

3116. OCCUPATIONAL FIELD 11, UTILITIES

1. Introduction. A utility is a provided service such as water, light, power environmental control and refrigeration. The Utilities OccFld is responsible for planning and providing strategic and tactical utilities support to all levels of all elements of the various MAGTFs, to include posts and stations, in any climate or place. This functional support includes planning establishment, operation, maintenance, and repair of electric power generation sites along with the inherent underground, above ground overhead and tactical electric power distribution systems; water purification, storage and distribution sites; shower and laundry facilities; and heating, ventilation, air conditioning and refrigeration sites. In addition to maintaining and repairing their own equipment at the organizational and intermediate levels, Marines in this OccFld troubleshoot and repair water pumps on equipment used by other OccFlds; the air conditioning systems on all ground equipment; and the electrical systems on engineer and general supply equipment. Cantonment is supported with field sanitation, sewage, and waste disposal; and Humanitarian Assistance and Civil Military Operations are supported with plumbing, HVAC, and interior wiring installation and repair.

a. Basic qualifications to work in this OccFld include manual dexterity, normal color vision, and the ability to understand involved technical material. Formal schooling is mandatory prior to assignment of any Utilities MOS. Marines entering the utilities field are assigned MOS 1100, Basic Utilities Marine, and attend formal schooling to gain the specific skills required to qualify for one of the designated MOSs. These skills are further developed by individual and team training, to include some cross training between MOSs, while in the Operating Forces. Later in the Marine's career, advanced formal schooling may be provided leading to assignment as a Section Chief, Utilities Chief, or appointment as a Utilities Officer.

b. Skills acquired in OccFld 11 are directly transferable to civilian occupations upon leaving military service. The opportunity to participate in a formal apprenticeship program leading to certification as a Journey Worker by the U.S. Department of Labor is available to all basic MOSs within the OccFld; refer to reference (bs) for specific information concerning the United Services Military Apprenticeship Program (USMAP). Additional information and assistance on apprenticeships are available from local education offices.

2. MOS 1141, Electrician (SSgt to Pvt) PMOS

a. Summary. Using knowledge of electrical theory and concepts, Electricians install, operate, maintain, and repair underground, above ground, overhead and tactical electrical power distribution systems. Additionally, Electricians operate and perform organizational level operator/crew maintenance on electrical power generation equipment, load banks, and floodlight sets. When on Humanitarian Assistance and Civil Military Operations, they install and repair interior wiring in buildings. These duties may include installing hardware, including cross-arms, insulators, and lightning arresters; assembling/erecting and climbing utility poles; stringing wire conductors; measuring, cutting, bending, assembling, and installing electric conduit; installing control and distribution apparatus, such as switches, relays, and circuit breakers; testing circuits for continuity, compatibility, and safety, including ground of components, using test instruments such as multi-meters and ohmmeters; and installing and repairing electric fixtures but not limited to, ground testers. Corporal

through Staff Sergeant are afforded the opportunity to attend a skill progression course the Advanced Electrician Course that provides in-depth instruction on the requirements of the National Electric Code (NEC) and the planning of electrical support to include determining demand, phase balancing, and voltage drops. An apprenticeship program, leading to U.S. Department of Labor certification as a Journey Worker, is available to Electricians under the United Services Military Apprenticeship Program (USMAP).

b. Prerequisites

- (1) Must possess an EL score of 90 or higher.
- (2) Must have normal color vision.

c. Requirements

(1) Complete the Basic Electrician Course (M0311B2), Marine Corps Engineer School, Camp Lejeune, NC.

(2) Skill progression course for Electricians (Cpl to SSgt) is the Advanced Electrician Course (M0311K2). See Figure 3-9.

<u>CID</u>	<u>TITLE</u>	<u>LOCATION</u>
M0311B2	Basic Electrician	Camp Lejeune, NC

d. Duties. For a complete listing of duties and tasks, refer to reference (1), Marine Corps Engineer and Utilities Training and Readiness Manual.

e. Related Standard Occupational Classification (SOC) Title and Code

- (1) Electricians 47-2111.
- (2) Electrical Power-Line Installers and Repairers 49-9051.
- (3) Power Distributors and Dispatchers 51-8012.

f. Related Military Skill

- (1) Field Wireman, 0612.
- (2) Construction Wireman, 0613.

