UNITED STATES MARINE CORPS
Logistics Operations School
Marine Corps Combat Service Support Schools
Training Command
PSC Box 20041
Camp Lejeune, North Carolina 28542-0041

AOM 6105

STUDENT OUTLINE

OPERATION AND FIRST ECHELON MAINTENANCE PROCEDURES - M998

LEARNING OBJECTIVES

1. Terminal Learning Objectives:

a. Given a M998 vehicle, TM 9-2320-280-10, and a Vehicle and Equipment Operational Record (NAVMC 10627), operate the vehicle, per information contained in the reference provided. (6.1.3)

b. Given a M998 vehicle, the required tools, supplies, equipment, TM 9-2320-280-10, LO 9-2320-280-12, and a Vehicle and Equipment Operational Record (NAVMC 10627), perform the prescribed first echelon maintenance on the vehicle, per information contained in the references provided. (6.1.4)

2. Enabling Learning Objectives:

a. Given a M998 vehicle, TM 9-2320-280-10, and NAVMC 10627, per information contained in the reference provided:

(1) prepare the vehicle for operation and (6.1.3a)

(2) operate the vehicle in all transmission/transfer ranges. (6.1.3b)

b. Given a M998 vehicle, the required tools, supplies, equipment, TM 9-2320- 280-10, LO 9-2320-280-12, and NAVMC 10627, per information contained in the references provided:

(1) perform "Before Operation" services on the vehicle, (6.1.4a)

(2) perform "During Operation" services on the vehicle, (6.1.4b)

(3) perform "After Operation" services on the vehicle, (6.1.4c)

(4) perform "Weekly" services on the vehicle, (6.1.4d)

(5) perform "Monthly" services on the vehicle, and (6.1.4e)

(6) complete the NAVMC 10627. (6.1.4f)

OUTLINE

1. INTRODUCTION TO THE M998 VEHICLE

a. The M998 Series vehicle is a Truck Utility, Cargo/Troop Carrier, 1 1/4 Ton, highly mobile, all-wheel drive vehicle that comes in a variety of body styles designed to perform various missions; all vehicle models are mounted on the same chassis.

(1) The vehicle is powered by a 6.2 liter DDA diesel engine. This overhead valve V8 is water cooled and produces 150 horsepower at 3600 revolutions per minute.

(2) The M998 vehicle is equipped with runflat tires that permit continued operation of the vehicle under emergency conditions after loss of air pressure in one or more tires. For runflat operation, the following safety/operational requirements must be met:

(a) for any possible combination of flat tires the maximum distance to be traveled is 30 miles;

(b) with 2 flat rear tires, the maximum allowable speed is 20 miles per hour;

(c) for any other combination of flat tires, other than two rear flats, maximum speed is 30 miles per hour.

(3) Drive train components include a three-speed automatic transmission with a two-range, full-time, four-wheel drive transfer case.

(4) The M998 features hydraulic disk service brakes, a manual disk-type parking brake and power steering.

(5) There are two models of the HMMWV Cargo/Troop Carrier. The difference between the two models is that the M1038 has a winch; the M998 does not. The Troop Carrier, featuring a troop seat kit, can transport eight passengers in addition to the crew.

(6) The M998 has a 25-gallon explosion resistant fuel tank that gives the vehicle a range in excess of 337 miles.

(7) The M998 can attain 55 miles per hour on hard surface roads and 23 miles per hour cross-country. It has a ground clearance of 16 inches and can negotiate an 18-inch step without sustaining vehicle damage.

(8) M998 Series vehicles are capable of operating in water up to thirty inches without special preparation. They can effectively operate in water up to sixty inches when equipped with a deep water fording kit.

b. Engine Compartment

(1) The power steering fluid reservoir is located at the left front side of the engine, next to the alternator adjusting bracket mount. It has a cap with an integral dipstick that is used to check fluid level.

(2) The engine oil dipstick is located behind the alternator, also on the left side of the engine. A small T-handle on the exposed part of the dipstick is turned counterclockwise to permit the dipstick to be withdrawn and clockwise, after installation, to tighten the seal in the dipstick tube.

(3) The engine oil filler cap is located front center of the engine.

(4) The fuel filter removes impurities from the fuel system. The filter is located on the firewall, at the left rear of the engine compartment.

