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FARP OPERATIONS

STUDENT HANDOUT

I. Introduction

A. Lesson Purpose. The purpose of this lesson topic is to familiarize the WTI student with operational procedures of a Forward Arming and Refueling Point (FARP) on the battlefield.

B. References

1. NWP 55-9-ASH, Vol. I (Rev. F), FMFM 5-35 Assault Support Helicopter Tactical Manual

2. MAWTS-1 WTI Flight Operations Standard Operating Procedures

3. Field Manual 1-104

C. Enabling Learning Objectives

1. Without the aid of references, state the mission and objectives of a FARP.

2. Without the aid of references, identify the best tactical location for a FARP and the considerations necessary prior to emplacement.

3. Without the aid of references, state the advantages and disadvantages of emplacing a FARP on the inbound, return, and/or outbound routes.

4. Without the aid of references, explain the transition process form a single FARP to multi-location operations.

5. Without the aid of references, explain how a FARP extends the combat radius of aircraft.

6. Without the aid of references, explain the defense requirements for a FARP.

7. Without the aid of references, describe the procedures necessary for movement of aircraft through a FARP.

8. Without the aid of references, describe the various FARP layouts.

9. Without the aid of references, explain the difference between “hot” and “cold” refueling.

II. Body

A. Mission. The FARP provides fuel and ordnance necessary for highly mobile and flexible helicopter and fixed-wing operations. The size of the FARP varies with the mission and the number of aircraft to be refueled. FARPs are normally temporary facilities, transitory in nature, and established for a specific duration and mission. The scope of flight operations in the FARP area should include, but not be limited to, individual aircraft, sections, or divisions of aircraft requiring ordnance and refueling.

B. Objective. The ultimate objective of operating FARPs is to minimize response time and decrease turn around time in support of sustained operations. This is achieved by minimizing flight time to and from the refueling and rearming point and reducing the refueling and rearming time. This can be accomplished in about 10 to 15 minutes per aircraft. Ordnance uploading of the CH-46/CH-53 assault helicopters is accomplished in the staging area and can be completed in less than 10 minutes. Refueling for the UH-1 and AH-1 placed in cold skid locations can be accomplished in about 10 minutes per aircraft. Ordnance uploading/downloading time for the UH-1/AH-1 attack helicopters is approximately 30 minutes, depending on the ordnance requirements; therefore, the uploading/downloading of ordnance is the overriding factor for the attack helicopters in the FARP. All times are dependent on environmental factors, aircraft armament, and support personnel proficiency.

C. Location. Ideally, the FARP will be located approximately 17 to 25 kilometers from the forward edge of the battle area (FEBA) or forward line of troops (FLOT). This positioning ensures it is far enough to the rear to prevent enemy artillery preparatory fires from targeting the FARP, yet allows the quick turn around of both aircraft and logistical transportation supporting the operation. The tactical dispersion of the FARP is terrain dependent. It must allow sufficient area for ground vehicles, aircraft operations, and material movement, and should provide terrain masking for cover and concealment.

1. In a general sense the FARP will either be established on the inbound route, return route, or on the outbound route. Each has distinct advantages and disadvantages; therefore, the mission, enemy situation, terrain and weather (METT) will dictate where the FARP will be located.

The following sections will consider the advantages and disadvantages of each selection.

a. FARP Established on the Inbound Route:

(1) Advantages

(a) Allows a staggered takeoff schedule to ensure a staggered arrival at the FARP, thereby ensuring aircraft do not have to wait for fuel.

(b) Allows assault forces the opportunity to preposition closer to the objective area.

(c) Allows the mission commander the opportunity to make final analysis of the situation before continuing.

(d) Allows the mission planners flexibility for time lost because of aircraft mechanical problems in route, redistribution of loads, etc.

(e) Allows an aircraft to enter the objective area with the maximum amount of fuel possible.

(f) Provides the minimum number of aircraft on the deck with low fuel (i.e., in the event the FARP is not operational, inbound aircraft should be able to bingo home while aircraft already through the FARP will have their scheduled fuel load).