3. MOS 1142, Engineer Equipment Electrical Systems Technician (SSgt to Pvt) PMOS

a. Summary. Using knowledge of electrical theory and concepts, and electronic fundamentals, Engineer Equipment Electrical Systems Technicians repair electric motors, electronic modules, motor control circuits, and electric power generation equipment. These technicians also troubleshoot digital/logic components/circuits and make organizational and intermediate level repairs on the electrical systems of engineer and general supply equipment. Duties include diagnosing problems and making repairs utilizing manuals, schematic diagrams, wiring diagrams, and other specifications, using hand tools, power tools, and electrical and electronic test equipment. Repairs include soldering connections and replacing wires, malfunctioning

apparatus, and components, including some faulty mechanical, hydraulic and pneumatic parts on equipment. Corporal through Staff Sergeant are afforded the opportunity to attend a skill progression course the Advanced Engineer Equipment Electrical Systems Technician Course that provides in-depth instruction on the integrated electrical systems of Combat Operations Center (COC) Integrated Trailer/ECU/Generator (ITEG); the interaction between electrical and hydraulic systems of Material Handling Equipment (MHE) using the CAT E-Tool, along with reprogramming of fault codes and parameters on controls of Tactical Quiet Generators sets; and electrical control of refrigerant systems and heater elements of Environmental Control Units (ECU), and Containerized Batch Laundry (CBL) units. An apprenticeship program, leading to U.S. Department of Labor certification as a Journey Worker is available to Engineer Equipment Electrical Systems Technicians under the United Services Military Apprenticeship program (USMAP).

b. Prerequisites

- (1) Must possess an MM score of 105 or higher.
- (2) Must possess an EL score of 100 or higher.
- (3) Must have normal color vision.

c. Requirements

(1) Complete the Basic Engineer Equipment Electrical Systems Technician Course (M03UAA2), Marine Corps Engineer School, Camp Lejeune, NC.

(2) Skill progression course for Engineer Equipment Electrical Systems Technician (Cpl to SSgt) is the Advanced Engineer Equipment Electrical Systems Technician Course (M03UAA2).

<u>CID</u>	<u>TITLE</u>	<u>LOCATION</u>
M03UAA2	Basic Engineer Equipment Electrical Systems Technician	Camp Lejeune, NC

d. Duties. For a complete listing of duties and tasks, refer to reference (1), Marine Corps Engineer and Utilities Training and Readiness Manual.

e. Related Standard Occupational Classification (SOC) Title and Code

- (1) Electrical and Electronics Repairers, Powerhouse, Substation and Relay 49-2095.
- (2) Electric Motor, Power Tool, and Related Repairers 49-2092.
- (3) Stationary Engineers and Boiler Operators 51-8021.

f. Related Military Skill

- (1) Fuel and Electrical Systems Mechanic, 3524.
- (2) Aircraft Maintenance Support Equipment Electrician/Refrigeration Mechanic, 6073.

4. MOS 1161, Refrigeration and Air Conditioning Technician (SSgt to Pvt) PMOS

a. Summary. Refrigeration and Air Conditioning technicians must be certified by the Environmental Protection Agency (EPA) to handle Hydro Chlorofluorocarbons (HCFCs) and Chlorofluorocarbons (CFC). They install, operate and perform organizational and intermediate level repairs on field refrigeration and environmental control units for all ground operations and equipment. These duties include installing refrigeration systems according to engineering specifications; recovery of specified gases or fluids from systems; dismantling and testing malfunctioning systems using electrical and mechanical, testing equipment, and repairing systems by replacing or adjusting defective and worn parts. An apprenticeship program, leading to U.S. Department of Labor certification as a Journey Worker, is available to Refrigeration and Air Conditioning Technicians under the United Services Military Apprenticeship Program (USMAP).

b. Prerequisites

- (1) Must possess an MM score of 105 or higher.
- (2) Must have normal color vision.

c. Requirements. Complete the Basic Refrigeration and Air Conditioning Technician Course at Marine Corps Engineer School, Camp Lejeune, NC.

<u>CID</u>	<u>TITLE</u>	<u>LOCATION</u>
M0311D2	Basic Refrigeration and Air Conditioning Technician	Camp Lejeune, NC

d. Duties. For a complete listing of duties and tasks, refer to reference (1), Marine Corps Engineer and Utilities Training and Readiness Manual.

e. Related Standard Occupational Classification (SOC) Title and Code

- (1) Heating, Air Conditioning, and Refrigeration Mechanics and Installers 49-9021.
- (2) Cooling and Freezing Equipment Operators 51-9193.

f. Related Military Skill. Aircraft Maintenance GSE Electrician/Refrigeration Mechanic, 6073.