(5) The fuel filter draincock is located in front and below the windshield washer reservoir and is the draining point for water collected in the fuel filter.

(6) The windshield washer reservoir cap unsnaps to add washer fluid. The reservoir is located at the left rear of the engine compartment.

(7) The master cylinder cover is located at the left rear of the engine and is removed to fill and/or check the brake fluid level.

(8) The air cleaner houses the air cleaner element which filters dirt and dust from the air before it enters the engine's combustion chambers. The air cleaner is located to the right of the engine.

(9) The coolant surge tank is located at the right rear of the engine. The cap is removed from the surge tank to add coolant to the cooling system. The radiator does not have a conventional filler cap.

(10) The transmission oil dipstick is located at the right rear of the engine compartment behind and to the left of the surge tank. The

transmission oil dipstick is designed the same as the engine oil dipstick and removed and replaced in the same manner.

(11) The radiator draincock is located beneath the right side of the engine on the lower radiator crossover pipe. Turn the draincock counterclockwise to drain the coolant from the radiator.

(12) The radiator fan activates and begins cooling the engine when the engine temperature reaches 220 degrees Fahrenheit.

2. INTRODUCTION TO M998 VEHICLE INSTRUMENTS, GAGES, INDICATOR LIGHTS AND OPERATOR CONTROLS

a. Instruments, Gages, And Indicator Lights

(1) Wait-to-start lamp. The wait-to-start lamp is the amber lamp located directly above the ignition switch. This lamp illuminates when the ignition switch is first turned to the "RUN" position.

(a) The engine is equipped with glow plugs in each cylinder that warm the air in the cylinder for starting.

(b) While the Wait to Start lamp is on, the glow plugs are receiving a 24-volt electrical charge for about 9 seconds to get them hot.

(c) There are four steps in the starting sequence to protect the glow plugs.

1 First we turn the ignition switch to the "RUN" position and wait for the lamp to go out. Remember, the lamp will remain on until the glow plugs warm up for about 9 seconds.

2 Turn the ignition switch to the "START" position. Don't hold the switch in "START" for more than 20 seconds. The starter will overheat and burn out.

3 If the engine does not start, return the ignition switch to the "RUN" position and wait 10 to 15 seconds to allow the starter to cool.

4 If you turn the ignition switch to the "ENG STOP" position, you must wait approximately 90 seconds before attempting to start the engine again. If you don't wait, the glow plug controller will reactivate the glow plugs thinking this is a new start and give the plugs a new pre-glow cycle. Since the glow plugs are already hot, they'll get hotter and burn out.

(2) Engine oil pressure gage.

(a) The engine oil pressure gage is the upper left gage of the center instrument cluster.

(b) Normal oil operating pressure should be 40 to 50 pounds per square inch. At engine idle, oil pressure should be 6 pounds per square inch.

(3) Engine coolant temperature gage.

(a) The coolant temperature gage is the upper right gage of the instrument cluster.

(b) Normal engine operating temperature is 190 degrees Fahrenheit to 230 degrees Fahrenheit. Temperatures exceeding 230 degrees will render the vehicle inoperative.

(4) The speedometer/odometer is the center gage of the instrument cluster. It indicates vehicle speed and accumulated mileage.

(5) The fuel gage is the lower left gage of the instrument cluster. It indicates the amount of fuel in the fuel tank.

(6) Voltmeter.

(a) The voltmeter is the lower right gage of the instrument cluster.

(b) It indicates the charging level of the battery charging system.

1 When the indicator is in the green zone, the system is functioning properly.

2 When the indicator is in the yellow zone, the system is not charging adequately.

3 When the indicator is in the red zone on the right side of the gage, the system is over charging. It is not charging at all if the indicator is in the red zone on the left side of the gage.

(7) Air restriction gage.

(a) The air restriction gage is located on the instrument panel to the right of the ignition switch and directly below the brake warning lamp behind the steering wheel.

(b) When there is no restriction in the air induction system, the sight gage will be clear.

(c) When the air becomes restricted to any degree, a yellow column will begin to rise in the sight gage.

1 The height of the yellow column has a direct relationship to the degree of restriction that exists in the air induction system.

2 When the column rises to the top of the sight gage and contacts the red band at the top of the sight gage, the air induction system is completely blocked.

(8) Brake warning lamp.

