

UNITED STATES MARINE CORPS
Marine Corps Food Service Courses
Marine Corps Detachment
Fort Lee, Virginia 23801-1508

STAFF NONCOMMISSIONED OFFICER COURSE

3381

COMPUTATION OF A MEU

LESSON PLAN

(3381.01.25 / 3381.16.08 / 3381.18.01)

(01 Feb 2001)

APPROVED BY: _____

DATE: _____

LESSON TITLE: COMPUTATION OF A MEU

TOTAL LESSON TIME: 16 HOURS

REFERENCES:

FM 10-23	Army Food Service Operations
FM 21-10	Field Hygiene and Sanitation
FSC C8900-SL	Federal Supply Catalog Stock List
P10110.2	SOP for Food Service and Subsistence Support
MCO P10110.14	Food Service Standard Operating Procedures
MCO P10110.17	USMC Nutrition and Menu Planning
MCO P10110.25	Standard B Rations
MCO P10110.42	Armed Forces Recipe Service
MCO P5090.2	Environment and Protection Manual
NAVMED P-5010	Manual of Naval Preventive Medicine
USAREUR CIRCULAR 40-657	Directory of Sanitarily Approved Food Establishments for Armed Forces Procurement

INSTRUCTOR PREPARATION:

1. PRIMARY INSTRUCTOR
2. INDOOR CLASSROOM
3. STUDENT HANDOUT
4. PRACTICAL APPLICATION EXERCISE WITH KEY
5. COMPUTER WITH LIGHT PROJECTOR
6. COMPUTER AIDED GRAPHICS

SAFETY PRECAUTIONS: FIRE / SAFETY BRIEF, COMFORTABLE ENVIRONMENT

**** **Instructor Note** ****

Ensure the classroom is prepared at least 15 minutes prior to class. Have the School Slate on display.

(ON CAG 1)

INTRODUCTION:

(2 MIN)

1. **GAIN ATTENTION:** You have been assigned as the senior food service manager for a MEU that is about to take part in a joint service, global exercise. The food service officer has not been determined at this time and the first staff meeting is in 48 hours. Can you brief the unit commander on what requirements will be needed for this operation?

(ON CAG 2 / AUTO CAG 3)

2. **OVERVIEW:** The purpose of this period of instruction is to provide you with the knowledge and skills to determine the food service requirements to support a MEU size operation.

**** **Instructor Note** ****

Choose one student to read the learning objectives aloud while the remainder of the class follow along.

3. **LEARNING OBJECTIVES:**

a. **TERMINAL LEARNING OBJECTIVES:**

(1) In a food service environment and given a situation involving deployment, equipment, number of personnel, length of mission, and references, prepare food service embarkation requirements so that personnel and material are prepared for embarkation in accordance with the references. (3381.01.25)

(2) In a food service environment and given Letters of Instruction (LOIs), training schedules and locations, source and type of rations, basic daily food allowance, number of participating personnel, references, calculator, and office supplies, formulate Class 1 personnel and equipment requirements for deployed units based on training/operational plans. (3381.16.08)

(3) In a field environment and given all necessary equipment, food service personnel, and the references, supervise the setup and dismantlement of a field mess to ensure that all operations are performed properly in accordance with the references. (3381.18.01)

b. **ENABLING LEARNING OBJECTIVES:**

(1) In a classroom environment and given a scenario or list of options, identify the characteristics of a Training Exercise Employment Plan (TEEP), an LOI, and a master menu. (3381.16.08a)

(2) In a classroom environment and given a scenario or list of options, determine number of personnel to be supported. (3381.16.08b)

(3) In a classroom environment and given a scenario or list of options, participate in planning conferences and site visits. (3381.16.08c)

(4) In a classroom environment and given a scenario or list of options, identify personnel requirements. (3381.16.08d)

(5) In a classroom environment and given a scenario or list of options, compute subsistence needs. (3381.01.25a)

(6) In a classroom environment and given a scenario or list of options, determine equipment requirements used in charts. (3381.16.08d)

(7) In a classroom environment and given a scenario or list of options, compute field equipment needs. (3381.01.25b)

(8) In a classroom environment and given a scenario or list of options, provide information to embarkation personnel. (3381.01.25c)

(9) In a classroom environment and given a scenario or list of options, identify the characteristics used when selecting a site. (3381.18.01a)

(10) In a classroom environment and given a scenario or list of options, identify an environmental impact statement. (3381.18.01b)

(11) In a classroom environment and given a scenario or list of options, identify the characteristics required of a good field mess area. (3381.18.01c)

(12) In a classroom environment, given all necessary equipment, food service personnel, and the references, establish placements and set up facilities and equipment. (3381.18.01d)

(13) In a classroom environment, given all necessary equipment, food service personnel, and references, ensure environmental procedures are followed at all times. (3381.18.01e)

(14) In a classroom environment, given all necessary equipment, food service personnel, and the references, ensure that tents, facilities, and equipment are dismantled. (3381.18.01f)

(15) In a classroom environment, given all necessary equipment, food service personnel, and the references, inspect the area. (3381.18.01g)

4. **METHOD/MEDIA**: This class will be taught by using the informal lecture and demonstration methods. There will also be several practical application exercises supported by a PowerPoint slide presentation.