5. MOS 1169, Utilities Chief (MGySgt to GySgt) PMOS

a. Summary. Utilities Chiefs are technical advisers to the commander at all levels of all elements of the various MAGTFs on the employment of utilities support. These Staff Noncommissioned Officers analyze, translate, and execute commanders' operational requirements into a utilities support reality that enhances mission accomplishment. They plan and supervise the establishment, operation, and maintenance of water purification, storage, and distribution sites; electric power generating sites along with the inherent underground, above ground, overhead and tactical electric power distribution systems; and shower and laundry services. They coordinate and supervise the installation, maintenance and repair of heating, air conditioning (to include automotive), and refrigeration equipment; and the maintenance and repair of

the electrical systems on engineer and general supply equipment. Water quality assurance, field sanitation, sewage, and waste disposal is also planned, coordinated, and supervised. When deployed in support of Humanitarian Assistance and Civil Military Operations, these chiefs also plan, and coordinate the installation and repair of plumbing and indoor electrical wiring. This MOS is technical in nature and requires years of experience to become proficient. Due to the diversity of commands throughout the Marine Corps, some of the duties and tasks performed by the Utilities Chief may overlap with those of the Engineer Equipment Chief, Motor Transport Maintenance Chief, and Motor Transport Operations Chief. Additional duties may include: formal schools faculty, MAGTF staff planning, new equipment/systems research and development, and new systems acquisition. This MOS will only be assigned to graduates of the resident Utilities Chief Course.

b. Prerequisites. Must hold MOS 1141, 1142, 1161, or 1171.

c. Requirements. Must complete the resident Utilities Chief Course (M0311E2), Marine Corps Engineer School, Camp Lejeune, NC, in order to receive MOS 1169.

<u>CID</u>	<u>TITLE</u>	<u>LOCATION</u>
M0311E2	Utilities Chief	Camp Lejeune, NC

d. Duties. For a complete listing of duties and tasks, refer to reference (1), Marine Corps Engineer and Utilities Training and Readiness Manual.

e. Related Standard Occupational Classification (SOC) Title and Code

(1) First-Line Supervisors/Managers of Mechanics, Installers and Repairers 49-1011.

(2) First-Line Supervisors of Construction Trades and Extraction Workers 47-1011.

f. Related Military Skill. None.

6. MOS 1171, Water Support Technician (SSgt-Pvt) (PMOS)

a. Summary. Water Support Technicians install, operate, inspect, and perform preventive and corrective maintenance on pumps, water purification equipment, water storage/distribution systems, and laundry and shower facilities. They conduct and evaluate water surveys, water reconnaissance, and water quality analysis as well as establish, maintain, and close sanitation systems. When on Humanitarian Assistance and Civil Military Operations these technicians also plan, install, and repair the plumbing systems of structures. These duties include cutting, bending, and threading pipes; joining pipes using screws, bolts, fittings, solder, and plastic solvent; cleaning tanks; testing water to determine acidity, impurities, turbidity, and conductivity; and regulating the flow of raw water for treatment while mixing it with specified amounts of chemicals in the purification process. Corporal through Staff Sergeant are afforded the opportunity to attend a skill progression course the Advanced Water Support Technician course (M03UAC2) that provides in-depth instruction on the requirements of the Uniform Plumbing Code (UPC) and the planning of water support. An apprenticeship program, leading to U.S. Department of Labor

certification as a Journey Worker, is available to Water Support Technicians under the United Services Military Apprenticeship Program (USMAP).

b. Prerequisites

- (1) Must possess an MM score of 95 or higher.
- (2) Must have normal color vision.

c. Requirements

(1) Complete the Basic Water Support Technician Course (M031102), Marine Corps Engineer School, Camp Lejeune, NC.

(2) Skill progression course for the Water Support Technician (Cpl to SSgt) is the Advanced Water Support Technician Course (M03UAC2).

