e.g., respond to radio dispatch instructions, notify dispatcher of change in route) to inform on the status of job assignments or problems encountered.</li> </ul>
<b>Expert</b>	<ul style="list-style-type: none"> <li>• Ensures proper equipment and vehicles are available to accomplish assigned tasks.</li> <li>• Carries out directions from upper-level management.</li> <li>• Interprets instructions and communicates its relevance to assigned tasks.</li> <li>• Oversees work accomplished by engineering equipment operators.</li> <li>• Investigates and reports accidents and/or mishaps.</li> <li>• Ensures all standard operational procedures are followed.</li> <li>• Follows established practices to provide continuously safe and reliable operation of engineering equipment.</li> <li>• Understands and follows hand/arm signals and/or oral and two-way radio instructions from ground guides.</li> <li>• Transmits messages on a two-way radio (e.g., respond to radio dispatch instructions, notify dispatcher of change in route) to inform on the status of job assignments or problems encountered.</li> </ul>



COMPETENCY	DEFINITION		
<b>2. Operation of Motor Vehicles</b>	Operates engineering equipment and licensed vehicles to push, pull, pile, load, drive, or tow equipment or vehicles in maintenance, storage, and/or rebuild.		
MINIMUM PROFICIENCY TARGET LEVELS			
Job Skill Level: Entry WD/WG 5-8	Job Skill Level: Journeyman WG/WL 8-10	Job Skill Level: Expert WG/WL/WS 7-10	
<b>2</b>	<b>3</b>	<b>5</b>	
BEHAVIORAL INDICATORS			
<b>Entry</b>	<ul style="list-style-type: none"> <li>• Adjusts attachments for correct level, angle, or depth based on work requirements and equipment for working orders.</li> <li>• Adjusts loads, attachments, cables or slings for correct level, angle, weight, or depth based on work requirements and orders.</li> <li>• Possess knowledge of lift points, articulations, weight limits on proper equipment needed for rigging and securing items.</li> <li>• Attaches and adjusts equipment attachments or material handling devices (e.g., towbars, rollers, scarifiers, scoops, digging, grader blades, bulldozer blades, hooks, magnets, clamshell baskets) for operational use.</li> <li>• Carries out preventative maintenance on all assigned mobile engineering equipment (e.g., check fluids, replenish fluids, examine filters, change filters, lubricate equipment).</li> <li>• Operates engineering equipment with hydraulically controlled attachments.</li> <li>• Executes periodic inspections and schedules maintenance on engineering equipment.</li> <li>• Hooks and unhooks trailers from tractors or converter dollies for transportation.</li> <li>• Operates all licensed heavy equipment while in the maintenance process to exact specifications (e.g., in-line trucks, bulldozers, graders, backhoes, front end loaders).</li> <li>• Operates clutches, levers, brakes, controls, or accelerator on heavy equipment (e.g., boom cranes, graders, tractors).</li> <li>• Operates different sets of controls simultaneously (e.g., gear shifting, clutches, brakes, steering controls, air valves) while maneuvering equipment.</li> <li>• Operates gasoline or diesel powered heavy duty equipment.</li> <li>• Operates engineering equipment on various terrains (e.g., flat, rolling, hilly terrain).</li> <li>• Operates engineering equipment and licensed vehicles close to buildings, parking lots, trees, drop-offs, rocks, narrow places, congestion, heavy traffic, or other obstructions.</li> <li>• Operates sweepers with attachments to sweep roads, buildings, and warehouses.</li> <li>• Operates engineering equipment to transport items. (e.g., supplies, materials, tools, and other equipment).</li> <li>• Performs coupling and uncoupling of attachments for towing or unloading items.</li> <li>• Prepares pre-trip inspection report in accordance with regulations, policies, and procedures.</li> <li>• Makes decisions concerning loading and arranging cargo, clearances, turning radius, braking distances, and distance from the preceding vehicles.</li> <li>• Operates heavy equipment and vehicles safely by recognizing their operational limits.</li> <li>• Disposes hazardous waste in compliance of environmental laws, regulations, policies, and procedures.</li> <li>• Maneuvers heavy duty construction equipment in traffic and weather conditions.</li> <li>• Uses personal protective equipment (PPE) and clothing for personal safety.</li> <li>• Maneuvers equipment in confined areas to avoid damage to equipment or surrounding area by listening and communication with ground guides.</li> <li>• Completes engineering equipment operations within specified time frames to meet agency requirements.</li> </ul>		