**** **Instructor Note** ****

Explain the Instructional Rating Forms to the students.

(ON CAG 5)

5. **EVALUATION**: There is a performance examination immediately following this period of instruction. The grade you receive on this exam will be your Field Phase grade and will be included in your final GPA for the course.

TRANSITION: Are there any questions about what we will be covering or how you will be evaluated? Before we can compute any requirements, we must understand some important considerations that will impact us during our planning phase.

(ON CAG 7)

BODY:

(12 HOURS)

1. **EXERCISE CHECKLISTS:**

(11 MIN)

(ON CAG 8)

a. **Pre -exercise considerations** are as follows:

- | | |
|------------------------|---------------------------|
| (1) Tactical situation | (11) Type of rations/menu |
| (2) Days of support | (12) Sources of supply |
| (3) Environment | (13) Personnel to feed |
| (4) Personnel assets | (14) T/E equipment needs |
| (5) Fuel | (15) Water source |
| (6) Cleaning supplies | (16) Tentage |
| (7) Construction needs | (17) Transportation |
| (8) Mess physicals | (18) Refrigeration assets |
| (9) Engineer equipment | (19) Refuse disposal |
| (10) Embarkation data | |

(ON CAG 9)

b. **Selection of Field Mess site.**

(1) The Commanding Officer or his representative selects the general area for the camp site once the battalion has been assigned a defense area by division.

(2) Within the general area selected by the Commanding Officer or his representative (usually the S-4 Officer), the Mess Manager will select the field mess site.

(ON CAG 10)

(3) When selecting the field mess site there are **five considerations** to keep in mind:

(a) **Natural cover.** Remember, the enemy has eyes, do not select an area that does not afford a natural cover and concealment. Do not destroy the natural cover excessively when clearing the area for the site.

(b) **Drainage.** The site should be on high terrain to allow for proper drainage. Keep in mind that soakage pits must be constructed. In heavy rains you wouldn't want your field mess to become a mud hole.

(c) **Access to a primary road.** It would be extremely difficult to receive supplies without an accessible road for trucks to deliver your equipment and subsistence supplies.

(d) **Availability to water.** Can you imagine trying to cook and maintain sanitation practices without water being readily available.

(e) **Combat Marines.** The site should be as close to the combat Marine as possible. The biggest single morale factor in the field is a well prepared and well served hot meal.

(ON CAG 11)

(4) When selecting a site, you must be informed of the length of time you will be established in the area and how close you will be to the combat Marine. The information is normally furnished by the S-4 Officer.

(a) **Temporary site.** The temporary site should be close to the fighting Marine and may be erected for only a day at a time.

(b) **Semi-permanent site.** The semi-permanent site would be set up at the rear of the combat Marines and could be there for an indefinite period of time.

(ON CAG 12)

(5) You should formulate a plan or diagram to enable yourself and your subordinates to get a clear visual picture of the layout and equipment to be used in the field operation.

(a) Once you receive the word that your unit is to go to the field or move into combat you should assemble your chief cooks. Lay your entire plan out to your subordinates. If there is to be a forward element in your section, assign the personnel to one of the chief cooks; designate an NCOIC of this element to insure your men understand your directions.

(ON CAG 13)

(b) You will show each tent in their relation to the unit area. Included in this plan should be the galley, dining area, dishwashing battery, storage area for subsistence, gasoline storage area, and maintenance area.

(ON CAG 14)

(6) Soakage pits should be in an area 75 to 100 feet from the kitchen that slopes away from the food preparation area. This area should be in a central location, as the galley and the dishwashing battery will utilize it.

(ON CAG 15)

(7) The hand washing devices should be located outside the latrine and adjacent to the galley. They may be set up at other points in a bivouac area. To encourage their use they should operate easily and kept filled with soapy water. Two cans should be provided and both containers checked frequently to see if refilling is necessary. All of these devices should have a shallow area dug out under the outlet, which should be filled with small stones. This will prevent the water from gathering into small pools.

(ON CAG 16)

(8) Refuse / garbage pits.

(a) For overnight or short stays garbage pits will be used. Guidelines for the maximum allowable amount are listed in Chapter 8 in NAVMED P-5010. For emplacements longer than 1 week, commercial removal or incinerators will be used.

(b) Because of environmental factors, you will only use incinerators if there is no commercial means of trash removal available. If used, you should bury all refuse from the inclined and cross trench incinerators at least two feet deep.

(ON CAG 17)

c. **Exercise considerations** are as follows:

- | | | |
|----------------------------|------------------------|-------------------------|
| (1) Selecting site | (6) Close to billeting | |
| (2) Ration liaison | | (7) Security of rations |
| (3) Delivery schedule | | (8) Feeding schedule |
| (4) Requisition procedures | | (9) Types of feeding |
| (5) Retrieval of bills | | (10) Monitor Mess Ops |

(ON CAG 18)

d. **Post-exercise considerations** are as follows:

- (1) Disposition of excess subsistence supplies.
- (2) Submission of subsistence operational analysis report.
- (3) Inspection and repair of T/E field equipment.
- (4) Food Service after action report.