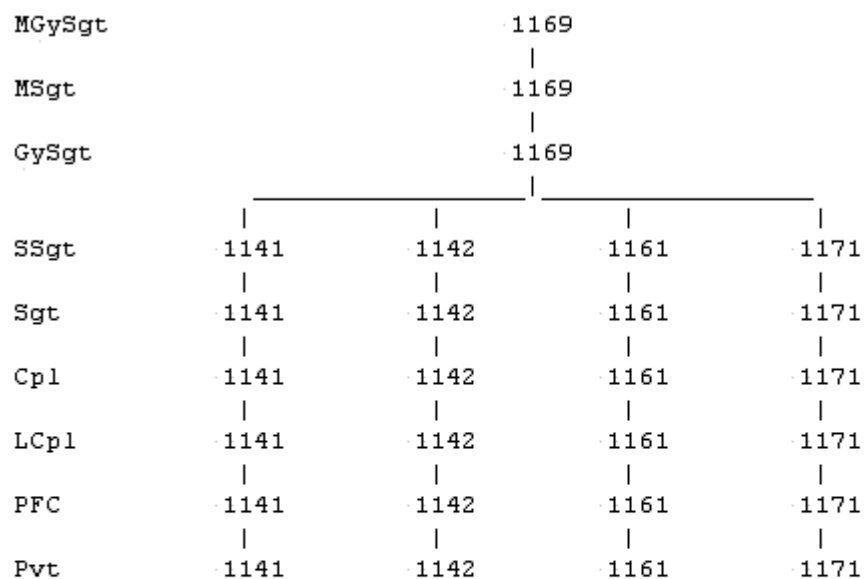
<u>CID</u>	<u>TITLE</u>	<u>LOCATION</u>
M031102	Basic Water Support Technician	Camp Lejeune, NC

d. Duties. For a complete listing of duties and tasks, refer to reference (1), Marine Corps Engineer and Utilities Training and Readiness Manual.

e. Related Standard Occupational Classification (SOC) Title and Code

- (1) Water and Wastewater Treatment Plant and System Operators 51-8031.
- (2) Laundry and Dry-Cleaning Workers 51-6011.
- (3) Plumbers, Pipefitters, and Steamfitters 47-2152.

f. Related Military Skill. None.



1100 Basic Utilities Marine (Basic MOS)
 1141 Electrician (PMOS)
 1142 Engineer Equipment Electrical Systems Technician (PMOS)
 1161 Refrigeration and Air Conditioning Technician (PMOS)
 1169 Utilities Chief (PMOS)
 1171 Water Support Technician (PMOS)

Figure 3-9.--Utilities

MOS 1141, Electrician (PMOS)

SSGT Required Training:
Skill Progression:
Skill Enhancement: Utilities Chief Course (M0311E2)
MOS Assignment: **OPFOR:** Electrician Quality Control/
Floor Chief/Maintenance Chief
SE: Instructor MCES/I&I Staff

SGT Required Training:
Skill Progression:
Skill Enhancement:
MOS Assignment: **OPFOR:** Electrician Quality Control/
Floor Chief/Maintenance Chief
SE: Instructor MCES

CPL Required Training:
Skill Progression:
Skill Enhancement:
MOS Assignment: **OPFOR:** Electrician Quality Control/
Floor Chief/Maintenance Chief
SE: None

LCPL Required Training: Basic Electrician Course (M0311B2)
Skill Progression:
Skill Enhancement:
MOS Assignment: **OPFOR:** Electrician
SE: None

PFC Required Training: Basic Electrician Course (M0311B2)
Skill Progression:
Skill Enhancement:
MOS Assignment: **OPFOR:** Electrician
SE: None

PVT Required Training: Basic Electrician Course (M0311B2)
Skill Progression:
Skill Enhancement:
MOS Assignment: **OPFOR:** Electrician
SE: None

MOS 1142, Engineer Equipment Electrical Systems Technician (PMOS)

SSGT Required Training:
Skill Progression:
Skill Enhancement: Utilities Chief Course (M0311E2)
MOS Assignment: **OPFOR:** Engineer Equipment Electrical
Systems Technician/Quality Control/
Floor Chief/Maintenance Chief
SE: Instructor MCES/I&I Staff

SGT Required Training:
Skill Progression:
Skill Enhancement:

Figure 3-9.--Utilities

	MOS Assignment:	OPFOR: Engineer Equipment Electrical Systems Technician/Quality Control/Floor Chief/Maintenance Chief SE: Instructor MCES