(a) The brake warning lamp is to the right of the wait-to-start lamp assembly.

(b) The warning lamp illuminates when the parking brake is applied or if a hydraulic pressure imbalance exists between the front and rear brake systems as the result of a leak.

b. Operator Controls

(1) Ignition switch.

(a) The ignition switch is a rotary type switch, located directly below the wait-to-start lamp on the extreme left of the instrument panel.

(b) When it is turned to "RUN," the switch activates the glow plugs to heat the precombustion chambers.

(c) When the switch is turned to "START," the starter will engage and crank the engine. After the engine starts, release the lever. The switch will automatically return to "RUN."

(d) When the switch is turned to "ENG OFF," it stops the engine.

(2) Light controls/switches.

(a) The main light switch controls the operation of all service lights and horn. It is located on the extreme lower left of the instrument panel and is of the standard military design.

(b) The turn signal control and indicator light controls the turn signal indicators on the exterior of the vehicle. It is also of a standard military design.

(c) The hazard flasher control activates the emergency flashers on the front and rear of the vehicle. It is located on the turn signal control.

(d) The high beam indicator light illuminates when the high beams are switched on with the foot controlled dimmer switch.

(3) When the defroster control knob is pulled back, it directs air to the windshield for defrosting. It is located to the right of the instrument cluster.

(4) When the heater control knob is pulled back, it allows heated air into the vehicle. It is located to the right of the instrument cluster.

(5) The heater fan switch controls the blower motor. The switch has "HI," "OFF" and "LO" settings to regulate defroster and heater air flow into the vehicle.

(6) The fording selector switch allows the operator to select "VENT" during normal operations or "DEEP FORD" for deep water fording. It is mounted below the instrument cluster.

(7) The windshield wiper/washer knob operates a two-speed electric wiper. When the knob is pressed, it operates the windshield washer. It is located on the windshield wiper motor in the top center of the windshield.

(8) The steering wheel lock cable permits the steering wheel to be locked in position thus preventing unauthorized use of the vehicle. It is located beneath the instrument cluster.

(9) The horn button activates the vehicle horn. The light switch must be on and in a position other than blackout drive or blackout marker before the horn can be used.

(10) The accelerator pedal is the operator's foot control for varying engine speed.

(11) The service brake pedal is the operator's foot control for slowing or stopping the vehicle.

(12) The transmission selector lever is located on the driver's right in the center console and is used to select the vehicle driving gear.

(a) "R," reverse. Reverse is selected when the operator wants to move the vehicle in reverse. The button on top of shift must be pressed to shift the transmission into reverse. Always use a ground guide when backing.

(b) "N," neutral. Neutral is used when the vehicle is stopped with the parking brake applied.

(c) "D," drive. Drive is used during normal operation with light to moderate loads on primary and secondary roads and fording operations.

(d) "2," second. Second is used for hill climbing; it also provides engine braking to slow the vehicle down when descending steep hills.

(e) "1," first. First is used for steep hill climbing and driving in deep snow or mud; this gear provides maximum engine braking when descending steep hills.

(13) The transfer case shift lever is located on the driver's right in the center console; it is used to select the vehicle driving range.

(a) "L," low lock. Low lock is for climbing or descending steep hills and operating in deep mud.

(b) "N," neutral. Neutral is used when the vehicle is disabled and must be towed.

(c) "H," high. High is the normal driving range when operating with light to moderate loads on primary or secondary roads or during fording operations.

(d) "H/L," high lock. High lock is selected for driving through deep snow, and for off road or slippery road conditions.

(14) The parking brake lever is located to the driver's right, adjacent to his seat and is used to set the parking brake. Always apply the parking brake after stopping the engine. To adjust the brake, turn the knob on the hand brake lever.

(15) The Simplified Test Equipment/Internal Combustion Engine (STE/ICE) connector is located forward of the transfer shift lever. It is the attachment point for the vehicle test meter used to facilitate vehicle systems diagnosis with STE/ICE-R. STE/ICE-R will be covered in detail later in the course.

(16) The companion seat/battery cover, when removed, provides access to the battery compartment and two 12-volt batteries. The two batteries provide 24 volts of power for the electrical system.

(17) The slave receptacle is the connecting point for the NATO slave adapter for slave starting the vehicle. It is mounted on the outside front of the battery box.