TRANSITION: Now that we have seen the big picture and understand the considerations, let's break down the types of supply classes we will be working with.

(ON CAG 19)

2. **TYPES OF SUPPLY CLASSES:** **(15 MIN)**

(ON CAG 20)

a. **Class 1**, Subsistence items, MRE'S, T-Rations, B-Rations, A-Rations, and rations supplements.

(ON CAG 21)

b. **Class 2**, Clothing, individual equipment (782 gear), tentage, organizational tool sets, tool kits, handbooks, administrative and housekeeping supplies or equipment.

(ON CAG 22)

c. **Class 3**, Petroleum, oils, lubricants: fuel, hydraulics, preservatives and bulk chemicals.

(ON CAG 23)

d. **Class 4**, Construction material, to include installed equipment and all fortification/barrier material.

e. **Class 5**, Ammunition, all types.

f. **Class 6**, Personal demand items (nonmilitary sales items).

(ON CAG 24)

g. **Class 7**, Major end items: a final combination of end products which are ready for their intended use; tanks, launchers, vehicles, M-1959 field range outfit, and M-67 Immersion Water Heater.

(ON CAG 25)

h. **Class 8**, Medical materials.

i. **Class 9**, Repair parts (less medical peculiar repair parts): all repair parts and components, required for maintenance support of all equipment.

j. **Class 10**, Material to support nonmilitary (agriculture and economic development) not included in classes 1 through 9.

(ON CAG 26)

k. During most exercises food service personnel will be involved with classes 1,2,3,7,and 9. Depending on the situation and augmentation of other support units, Classes 4 and 8 may also be required.

TRANSITION: Now that we know what types of classes there are and which ones we use in the subsistence field, let's turn our attention to how we compute Class 1 requirements.

(ON CAG 27)

3. DETERMINING SUBSISTENCE REQUIREMENTS: (20 MIN)

a. The **Unitized B-Ration:** In August 1993 HQMC Washington DC (LFS-4) established the Unitized B-Ration as the Primary operational Ration for the Marine Corps. Unitized B-Rations

have two types of meals, Breakfast and Dinner. The Unitized B-Ration should be supplemented with fresh produce, milk, and bread. Each ration contains 100 meals and is shipped two rations per pallet. Remember to delete your requirements for paperware and plastic goods, as it is already packaged with the Unitized B-Ration.

b. Since we are dealing with food, great care must be exercised in determining the correct item requirements in order to prevent spoilage and having to turn in excessive amounts of B-Rations at the end of an operation.

(ON CAG 28)

c. When computing A-Rations the same formula is used except that the Armed Forces Recipe Cards Service replaces the B-ration menu.

d. T-Rations are computed by modules. Each module that contains 18 portions each.

e. Our meals ready to eat (MREs) are packed 12 meals per case.

f. Rations, Cold Weather (RCW) are packed 6 rations per box. Each RCW contains 4500 calories each. Usage requirement is **one RCW per person per day**.

g. Remember to round all items up to the nearest unit of issue.

TRANSITION: Knowing how to compute our subsistence requirements is great, but it would help to know where to get these supplies. This is our next topic for discussion.

(ON CAG 29)

4. **SUPPLY FOR SUBSISTENCE:**

(10 MIN)

a. The Commandant of the Marine Corps will designate the source of subsistence supply for Marine Corps activities upon request from the Commanding Officer. All request should be sent to HQMC (Code LFS-4).

b. Subsistence supplies will normally be procured from one or more of the following sources:

(ON CAG 30)

(1) Defense Personnel Support Center

(2) Naval Supply Center

(3) Other installations of the Armed Forces

(4) Commercial sources, when not available from the other sources

(5) Marine Corps Stock Accounts

(ON CAG 31)

c. **Defense Personnel Support Center.** The Defense Supply Agency, Defense Personnel Support Center handbook, "CONUS Semi- Perishable Subsistence Requisitioning Handbook" contains instructions and guidance for all CONUS activities that procure semi-perishable subsistence items from a Defense Personnel Support Center depot. The Defense Personnel Support Center furnishes guidance periodically for all activities that procure perishable subsistence items from a Defense Personnel Support Center Regional Headquarters. It should be noted that DPSC is the primary source of procurement for subsistence supplies.

(ON CAG 32)

d. **Naval Supply Centers.** Requisitions for subsistence supplies are submitted directly to the Naval Supply Center authorized as a source of supply. Such requisitions are prepared and submitted as directed by the supporting Naval Supply Center.

(ON CAG 33)

e. **Other installations of the Armed Forces.** When a Marine Corps activity procures subsistence from other installations of the Armed Forces, an interservice support agreement (ISSA) is negotiated between the Marine Corps activity and the supporting activity. A copy of this agreement must be furnished to the HQMC.

(ON CAG 34)

f. **Commercial sources.** Subsistence items may be procured from commercial sources when they are not available from preceding sources and are authorized for Marine Corps messhall use. These authorized items are listed in the Federal Supply Catalog Stock List, C8900-SL.

(ON CAG 35)

g. **Marine Corps Stock Accounts.** Requisitions for procuring subsistence items through Marine Corps stock accounts should be submitted in accordance with the current Marine Corps directive.