(g) Allows the FARP security force to be augmented by embarked troops from transports if applicable.

(h) Allows all personnel concerned to be familiar with the plan for emergency evacuation of the FARP.

(i) Allows planners to use the FARP as a bingo site if necessary.

(j) If the FARP is detected prior to being utilized by aircraft, mission can be canceled or aborted with minimal loss of assets.

(2) Disadvantages

(a) If final coordination is desired, assets will possibly be massed and shut down providing a prime target of opportunity for the enemy.

(b) Aircraft may possibly be shut down to conserve fuel when large flights are utilized and range is excessive.

b. FARP established on the Return Route:

(1) Advantages

(a) Allows the mission commander the opportunity to make changes to his plan prior to returning to the objective area. Plans can easily change because of lost aircraft, damaged aircraft, enemy threat, updated intelligence, etc.

(b) Allows an aircraft to reenter the objective area with the maximum amount of fuel possible.

(c) Allows an aircraft to reenter the objective area with the maximum amount of ordnance possible.

(2) Disadvantages

(a) With all aircraft coming off target at about the same time, there is a tendency for aircraft to converge on the FARP at one time, causing congestion and delays while waiting for fuel.

(b) If aircraft are aggressed while coming off target and pursued, the FARP can easily be detected.

(c) If the FARP has been detected, destroyed or is rendered mechanically inoperative, aircraft coming off the target will have no place to refuel.

c. FARP Established on the Outbound Route:

(1) Advantage. Allows aircrews to have the option to bypass the FARP if fuel is not required.

(2) Disadvantages

(a) With all aircraft coming off target at about the same time, there is a tendency for aircraft to converge on the FARP at one time, causing congestion and delays while waiting for fuel.

(b) If aircraft are aggressed while coming off target and pursued, the FARP can easily be detected.

(c) If the FARP has been detected, destroyed or is rendered mechanically inoperative, aircraft coming off the target will have no place to refuel and may not have sufficient fuel to return to base.

(d) Since prior briefing with ground forces is limited and confusion could result, security for the FARP cannot be easily augmented by embarked assault personnel on assault helicopters,.

D. FARP Mobility

1. In a sophisticated threat environment where the enemy can be expected to possess air parity, a FARP may have to be moved frequently. In a low-intensity situation with a static front and little enemy air activity, the need to displace will often be reduced, but this requirement is highly situational.

2. Dependent upon the situation, multiple FARPs may be employed or a single FARP that relocates to different sites utilized. The mobility of a FARP or multiple locations provides the commander increased responsiveness and capabilities. FARPs should be emplaced by the mode of transportation most appropriate and/or available, depending on the urgency of the mission. If establishing multiple FARPs or relocating a single FARP, it is recommended that the new/forward FARP be operational prior to the old FARP displacing. Speed is of prime importance and adequate time should be planned into any FARP operation.

E. Planning Considerations

1. The objective of utilizing a FARP is to allow aircraft to extend their combat radius. Combat radius should not only be considered in terms of distance, but also in terms of time. If there is any doubt that the fuel/ordnance available for a mission is insufficient, a FARP should be planned.

2. In tactical operations, the following considerations will apply in establishing the FARP:

a. Distance to, and the stability of, the FEBA or FLOT.

b. Required time-on-station.

c. Security requirements for the FARP.

d. Enemy ability to destroy the FARP with indirect fire.

e. Availability of adequate road networks.

f. Distance between the FARP and the nearest Class III and V supply points.

g. Command and control requirements.

h. Proximity to the main supply route (MSR).

i. Coordination with the logistical effort.

3. The above considerations need to be applied when establishing any type of FARP operation. There are basically four types of methods to establish a FARP and are incorporated into the planning cycle. The most common method is by the use of a truck mounted FARP. This method usually occurs when the tactical situation lends itself to allow sufficient planning time. In addition, the availability of adequate road networks, MSRs, distance to the FARP, timing, reduced security requirements, and the need for a large logistical effort based on aircraft sorties dictate a truck FARP. During this method, a site will be determined and the FARP established, usually for a longer duration than most other FARP types.