(18) The driver's seat has two positions; to adjust it, lift up on the front of the seat and move the seat to the desired position.

(19) An accident occurred in which the operator of a HMMWV was thrown from the vehicle. The seat belt was being used, but gave way upon impact. Seatbelts have non-locking retractors. For proper use, the webbing must be completely extended from the non-locking retraction device. All excess webbing must then be adjusted at the buckle. Special attention must be given to the buckle mechanism. Be sure the mechanism is secure, free of paint, and is in the locked position.

3. PMCS

a. BEFORE OPERATION SERVICES Before we begin before operation services, we should call to mind the safety precautions that should be observed while engaged in the conduct of preventive maintenance.

(1) Remove all jewelry before performing PMCS. These items could cause a direct short that can result in serious injury or damage to the equipment.

(2) Never smoke, have flames or sparks near fuel system components or batteries.

(3) Do not operate the vehicle engine in an enclosed area. Carbon monoxide poisoning can be lethal.

b. General Inspections

(1) Begin the general inspection by visually checking the exterior of the vehicle for obvious damage to the body or frame that would impair operation. This will satisfy the requirements specified by the technical

manual and the first item on the bottom portion of the NAVMC 10627. Be sure to check the appropriate block on the bottom of that form.

(2) Next we will look under the vehicle for evidence of fuel, oil, coolant, or brake fluid leaks. This requirement is also reflected on the NAVMC 10627; again, check the appropriate block on that form.

(a) Leaks are classified as Class I, Class II or Class III leaks. The vehicle cannot be operated with any Class III leakage or any class of leak in the brake system.

(b) Class III leaks are leaks great enough to form drops that fall from the item being inspected, Class II leaks form drops but the drops do not fall from the items and Class I leaks are leaks indicated by wetness or discoloration but not great enough to form drops.

(3) Now you will check the tires for cuts, gouges, or cracks and remove any penetrating objects. The vehicle is not ready for operation if there is any defect that might cause a failure during operation.

(4) The mirrors will be checked next. Make sure the glass is clean and not cracked. Also make sure the mirror is sufficiently tight that it will not change position during vehicle operation.

(5) Now, check the weather seals around the doors, windshield, and soft top enclosure.

(6) Open the hood and check the oil level.

(a) The oil level should be at the crosshatch marks between "FULL" and "ADD 1 QUART".

(b) During normal operations, add 15w 40 lubricant to the crankcase as necessary.

(7) While the hood is open, check the coolant level in the surge tank. The tank should be one-half full prior to operation. Add coolant as necessary to bring the coolant to the proper level.

(8) Before operation services prescribed by the NAVMC 10627. You have already completed all of the first three checks listed except for checking the fuel level, so that's where we will begin. Check the fuel level by turning on the ignition switch and observing the fuel gage. The vehicle should have sufficient fuel for you to complete your next trip; if it does not, refuel the vehicle.

(b) Start the engine and allow it to warm up. The starting procedures are as follows:

1 Make sure the parking brake is applied.

2 Adjust the driver's seat.

3 Adjust the left and right rear view mirrors.

4 Fasten the seatbelt and make sure it is adjusted correctly.

5 Place the transmission shift lever in "N" or neutral position.

6 Place the transfer case in the desired range.

7 Turn the ignition switch to the "RUN" position and wait until the "Wait-to-Start" lamp goes out.

8 Start the engine. Do not operate the starter continuously for more than 20 seconds between periods of starter operation; damage to the starter may result.

9 Set vehicle light switch.

(c) While waiting for the engine to warm up, check the instruments to see that they are functioning normally and that they are providing readings consistent with the engine temperature.

1 The oil pressure gage should be indicating a minimum of 6 pounds per square inch oil pressure at idle.

2 The voltmeter indicator should be in the green zone indicating a charging condition.

3 The coolant temperature should start to rise.

4 The air restriction indicator should be clear.

(e) Record the results of your observations on the bottom portion of the NAVMC 10627.

c. DURING OPERATION SERVICES During operation services prescribed by the vehicle operator's manual.

(1) The first items to check are the windshield, windows, wipers, and wiper blades.

(a) The windshield and windows should not have any cracks or discoloration that would obscure operator's vision.

(b) The windshield wipers should operate properly and the windshield wiper blades should be in a serviceable condition; that is, the blades should be firm, but not brittle and no rubber should be missing from the edge that contacts the glass.