TRANSITION: Does anyone have any questions about sources of supplies for subsistence? Then let us move on to bigger and better Supply Centers.

(ON CAG 36)

5. **REGIONAL SUPPLY CENTERS:**

(5 MIN)

a. Regional Supply Centers are strategically located throughout the country for serving larger military zones.

(ON CAG 37)

b. These centers store perishable subsistence supplies and are located at the following areas:

- | | |
|-----------------------|--------------------------|
| (1) Seattle, Wash. | (12) HQ DSR Pacific |
| (2) Alameda, Calf. | (13) Los Angeles Calf. |
| (3) San Diego, Calf. | (14) El Paso, Tex. |
| (4) Denver, Col. | (15) Kansas City, Mo. |
| (5) Fort Worth, TX. | (16) San Antonio, TX. |
| (6) Chicago, Ill. | (17) Nashville, Tenn. |
| (7) New Orleans, La. | (18) Tampa, Fla. |
| (8) Jacksonville Fla. | (19) Birmingham, Ala. |
| (9) Columbia, S.C. | (20) Chatham Annex |
| (10) Landover, M.D. | (21) Philadelphia, Penn. |
| (11) Bayonne, N.J. | (22) Boston, Mass. |

TRANSITION: Does anyone have any questions about regional supply centers?

(ON CAG 38)

6. **GENERAL SUPPLY DEPOTS:**

(10 MIN)

a. General Supply Depots store **Semi-perishable** supplies.

b. They are also located strategically throughout the country and their locations are as follows:

(ON CAG 39)

- | | |
|--------------------------|-----------------------------|
| (1) Alameda Annex, Calf. | (6) DD Tracy, Calf. |
| (2) DD San Diego, Calf. | (7) DD Memphis, Tenn. |
| (3) NSC Charleston, S.C. | (8) Norfolk, Va. |
| (4) DGSC Richmond, Va. | (9) DD Mechanicsburg, W Va. |
| (5) Philadelphia, Penn. | |

(ON CAG 40)

c. **Naval Supply Centers** support many of our smaller posts and stations, especially a Marine barracks located on a Naval station. Because of our size we must rely on these centers to support us during combat.

d. **Other installations of the Armed Forces** are also used for small post and stations when no other primary source is available. When dealing with these installations, the inter-service support agreement covers the following items:

- (1) Required number to feed.
- (2) What Master Menu will be used?

(3) Which meal is day one?

(4) How to report daily operation?

(ON CAG 41)

e. **Commercial sources** can only be used when none of the others are available. Purchases will be in accordance with the Armed Services Procurement Regulations. The Commandant of the Marine Corps will periodically publish a list of items that are authorized for local purchases.

(ON CAG 42)

f. The **Marine Corps Stock Accounts** will normally supply all items of subsistence stores at major shore stations, and will also be the source of supply for smaller posts located in the vicinity of larger stations. These same accounts under the name of O&MMC will be used for the procurement of non-consumable items like silverware, napkins, plates, and salt & pepper shakers.

TRANSITION: We know how and where to get supplies during normal operations stateside, but what will happen to us once we get overseas is the question that now needs to be addressed.

(ON CAG 43)

7. **OVERSEAS SUBSISTENCE SOURCES:** **(20 MIN)**

The Armed Forces uses **UNITED STATES ARMY EUROPE CIRCULAR 40-657 (USAREUR CIRCULAR 40-657) (Directory of Sanitarily Approved Food Establishments for Armed Forces Procurement).**

(ON CAG 44)

This publication is issued every six months with quarterly updates. The following veterinary units are responsible for the sanitary inspections and placement of local vendors into this approved source listing recorded by countries.

(ON CAG 45)

a. United States Army Veterinary Detachment, Europe, APO 09169.

- | | | |
|-------------|------------------|-----------------|
| (1) Austria | (8) Germany | (15) Norway |
| (2) Azores | (9) Greenland | (16) Scotland |
| (3) Belgium | (10) Hungary | (17) Spain |
| (4) Denmark | (11) Iceland | (18) Sweden |
| (5) England | (12) Ireland | (19) Wales |
| (6) Finland | (13) Luxembourg | (20) Yugoslavia |
| (7) France | (14) Netherlands | |

(ON CAG 46)

b. The next largest responsible unit is the 34th Medical Detachment (VETSVC) APO 09221.

- (1) Bahrain
- (2) Greece
- (3) Israel
- (4) United Arab Emirates
- (5) Oman
- (6) Portugal
- (7) Saudi Arabia
- (8) Spain
- (9) Turkey
- (10) Italy

(ON CAG 47)

c. The other areas of the world not covered in the USAREUR CIRCULAR 40-657 are the responsibility of the following units through FMFPAC Veterinary Contacts:

(ON CAG 48)

- | | |
|---|---|
| Republic of Korea
106th Eight Army
Yongsan, Korea | South Pacific Area
Deputy Commander for
Veterinary Services
TAMC / WESTCOM |
| Japan / Okinawa
Deputy Commander
Veterinary Services
USA MEDDAC, Japan
APO, San Francisco
96343-0077 | Chief, Veterinary
Public Health and
Diagnostic Laboratory
Veterinary Service
USA MEDDAC, Panama
servicing Panama and Central America |

(ON CAG 49)

d. Any other areas of the world not recorded will be covered by **DOD DIRECTIVE 6015.5** which designated the Dept. of the Army as Executive Agent of the Dept. of Defense Veterinary Services. The directive also states the Dept. of the Army shall furnish, on an as required basis, all preventive medicine services to the Dept. of the Navy, to include the following: Inspection of food products and sanitary inspection of establishments supplying food products to DOD components. Approved list of food supplies and laboratory examination of food products.