	<ul style="list-style-type: none"> <li>• Maneuvers heavy equipment using hand, foot, and eye coordination to operate controls.</li> <li>• Uses a high degree of concentration to perform reliable equipment operations.</li> <li>• Identifies operational defects through daily inspections and preventative maintenance of engineering equipment.</li> <li>• Inspects and schedules maintenance of engineering equipment and attachments for operational performance.</li> <li>• Inspects equipment for signs of wear or damage to maintain safe operating condition.</li> <li>• Inspects vehicles for adequate fuel supply, radiator coolant, oil level, and battery condition.</li> <li>• Inspects work areas to confirm safety practices are observed (e.g., cleanliness, sanitation, safety hazards, or safe stowage of supplies, materials, equipment).</li> <li>• Loads and unloads amphibious vessels from trailer trucks and dollies.</li> <li>• Loads and unloads equipment or trailers with or without mechanical freight handling equipment.</li> <li>• Lubricates moving parts while inspecting equipment for signs of wear or damage.</li> <li>• Maintains cleanliness of assigned vehicles.</li> <li>• Reviews markings or labels on freight to confirm vehicle is correctly placarded.</li> <li>• Reviews shipping documents to determine presence of hazardous materials.</li> <li>• Tracks materials and labor for service and maintenance tickets.</li> <li>• Uses correct tensions and clearances.</li> <li>• Confirms cargo is distributed, secured, and protected from weather and other conditions.</li> </ul>
<b>Journeyman</b>	<ul style="list-style-type: none"> <li>• Oversees engineering equipment operators to ensure they maneuver equipment in a reliable, safe, and professional manner.</li> <li>• Briefs other engineering equipment operators on limitations, hazards and restrictions to ground movement.</li> </ul>
<b>Expert</b>	<ul style="list-style-type: none"> <li>• Oversees engineering equipment operators to ensure they maneuver equipment in a reliable, safe, and professional manner.</li> <li>• Briefs other engineering equipment operators on limitations, hazards and restrictions to ground movement.</li> </ul>

## Appendix A. Training-to-Competency Mapping

CORE TRAINING	VENDOR	Direction & Comprehension	Operation of Motor Vehicles
Class "A" Licensing	Cape Fear Comm. Coll	√	√
Driver Training Series: Extreme Weather Driving	J.J. Keller	√	√
Driver Training Series: Night Driving	J.J. Keller	√	√
Forklift Hazard Perception Challenge - Advanced Safety Awareness	J.J. Keller	√	√
Forklift Hazard Perception Challenge - Basic Safety Awareness	J.J. Keller	√	√
Forklift Hazard Perception Challenge - DVD Training	J.J. Keller	√	√
Forklift Hazard Perception Challenge - Intermediate Safety Awareness	J.J. Keller	√	√
Forklift Operator Safety Training	J.J. Keller	√	√
HAZWOPER (Initial)	HAZTRAIN	√	√
RCRA 40 Hour Course	HAZTRAIN	√	√
Straight Truck Solutions: Loading & Unloading	J.J. Keller	√	√
The Forklift Workshop - DVD Training	J.J. Keller	√	√
Vehicle Inspections: Tractor Trailers	J.J. Keller	√	√
320/345B Excavators	Yancey	√	√
980G Wheel Loader	Yancey	√	√
C-Series Backhoe Loaders	Yancey	√	√
Forklift Training	Yancey	√	√
H-Series Motor Graders	Yancey	√	√
Medium Wheel Loaders	Yancey	√	√

SUSTAINMENT TRAINING	VENDOR	Direction & Comprehension	Operation of Motor Vehicles
HAZWOPER Refresher (Annual)	HAZTRAIN	√	√
RCRA Refresher (Annual)	HAZTRAIN	√	√

## Appendix B. Acronyms Defined

◆ AAV	Amphibious Assault Vehicle
◆ ACE	Armored Combat Earthmover
◆ BI	Behavioral Indicator
◆ CAT	Caterpillar
◆ COI	Community of Interest
◆ DAU	Defense Acquisition University
◆ DoD	Department of Defense
◆ DON	Department of the Navy
◆ HAZWOPER	Hazardous Waste Operations and Emergency Response
◆ HMMWV	High Mobility Multipurpose Wheeled Vehicle
◆ JLTV	Joint Light Tactical Vehicle
◆ LAV	Light Armored Vehicle
◆ LVSR	Logistics Vehicle System Replacement
◆ MRAP	Mine Resistant Ambush Protected
◆ MTVR	Medium Tactical Vehicle Replacement
◆ OCHR	Office of Civilian Human Resources
◆ OSHA	Occupational Safety and Health Administration
◆ RCRA	Resource Conservation and Recovery Act
◆ USMC	United States Marine Corps
◆ WG	Wage Grade
◆ WL	Wage Leader
◆ WS	Wage Supervisor