4. Another method is by the use of a Mobile FARP. The Mobile FARP resembles the Truck Mounted FARP, with many of the same planning considerations that required a Truck Mounted FARP. The Mobile FARP will most likely require less logistical effort and provide a specific amount of fuel and ordnance for a certain mission. An example would be the refueling of attack helicopters (AH/UH) that only required one refuel and upload while in transit. The Mobile FARP would drive straight to the aircraft in the LZ.

5. An alternate means of FARP establishment could be by CH-53 or CH-46 helicopters. Tactical operations requiring rapid emplacement, initial stocking and resupply, or displacement which may not always be accomplished by ground transportation due to time, distance, inadequate road networks, terrain, and/or enemy controlled area, dictate establishment and support of the FARP by air. Because of required quantities of fuel and ammunition, and other priorities placed on cargo helicopters, aerial resupply of the FARP should be limited. In addition, continued aerial resupply of the FARP can increase the probability of detection by enemy electronic warfare (EW) surveillance equipment and visual reconnaissance methods.

6. Under certain situations, a combination of aerial and ground established FARP's may be operationally desirable. For example, if an attack helicopter squadron received a very rapid commitment order, the FARP may be initially established by air with enough Class III and V supplies for one turn-around per helicopter. Continued operation could then rely on surface transportation.

7. Always assume enemy radar is located any high ground or prominent terrain occupied by enemy forces. To determine the available radar mask, a line-of-sight analysis is made of the FARP location. Three or four points with routes leading to the FARP and masked from radar detection are established and used by aircraft going to the FARP. Leaving the FARP, aircraft return to a masked point and then, if required, move with high speed to resume their assigned missions. By using such passive security measures, aircraft can avoid having the FARP directly detected by radar.

F. Defense. The FARP is defended based on the threat. This threat could be in the form of a ground or an air threat. Thus, the defense can be broken down into two types, ground defense and air defense.

1. Ground Defense. Ground defense of the FARP encompasses organic FARP personnel with their T/E weapons and several organic and non-organic units of the assault force, if applicable.

a. Reconnaissance personnel can best be used to ensure that the designated location for the FARP will sustain the would-be operation. They can also provide intelligence update on the zone, which can then be passed to the aircraft commander (airborne). They can also provide initial security for the FARP.

b. A Tactical Air Control Party (TACP) can be inserted prior to the assault force arriving, to provide a link with most supporting arms.

c. Embarked personnel of the assault force can be used to support the ground defense. However, this requires extensive planning because of the movement of aircraft through the FARP. The potential of having the assault troops spread out and disoriented at the FARP must be considered and avoided.

2. Air Defense. Air defense could encompass not only helicopter escort and fighters, but might also include the integrated air defense of Low-Altitude Air Defense (LAAD).

a. Low-Altitude Air Defense. LAAD may be employed either separately or as part of the following.

(1) LAAD can be inserted with or after the reconnaissance force with assigned sectors of fire.

(2) LAAD can be inserted with the FARP personnel with assigned sectors of fire.

(3) LAAD can be inserted with the embarked assault force with assigned sectors of fire.

b. The senior LAAD unit commander should be thoroughly briefed on the FARP operation (i.e., types, numbers, direction, etc.), so that he can better plan the FARP air defense.

c. Missile Engagement Zone (MEZ). FARPS should not be established within a MEZ. Large numbers of helicopter rotor systems close-in may affect the radar Doppler return making it difficult to track other targets in the vicinity.

(1) Place the FARP behind the MEZ or out of line-of-sight (LOS) with the Radar SAM units in the vicinity of the MEZ.