TRANSITION: Now that we know where to get our subsistence, let's look at some of the technical equipment we need to have for support.

(ON CAG 50)

8. **TECHNICAL EQUIPMENT:** **(30 MIN)**

I would like to read to you part of a HQMC White Letter no. 7-91, subject, Equipment Accountability and Maintenance. "It is apparent that the present condition of our equipment is attributable, in part, to an absence of proper accountability and custodial responsibility... There is no higher priority in the Marine Corps." Gen. C.E. Mundy Jr. Everyone here has the basic understanding how to perform maintenance your technical equipment. Our problem seems to be

how to compute how much gear and replacement/repair parts (class 9) are needed for an operation.

(ON CAG 51)

a. The following is a list of required technical equipment (T/E) gear to support a field mess operation:

<u>TAMCN</u>	<u>DESCRIPTION / NSN</u>	<u>REQUIREMENT</u>
C4000	Accessory outfit Field Range Outfit 7360-00-187-4757	1 per four ranges
C4880	Food Container Insulated, 7330-00-238-2411	1 per 25 personnel
C4980	Heater, Water ¹ Immersion 4540-00-469-6593	4 per 85 personnel
C5110	Jug, Vacuum, 3 Gal 7330-00-577-5864	1 per 25 personnel
C5820	Range outfit field gasoline 7360-00-082-2153	1 per 50 personnel

(ON CAG 52)

C6410	Tent, (medium) general purpose 8430-00-543-7788	4 per 500 personnel
D0880	Trailer, Tank ² Water 400 Gal 2330-00-832-8801 2330-00-542-2039	1 per messhall (minimum) supports 250 personnel each
BL6507	Refrigeration Unit ERU-4E 4110-00-880-0606	2 per 500 Troops
B17110	Refrigeration 350 Cubic Ft. Box 4110-00-097-9078	2 per 500 Troops

B0891	Generator 10 kW 60h MEP-3 15-00-097-8021	2 per messhall 24 hr operation Supports a 1500 troop mess
C6621	Heater system Tray Ration w/QuadCon 8115-01-354-0797	1 per 250 Personnel

(ON CAG 53)

Field "B" pack 1 colander 1 rolling pin	1 per 4 range outfits
Can, Garbage ³ and refuse 7240-00-160-0440	3 per 100 Personnel

¹ The immersion water heaters must be maintained in a field mess until implementation of the Field Sanitation Unit (FSU) projected to be released by FY04.

² An average of 75 gallons of water per day is required to prepare food and beverages for 100 personnel using B-Rations.

³ This item is not carried on the unit's field food service T/E; therefore, liaison between the manager and supply officer should be established to determine the number of cans required to support the unit in the field.

(ON CAG 54)

Computing these above requirements are very simple. First you take the total number of troops to be fed (example you are feeding 500 troops) and divide your 500 troops by the number of items required by your chart (lets do vacuum jugs 1 per 25 troops) 500 troops @ 25 servings per jug equals 20 vacuum jugs required to support 500 troops.

(ON CAG 55)

(Requirement) 25 @ 500 = 20 Amount needed)

By following this procedure with each item listed we can compute our total requirement of T/E gear for any operation.

(Note): No other garrison type messing equipment will be taken to the field.

(ON CAG 56)

UNITED STATES MARINE CORPS
Marine Corps Food Service Courses
Marine Corps Detachment
Fort Lee, Virginia 23801

SNCO 0303
FEB 2001

PRACTICAL APPLICATION #1 (KEY)

Your unit has just been notified that they will take part in a field exercise in **4 days**; you must now determine what your equipment requirements are. Your unit totals **700 Marines** and the operation will last **7 days**.

Compute the following equipment needs: (Round up all answers)

FOOD CONTAINERS	<u>28</u>	700 DIV BY 25=28
RANGE OUTFITS	<u>14</u>	700 DIV BY 50=14
ACCESSORY OUTFITS	<u>4</u>	14 DIV BY 4=3.5 RATIO 4-1
VACUUM JUGS	<u>28</u>	700 DIV BY 25=28
IMMERSION WATER HEATERS	<u>36</u>	700 DIV BY 85= 8.23= 9 x 4 = 36
TENTS GP MEDIUM	<u>6</u>	500 DIV BY 4 =125 (RATIO 4 PER 500) 700 DIV BY 125= 5.6 ROUNDED=6
ERU 4-E REFRIGERATION UNITS	<u>3</u>	500 DIV BY 2=250 (RATIO 2 PER 500) 700 DIV BY 250=2.8 ROUNDED 3
350 CU. REFRIGERATION BOXES	<u>3</u>	500 DIV BY 2 =250 (RATIO 2 PER 500) 700 DIV BY 250=2.8 ROUNDED 3
GENERATORS, MEP-3	<u>2</u>	RATIO 2 PER 1500
FIELD "B" PACKS	<u>3</u>	RATIO 1 PER FOUR RANGES 14 DIV 4= 3.2 ROUNDED=3

**** **Instructor Note** ****

Answer any / all questions from the students prior to moving on to next subject.