(2) The next items to check are the lights.

(a) The service drive lights, blackout lights, and turn signal lights, and hazard marker lights should function properly.

(b) Have an assistant observe each set of lights while you manipulate the switches to turn on the various lights.

(3) The seatbelts must be checked for proper operation of the clasp ends.

(4) The horn must also be checked for proper operation.

(5) Observe the brake warning lamp. It should be illuminated.

(6) You should check all gages frequently during vehicle operation. After the engine is warmed to its normal operating temperature, all gages should provide normal readings that you were previously taught.

(7) With the service brakes applied, shift the transmission through all of its operating ranges and check for stiffness. The vehicle should not be operated if the shift lever is binding or inoperative.

(8) At this same time, check the transfer for proper shifting. Remember that the transmission must be in neutral when checking the transfer shift linkage. The same serviceability criteria exists for the transfer shift lever as was applied to the transmission.

(9) Once the vehicle is underway, check operation of the shock absorbers. Be alert for any unusual dip, sway, or unstable handling. Also, listen for evidence of exhaust system leaks.

(10) Be alert for vibration or unusual noises coming from the transmission, transfer case, differentials, propeller shafts, axle shafts, geared hubs or wheels. Discontinue operation of the vehicle and report the

condition to your supervisor if you experience vibrations or unusual noises from any of the components mentioned.

(11) The service brakes should be capable of stopping the vehicle from a speed of 20 miles per hour on a hard, level, dry surface approximately 25 feet from the point at which the brakes actually take hold. The vehicle should stop in a straight line without a noticeable pull to either side.

(12) At some point in your trip when the vehicle is stopped, apply the parking brake. With the transmission in "D" drive and the engine at idle, the vehicle should remain stationary.

(13) During operation services prescribed by the NAVMC 10627.

(a) If you look at the bottom portion of the NAVMC 10627, you will see that only the steering system remains to be checked. We will not be concerned with the clutch because, as you know, this vehicle has an automatic transmission.

(b) Steering should be responsive with little or no lost motion and there should not be any roughness as you turn the wheel from side to side.

d. <u>After Operation Services</u>

(1) The first requirement is to drain any water that may have accumulated in the fuel filter.

(a) To drain the filter, start the engine and open the fuel filter draincock located on the left side of the engine compartment below the windshield washer reservoir.

(b) Drain off approximately one pint of the fuel-water mixture or until the fuel runs clear.

(c) When the draining is complete; close the draincock, stop the engine, and check for fuel leaks at the draincock.

(2) Next, you will check the items listed in TM 9-1320-280-10 on the bottom portion of the NAVMC 10627 in the column marked after operation.

(3) If either the fuel, oil, or water levels are low, refill them.

(4) When you have completed the after operation services, you would close out the NAVMC 10627, unless you are required to conduct a weekly service.

e. Weekly Services

(1) You will begin this service by checking the condition of all locking and fastening devices. The items to check are:

(a) door latches and strikers,

(b) hood latches,

(c) fuel cap and attachments,

(d) seat belts,

(e) tailgate chains and hooks,

(f) soft top enclosure fasteners (if equipped),

(g) troop seat lock pins (if equipped), and

(h) tool stowage straps.

(2) Next, check the operation of the tow pintle. Make sure that the cotter pin and attaching chain are present.

(3) While in this area, check the trailer electrical connector. It should be secure, clean, and free of dirt, debris, corrosion and its cover should function properly.

(4) Check the pressure in each tire with a tire gage. The tires are required to be inflated to various pressures, depending on the anticipated operating conditions. You will have to consult the operator's manual to determine the correct pressure. I want 20 pounds per square inch in the front tires and 22 in the rear.

(5) Check the tire tread depth. The tread should not be worn beyond the level of the wear bar.

(7) Next, open the hood and inspect the drive belts. Check the drive belts for cracks, fraying, or breaks. The vehicle cannot be operated if the drive belts are unserviceable.

(8) While the hood is open, inspect the air intake assembly.

(a) Check the air intake hose, air cleaner assembly, intake extension and weathercap for security and damage.

(b) If the air cleaner assembly, weathercap, air intake hose or mountings would allow unfiltered air to enter engine; the system must be repaired.