(2) Return to force procedures should be thoroughly planned with the TAC's air defense staff. Windows of time and/or specific routes should be planned for in advance so that air defense units are expecting friendly aircraft in their vicinity and are better able to identify returning aircraft (particularly in reduced visibility). Specific routes (corridors) are important so that the entire air defense system need not be brought down to weapons tight and may retain as much reaction time as possible to protect the Marine Air Ground Task Force (MAGTF).

d. Close Air Support (CAS). CAS for the FARP may consist of both helicopter and fixed-wing assets. It must be planned for in advance and may consist of both organic and non-organic assets. All aspects of support must be clearly planned for and briefed (e.g., combat air patrols (CAPs), proximity escort, preplanned on call, etc).

G. Flight Pattern. All aircraft going to the FARP should enter from a designated initial point (IP). Tower control (ATC) will not exist at the FARP. Individual flight leaders will be required to provide separation and control of aircraft into the FARP. The FARP OIC/NCOIC will maintain FM and/or UHF radio communication. In addition, FARP aircraft directors can provide terminal guidance with hand and arm signals and NVG compatible wands. Dependent upon the number of aircraft and complexity of the operation, a MATCS Mobile Team (MMT) may be used to provide procedural control to incoming aircraft and airspace deconfliction. If emission control (EMCON) conditions allow, the flight leader will call the FARP. At this time he will either be cleared into the staging area or to an alternate staging area, depending upon traffic and refueling priority.

1. Aircraft should utilize the pre-refueling and post-refueling staging areas to maintain division/section integrity. Utilization of the pre-refueling and post-refueling staging area will reduce the number of airborne aircraft in the vicinity of the FARP.

2. The refueling points should be used for aircraft to refuel and for the embarkation/debarkation of troops loaded on transport helicopters. Troops must debark aircraft before refueling and embark after refueling is complete.

3. The heading for final approach to the FARP should be determined during the planning phase and may be terrain dependent. Approach to final should be marked with chemlights or LZ panels.

4. CAUTION. Avoid aircraft over flying the FARP while other aircraft are in the site. If other aircraft are waiting at the primary staging area, have other aircraft land at the alternate staging area.

5. A right-hand landing pattern is desired. Pattern altitudes shall be specified and selected in accordance with METT considerations. The pre-briefed landing pattern shall be the same for all aircraft operating at the FARP.

6. Procedures for wave-off at either the FARP or the staging areas should be pre-briefed and conform to the pattern established in that area.

H. Taxi Procedures and Signals. After landing at the pre-refueling staging area, the aircraft should wait for appropriate signals before proceeding to a specific refueling point. Helicopters will normally air taxi with a 45 degree angle in to the most forward open refueling point. If the surface will allow, transport helicopters can ground taxi to the most forward open refueling point.

I. Communication Procedures. Personnel at the FARP should be equipped with PRC-119 or PRC-113 radios. Frequencies and call signs should be pre-briefed. The majority of FARP operations should not utilize radio communication. Normally, aircraft will not make radio transmissions while they are refueling, rearming, de-arming, or when they are within 50 feet of an aircraft undergoing any of the above evolutions. Emergency transmissions may be made as required.

J. Pre-Refueling Staging Area. This is a landing area for aircraft to position themselves to de-arm their ordnance and to wait when all refueling points in the FARP are full. This landing area should be within visual range of the FARP and be large enough to contain a division or more of aircraft (figure 1). The use of the pre-refueling staging area will preclude flights of aircraft orbiting the FARP. Aircraft director support normally will not be available at the pre-refueling staging area. The staging area will be marked. The movement from the staging area to the refueling points is a critical period. Only one aircraft should be allowed to air taxi at a time. Aircraft will air taxi at a safe altitude before entering at a 45 degree angle to the forward most refueling point. Taxi directors can be used to control the taxing and positioning of aircraft. Once the lead aircraft has

landed, the second aircraft located at the pre-refueling area staging area is cleared to lift and reposition, etc. When an aircraft has been refueled, it will be cleared to lift and out of the refueling point at a 30 degree angle and reposition itself to the post-refueling staging area. Remember the rule, "first in should be first out". Aircraft directors must ensure that only one aircraft at a time is airborne at the refueling points for deconfliction and safety.