(ON CAG 44)

(ON CAG 57)

b. GENERAL INFORMATION ON EQUIPMENT.

(1) The M-2 burner is filled with 2 gallons of fuel. To test the safety device it is pumped up to 60 psi. The purpose of the top shield is to reflect heat from the fuel tank and catch falling food particles. **(6 to 20 psi safe operating pressure)**

(2) The M-59 Range outfit can perform all cooking methods except broiling.

(3) The embark dimensions of the 350 cu. ft. refrigeration box is 8'x 8' x 10'.

(ON CAG 58)

c. The repair or replacement of T/E gear (class 9) is determined by the age of the equipment, hours of operation, handling during transportation, and how good your maintenance program has been performed. Here is the life expectancy schedule of field equipment as stated in MCO P10110.14.

<u>TYPE OF ITEM</u>	<u>AVERAGE LIFE EXPECTANCY</u>
(1) M-59 Range Cabinet	Indefinite Life
(2) M-2A Burner	10 years
(3) Immersion Water Heater	3 years
(4) Generator for M-2	450- 500 operating Hours
(5) Food Container	5 years
(6) Vacuum Jug	5 years (replace with Cambro)

As you can see the generators on the M-2 burners have a short life expectancy compared to the rest of our gear. This is one reason why the burner is equipped with two spare generators. Other items of concern would be pre-heaters, air input valves, pressure gages, filler cap gaskets, and brass washers and screws that work loose or are damaged by mishandling and/or shipping. Unless directed by message or the letter of instruction (LOI) to keep a specified amount of class 9 on hand for a pre-expendable bin (PEB), a general rule of thumb is to compute 10% of the above-mentioned items for every 30 days of operation.

(ON CAG 59)

Example: You are feeding 500 troops, and you compute that you need 10 range outfits that have 10 burners. Each burner has 3 generators so there is a total of 30 generators to have the operational units needed. By taking the total amount required (30 generators) and multiplying it by 10% (10% general rule) your answer is 3 generators. This is the amount needed for your class 9. (ROUND UP ALL EQUIPMENT)

$$30 \text{ generators} \times .10 = 3.00 \text{ class 9 PEB}$$

TRANSITION: Now let's try to compute some PEBs in an exercise.

(ON CAG 60)

UNITED STATES MARINE CORPS
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Fort Lee, Virginia 23801

FSS 0303
FEB 2001

PRACTICAL APPLICATION #2 (KEY)

Using the answers from your equipment practical application class, compute the class 9 requirements for your operation.

FOOD CONTAINERS:

CONTAINER GASKETS	$28 \times .10 = 2.8$ (3)
INSERT GASKETS	$28 \times 3 = 84 \times .10 = 8.4$ (9)

RANGES/M-2 BURNERS:

GENERATORS	$14 \times 3 = 42 \times .10 = 4.2$ (5)
PREHEATERS	$14 \times .10 = 1.4$ (2)
AIR INPUT VALVES	$14 \times .10 = 1.4$ (2)
DRAIN PLUGS	$14 \times .10 = 1.4$ (2)
RETAINING SPRINGS	$14 \times 4 = 56 \times .10 = 5.6$ (6)
AIR PRESURE GAUGES	$14 \times .10 = 1.4$ (2)
BOTTM SHIELD SCREWS	$14 \times 4 = 56 \times .10 = 5.6$ (6)

A-PACKS:

AIR PUMPS	$4 \times .10 = .4$ (1)
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VACUUM JUGS:

COVER GASKETS	$28 \times .10 = 2.8$ (3)
FAUCETS ASSEMBLIES	$28 \times .10 = 2.8$ (3)
FAUCET GASKETS	$28 \times .10 = 2.8$ (3)

IMMERSION WATER HEATERS:

WICKS

$$36 \times .10 = 3.6 \text{ (4)}$$

RETAINING RINGS

$$36 \times .10 = 3.6 \text{ (4)}$$

TRANSITION: Having figured out how much T/E gear and class 9 is needed for an operation, where to get our food overseas, the next area of responsibility is how to protect our equipment during shipping.

(ON CAG 61)

9. **EMBARKATION:**

(15 MIN)

a. You must ensure that all of your field food service equipment is in the proper mount-out containers. All equipment has cubic footage on the mount-out containers that is needed by the embarkation personnel. Should you have additional equipment that is in need of being embarked, and there is no cubic footage written on the container you'll need to figure its cubic footage by doing the following:

(ON CAG 62)

- (1) Measure the width of the item in inches.
- (2) Measure the length of the item in inches.
- (3) Measure the height of the item in inches.
- (4) Multiply (#1) by (#2). This will give you the square inches of the item.
- (5) Multiply the square inches by (#3). This is the cubic inches of the item, divide the cubic inches by 1728 and you'll get the cubic feet of the item you are measuring.