(9) Now move to the left side of the vehicle and check the windshield washer reservoir fluid level. If it is less than 1/2 full, fill it with windshield washer cleaning fluid.

(10) The next item to check is the transmission fluid level. The procedures are:

(a) Start the engine and shift the transmission selector through all operating ranges; this will fill the various cavities in the transmission.

(b) Place the transmission in neutral and check the fluid level with the engine running.

(c) At operating temperature, the fluid level should be at the crosshatch marks between "FULL" and "ADD."

(d) If the transmission is low, slowly add no more than one pint of Dexron II transmission fluid through the dipstick tube.

(11) While the hood is still open, check the coolant level as you were previously instructed.

(12) Now you should inspect the batteries.

(a) Remove the companion seat and check the batteries for damaged casings, terminal posts, and security of mounting.

(b) Check the battery box for corrosion and clean it as needed, with a solution of soda and water.

(c) Clean debris from the battery box drain holes if any is present.

(d) Check the electrolyte level.

(13) Now inspect the deep water fording kit exhaust and intake extensions for security or damage.

(14) The last task on the weekly service is an inspection of the soft top enclosures.

(a) Check the vinyl-coated nylon pieces of the enclosure for tears, punctures, ripped seams, and proper operation of zippers and pull tabs.

(b) Also check the windows for cracks, scratches, or discoloration.

(c) Next, check the bows, mounting brackets, and clasps for security of mounting and damage.

f. Monthly Operator Services

(1) First, inspect the wheels for missing or loose wheel stud nuts and lug nuts.

(a) Check the lug nuts for tightness, using the appropriate sized socket and a drive handle.

(b) If any are loose, they must be torque tightened by organizational maintenance; notify your supervisor of that requirement.

(2) The next requirement is to check power steering pump fluid.

(a) Open the hood and remove the cap and dipstick assembly from the power steering reservoir and check the fluid level. If the engine is warm, the fluid level should be between the "COLD" and "HOT" marks. If the engine is cool, the level should be between the "ADD" and "COLD" marks. Do not permit dirt, dust, or grit to enter the power steering reservoir. Damage to the power steering system will result if the power steering fluid becomes contaminated. Overfilling the power steering system reservoir will also result in damage to the system.

(b) Add only a few ounces of fluid as necessary, using Dexron II.

(c) The equipment should be taken out of service if a Class II or III leak is evident.

(3) While you have the hood open, inspect the brake master cylinder.

(a) Check for leaks around the cover.

(b) Remove the cover and check the brake fluid for contamination and that it is at the proper level. The fluid level should be 1/8 inch from the top of the reservoir.

(c) Add fluid as necessary, using silicone brake fluid only.

(d) Next, make sure that the rubber diaphragm is not distorted and that it is completely seated before installing the cover. Install the cover and make sure the bail will hold it properly in place.

(e) Remember, any leak in the brake system is cause for deadlining the vehicle.

(4) The next requirement is to inspect the shock absorbers for leaks, damage, and security of mounting. Notify your supervisor if any discrepancies exist.

(5) Inspect the electrical winch.

(a) Check the winch controls for proper operation by extending and retracting the cable.

(b) When the cable is extended, check for proper lubricating kinks, frays, and breaks.

(6) The last item on this portion of the monthly service is to check the security of the seatbelt mountings.

4. OPERATOR'S RESPONSIBILITIES IN CONJUNCTION WITH LUBRICATION OF THE M998 VEHICLE

a. The lubrication order that you have sets forth the lubrication requirements for the M998 Series vehicle. Contained within its pages you can find information pertaining to what is to be lubricated, when to apply the lubricant, the type of lubricant to use, and who is responsible for that lubrication point. For an example; the transfer case fluid level is checked every 3,000 miles, filled with Dexron II and is organizational maintenance's responsibility.

b. Take a moment to look the lubrication order over. You will be provided detailed instruction on lubrication orders and instructions later in your training. Remember that the operator may be required to assist the organizational maintenance mechanic when a lubrication service is performed.

c. After looking at the lubrication order, you should have noted that the operator or crew is responsible for certain lubrication services. Those services include lubricating the winch cable and checking and replenishing the:

(1) engine oil,

(2) brake fluid,

(3) transmission fluid, and

(4) power steering fluid.

REFERENCES:

TM 9-2320-280-10
LO 9-2320-280-12
NAVMC 10627