PRE-REFUELING STAGING AREA

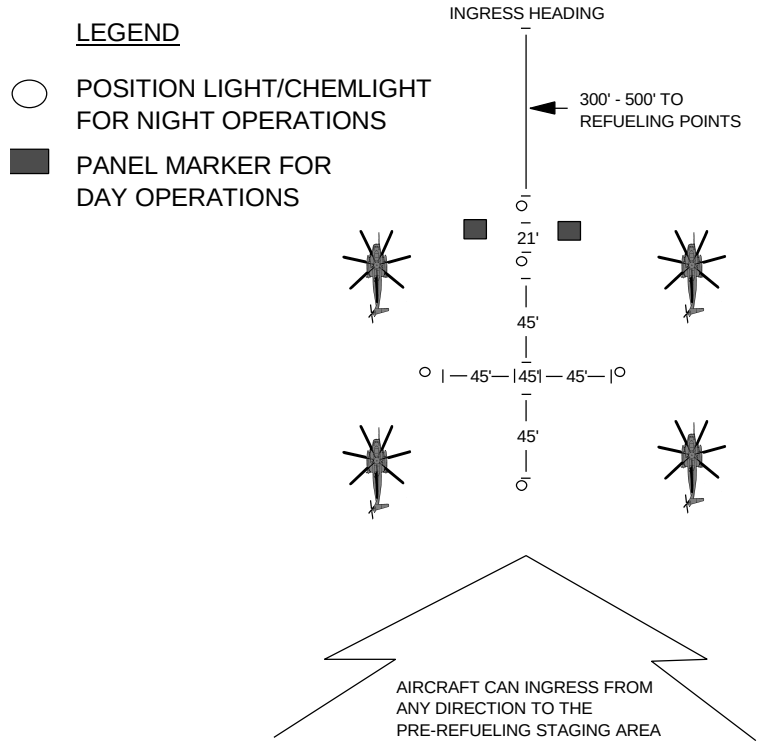

FIGURE 1

K. Refueling Procedures. Helicopter refueling should be accomplished by utilizing the following procedures:

1. Hot Refueling. The term hot refueling is used to describe refueling of an aircraft with the aircraft engine(s) operating. Only aircraft that are equipped with a closed circuit refueling (CCR) receiver that incorporates an automatic fuel shutoff capability are authorized to hot refuel.

2. Cold Refueling. This is accomplished by shutting down the engines, turning off all switches, and for helicopters, waiting until the rotor blades have stopped turning and are secured. Refueling is then normally accomplished by open port refueling.

3. All aircraft carrying ordnance will be de-armed prior to refueling.

4. Open port hot refueling is not authorized at any time.

5. Rotary-wing aircraft may be rapidly refueled in conjunction with by the open port method or by the CCR method when, in the judgment of the commander, tactical emergency conditions exist, and benefits of reducing ground time outweigh the risk involved.

6. All aircraft with forward firing ordnance will position the nose of the aircraft to point away from other aircraft and refueling personnel.

7. All aircraft carrying passengers should debark/embark personnel at the refueling point.

L. Post-Refueling Procedures. Aircraft should not depart refueling points until cleared. Aircraft may remain in the FARP in order to retain section integrity, or aircraft may depart separately and rendezvous with their division/section leader in the post-refueling staging area. Aircraft commanders must ensure that proper post-refueling procedures and pre-takeoff checklists are completed prior to takeoff.

M. Post-Refueling Staging Area. The post-refueling staging area is a landing area for aircraft to position themselves after they have refueled and are waiting for their wingmen to join (figure 2). In the post-refueling staging area aircraft can be uploaded and armed. Pre-refueling and post-refueling staging area locations should be thoroughly briefed and understood by all aircrews who will utilize the FARP. Aircraft director support will normally not be available at the post-refueling staging area. The staging area will be marked, if required.