(ON CAG 63)

Example: A box is 108 in. long, 48 in. wide and 48 in. high.

$$\begin{array}{r} 108 \text{ in. in length} \\ \times 48 \text{ in. in width} \\ \hline 864 \\ 432 \\ \hline 5184 \text{ sq.in.} \\ \times 48 \text{ in. in height} \\ \hline 41472 \\ \hline 20736 \\ \hline 248832 \text{ cu.in.} \\ \text{divided by } 1728 \\ \hline 144 \text{ cu. ft.} \end{array}$$

(ON CAG 64)

b. Embark boxes will be kept on hand for all items of field food service equipment. These boxes will be displayed for scheduled inspections with the T/E equipment. Embark boxes will be in good repair and capable of withstanding the rigors of embarkation. These boxes will also be marked on top, one end and one side where practical. Tactical marks, letters and numerals will be of the appropriate size noting container numbers, cube, weight and departmental designator.

c. Listed below are the items, cube and weight needed to compute embarkation requirements:

(ON CAG 65)

<u>ITEMS</u>	<u>CU/FT</u>	<u>WEIGHT</u>
Range Outfit	27	425
A-Pack	6	100
Immersion Heater	6	60
Food container (4)	11	152
Vacuum jug (3)	7	75
Tents GP MED.	25	300
ERU 4-E	29	535
350 CU. REFER BOX ¹	640	10,000
Quadruple Container (QuadCon) ²	263	10,000

¹ The measurements 350 ft³ refers to interior dimensions, NOT embarkation (outside).

²The Quad Con used to transport the Tray Ration Heater also offers additional storage space. If any embarked equipment has additional equipment included in the embark box (i.e. trays, racks, utensils etc.) then the embark manifest must reflect the added increase in weight.

(ON CAG 66)

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FSS 0303
 FEB 2001

PRACTICAL APPLICATION #3 (KEY)

You are the senior food service specialist assigned to an operation, You have been tasked by the S-4 Officer to submit your embark space requirements for the food service section. Using the following equipment compute and record your total cubic foot requirements.

<u>Item</u>	<u>ft³ each item</u>	<u># each item x ft³ each = req. ft³</u>
VACUUM JUGS	<u>70 ft³</u>	28 DIV BY 3 = 9.3 (10) X 7 = 70 ft ³
ACCESSORY OUTFITS	<u>24. ft³</u>	4 X 6 = 24 ft ³
IMMERSION WATER HEATERS	<u>216 ft³</u>	36 X 6 = 216 ft ³
FOOD CONTAINERS	<u>77 ft³</u>	28 DIV BY 4 = 7 X 11 = 77 ft ³
RANGE OUTFITS	<u>378 ft³</u>	14 X 27 = 378 ft ³
TENTS (GENERAL PURPOSE)	<u>150 ft³</u>	6 X 25 = 150 ft ³
ERU 4-E REFRIGERATION UNIT	<u>87 ft³</u>	3 X 29 = 87 ft ³
350 CU. REFRIGERATION BOX	<u>1920 ft³</u>	3 X 640 = 1920 ft ³
TOTAL CUBIC FEET REQUIRED	<u>2,922</u>	

TRANSITION: Now that we are all packed up, lets see what it will take to move us.

(ON CAG 69)

10. **MOTOR TRANSPORT:**

(20 MIN)

a. In most cases our equipment will be trucked to and from airport, docks or training sites. We must be able to figure out how many and what type of trucks are required to move our gear. This will enable us to forward our request or brief the commanding officer. Here are the dimensions of the most commonly used vehicles:

<u>VEHICLES</u>	<u>CARGO SPACES</u>	<u>CUBIC FEET</u>
Flat Bed	20 ft long 8 ft wide 8 ft high	1280
5 Ton	14 ft long, 7 ft wide, 8 ft high	784
Hum-V	4 ft long, 4 ft wide, 4 ft high	64

The Hum-V and 5 Ton have the capability of towing designed trailers or other items like water bulls or generators. These trailers are the 762 trailer for the Hum-V and the 353 trailer for the 5 Ton trucks. Figuring out the cubic feet or total cargo space is done the same way you did the embarkation boxes.

b. Some of the other equipment needed to move our gear is a 10,000 lb forklift. This is the only way to lift our 350 cu. refrigerators. Also remember that the MEP-3 generators need to be skid mounted to either the 762 trailer (holds one Mep-3) or the 353 trailer (holds two Mep-3).

(ON CAG 70)

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FSS 0303
FEB 2001

PRACTICAL APPLICATION #4 (KEY)

Using the total cubic feet from your equipment requirements compute, how many and what type of trucks will be needed to move your gear. (Use the largest truck first).

FLAT BED TRUCK = 1280 CU FT.

5 TON TRUCK = 784 CU FT.

HUM-V TRUCK = 64 CU FT.

ANSWER:

2,922 TOTAL CU FT REQUIRED.