CPL	Required Training: Skill Progression: Skill Enhancement: MOS Assignment:	OPFOR: Engineer Equipment Electrical Systems Technician/Quality Control/Floor Chief/Maintenance Chief SE: None

LCPL	Required Training: Skill Progression: Skill Enhancement: MOS Assignment:	Basic Engineer Equipment Electrical Systems Technician Course (M03UAA2) OPFOR: Engineer Equipment Electrical Systems Technician SE: None

PFC	Required Training: Skill Progression: Skill Enhancement: MOS Assignment:	Basic Engineer Equipment Electrical Systems Technician Course (M03UAA2) OPFOR: Engineer Equipment Electrical Systems Technician SE: None

PVT	Required Training: Skill Progression: Skill Enhancement: MOS Assignment:	Basic Engineer Equipment Electrical Systems Technician Course (M03UAA2) OPFOR: Engineer Equipment Electrical Systems Technician SE: None

MOS 1161, Refrigeration and Air Conditioning Technician (PMOS)

SSGT	Required Training: Skill Progression: Skill Enhancement: MOS Assignment:	Utilities Chief Course (M0311E2) OPFOR: Refrigeration and Air Conditioning Technician Quality Control/Floor Chief/Maintenance Chief SE: Instructor/MCES/I&I Staff

SGT	Required Training: Skill Progression: Skill Enhancement: MOS Assignment:	OPFOR: Refrigeration and Air Conditioning Technician SE: Instructor MCES

CPL	Required Training:	

Figure 3-9.-Utilities (continued)

	Skill Progression:	
	Skill Enhancement:	
	MOS Assignment:	OPFOR: Refrigeration and Air Conditioning Technician SE: None

LCPL	Required Training:	Basic Refrigeration and Air Conditioning Technician Course (M0311D2)
	Skill Progression:	
	Skill Enhancement:	
	MOS Assignment:	OPFOR: Refrigeration and Air Conditioning Technician SE: None

PFC	Required Training:	Basic Refrigeration and Air Conditioning Technician Course (M0311D2)
	Skill Progression:	
	Skill Enhancement:	
	MOS Assignment:	OPFOR: Refrigeration and Air Conditioning Technician SE: None

PVT	Required Training:	Basic Refrigeration and Air Conditioning Technician Course (M0311D2)
	Skill Progression:	
	Skill Enhancement:	
	MOS Assignment:	OPFOR: Refrigeration and Air Conditioning Technician SE: None

<u>MOS 1169, Utilities Chief (PMOS)</u>		
MGYSGT	Required Training:	
	Skill Progression:	
	Skill Enhancement:	
	MOS Assignment:	OPFOR: Utilities Chief SE: Academic Chief MCES/HQMC I&L, LPE

MSGT	Required Training:	
	Skill Progression:	
	Skill Enhancement:	
	MOS Assignment:	OPFOR: Utilities Chief SE: Faculty MCES/I&I Staff

GYSGT	Required Training:	Utilities Chief Course (M0311E2)
	Skill Progression:	
	Skill Enhancement:	
	MOS Assignment:	OPFOR: Utilities Chief SE: Instructor MCES/I&I Staff

Figure 3-9.-Utilities (continued)

MOS 1171, Water Support Technician (PMOS)

SSGT	Required Training: Skill Progression: Skill Enhancement: MOS Assignment:	Utilities Chief Course (M0311E2) OPFOR: Water Support Technician Quality Control/Floor Chief/ Maintenance Chief SE: Instructor MCES/I&I Staff

SGT	Required Training: Skill Progression: Skill Enhancement: MOS Assignment:	OPFOR: Water Support Technician Quality Control/Floor Chief/ Maintenance Chief SE: Instructor MCES

CPL	Required Training: Skill Progression: Skill Enhancement: MOS Assignment:	OPFOR: Water Support Technician Quality Control/Floor Chief/ Maintenance Chief SE: None

LCPL	Required Training: Skill Progression: Skill Enhancement: MOS Assignment:	Basic Water Support Technician Course (M031102) OPFOR: Water Support Technician SE: None

PFC	Required Training: Skill Progression: Skill Enhancement: MOS Assignment:	Basic Water Support Technician Course (M031102) OPFOR: Water Support Technician SE: None

PVT	Required Training: Skill Progression: Skill Enhancement: MOS Assignment:	Basic Water Support Technician Course (M031102) OPFOR: Water Support Technician SE: None

Figure 3-9.-Utilities (continued)