2-FLATBED TRUCKS, 1-5 TON TRUCK

	2922	
<u>1280 CU FT FLAT BED # 1</u>	<u>-1280</u>	
<u>1280 CU FT FLAT BED # 2</u>	1642	
<u>784 CU FT 5 TON TRUCK # 1</u>	<u>-1280</u>	
	362	784
<u>422 TOTAL CU. FT. AVAILABLE</u>		<u>-362</u>
<u>2922 TOTAL CU. FT. REQUIRED</u>		422

(ON CAG 71)

TRANSITION: Before we can open our Field Mess site for business, remember that none of our equipment will run without fuel and lubricants. So lets see how to determine the amount of class 3 items needed for our operation.

(ON CAG 72)

11. **CLASS 3 FUEL:** **(20 MIN)**

a. For all of our T/E gear, unleaded gasoline is required to operate these items (except the tray ration heater).

(ON CAG 73)

To figure out how much fuel to order, we multiply the items needed (IN), by item capacity, (IC) by scheduled feeding,(SF) by days of operation (DO). This will give you the amount required. (IN X IC X SF X DO = AR)

(ON CAG 74)

Example: We are feeding 500 meals, twice a day, for 3 days. The first thing is to determine how much gear is needed for 500 meals. Using M-2 burners, we figured out that we need 10 burners. Multiply 10 burners by 2 gal. and your answer is 20 gal per feeding. Take the 20 gal. and multiply by 2 feeding and your answer is 40 gal. per day. Then multiply 40 gal. by 3 days and your answer is 120 gal. for the operation. Do this with each item that requires that type of fuel and add all the totals together to get your total requirement for the operation. Follow these steps with each type of fuel or lubricants needed.

10 burners	20 gal per feeding	40 gal per day
<u>x2</u> gallons gas	<u>x2</u> feeding	<u>x3</u> days
20 gal per feeding	40 gal per day	120 gal per ops.

(ON CAG 75)

b. The MEP-3 Generators requires diesel fuel. The Mep-3 generator can hold 20 gals of fuel and operate for 12 continuous hours.

(ON CAG 76)

c. The Tray Ration Heater can use Diesel fuel (1,2,3) , Artic Diesel, JP8 or Kerosene. NO GASOLINE. Diesel Fuel will burn for 10 continuous hours on 5 gallons. Remember the Tray Ration Heater will heat 30 gallons of water to a boil in approximately 20 to 25 minutes, then the thermo disc will regulate the temperature.

d. For maintenance and upkeep of equipment, the only lubricant needed is mineral oil. It has been determined that one quart per day will service a 500 troop mess.

e. On average, you should allow for 1 to 1½ gallons of drinking water per person per day. Also, the climate will have a direct impact on consumption.

NOTE: Water requirements can also be computed following the same method as mentioned above. This will help you to determine how many water trailers will be needed or the number of times they will have to be refilled.

(ON CAG 77)

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FEB 2001

PRACTICAL APPLICATION #5 (KEY)

USING THE ANSWERS FROM YOUR EQUIPMENT PA # 2 COMPUTE HOW MUCH UNLEADED FUEL WILL BE REQUIRED FOR THE FOOD SERVICE EQUIPMENT. EACH MEAL REQUIRES 4 HOURS OF OPERATION TIME. YOU ARE PREPARING 2 MEALS PER DAY.

YOU ARE FEEDING 700 MARINES 2 TIMES A DAY FOR 7 DAYS.

IMMERSION WATER HEATERS: 700 MARINES DIV BY 85 = 8.235 ROUNDED = 9 X 4
HEATERS PER SET UP = 36 HEATERS

RANGE OUTFITS/ M-2 BURNER UNITS: 700 MARINES DIV BY 50 =
14 BURNERS

36 - IMMERSION HEATERS X 2 GALLONS OF GAS PER UNIT = 72 GAL PER MEAL X 2
MEALS = 144 GAL PER DAY X 7 DAYS = 1008 GALLONS OF GAS FOR THE IMMERSION
WATER HEATERS

14 - M-2 BURNER UNITS X 2 GALLONS OF GAS PER UNIT = 28 GAL PER MEAL X 2 MEALS
= 56 GAL PER DAY X 7 DAYS = 392 GALLONS OF GAS FOR THE M-2 BURNER

TOTAL GAS = 1400 GALS.

(ON CAG 78)

TRANSITION: We all know that we are America's Finest, but even the finest is not enough to run the equipment and operate the field mess by ourselves. The last thing you will need to know is how to compute personnel requirements.

(ON CAG 79)

12. **PERSONNEL:**

(15 MIN)

Cooks are determined at a ratio of 1 per 50 factor and Messman at 1 per 25 factor in a mess operation. Dividing the total number to be fed by the above mentioned factors you can compute how many cooks and Messman are needed.

(ON CAG 80)

EXAMPLE: You are feeding 500 troops, you divide the 500 troops by the factor (50) and your answer is 10 cooks needed.

$$\begin{array}{r} \underline{10} \text{ cooks} \\ \text{Factor } 50 \overline{)500} \text{ troops} \\ \underline{50} \end{array}$$

(ON CAG 81)

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PRACTICAL APPLICATION SCENARIO #6 (KEY)

PERFORMANCE EXAMINATION:

(180 MIN)

(ON SLATE)