POST-REFUELING STAGING AREA

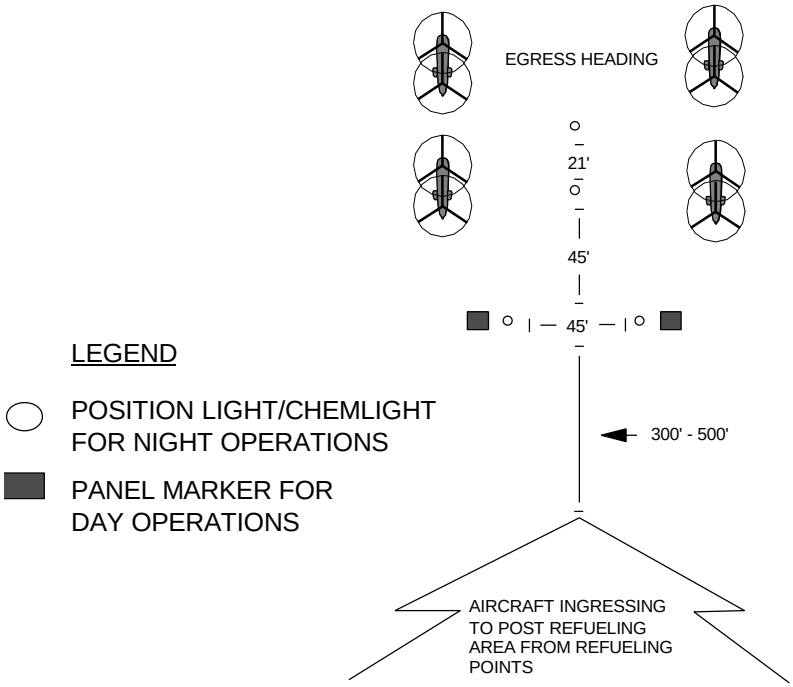

FIGURE 2

N. Helicopter FARP Layout. Suggestions toward establishing a FARP are as follows:

1. Spacing between Aircraft. The space between refueling points must be planned to accommodate the largest helicopter expected to utilize the FARP. Normally, all types of helicopters refuel at the FARP. Therefore, the standard layout should accommodate aircraft in size up to the CH-53E.

2. Wind Direction. The FARP should be laid out so that aircraft can land, refuel, and take off into the wind.

3. Vapor Collection. Fuel vapors are heavier than air and will pool in a depression or hollow. If the ground slopes, lay out the FARP equipment on the higher ground.

4. Drainage. Ensure that all FARP equipment is positioned in a location that provides adequate drainage away from the equipment and refueling points in the event of a fuel spillage or a sudden rainfall.

5. Some additional FARP location specifics are as follows when actually establishing the FARP:

a. Ensure clear of loose debris or FOD producing material.

b. Ensure there are no depressions or protrusions exceeding 10 inches.

c. Slope of the FARP area (landing points) should not exceed 5 degrees.

d. Utilize locations that provide minimum soil disturbance.

e. Availability to access roads.

O. Emergency Breakdown/Evacuation Plan. In the event the FARP comes under attack, it is essential that all participants are familiar with the load plan and the sequence of extract. The only hard rules are that security forces will be the last out, refueling equipment is considered expendable, and supporting arms must be preplanned and utilized. There is no standardized procedure for this evolution; therefore, each mission will develop its own procedure in accordance with METT and the availability of supporting units.

P. Night Operations. Because of the increased sophistication of anticipated threat weapon systems, helicopter operations will largely occur during the night to increase survivability.

1. The increased likelihood of conducting FARP operations at night requires thorough planning at all levels. Additionally, night evolutions inherently take longer to complete.

2. FARP evolutions during night conditions will normally be set up for NVG operations. Taxi directors should utilize wands with cones.

Q. FARP Equipment

1. The FARP will normally utilize the equipment from the Helicopter Expeditionary Refueling System (HERS). Among the equipment is the following:

a. 125 GPM Pump. The 125 GPM pump is a variable speed, frame-mounted, self-priming, unit capable of pumping at a rate of 125 GPM. It is started by using a hand crank, and the speed is controlled by a throttle control hand lever. It has a variable speed governor that maintains engine speed regardless of load.

b. 100 GPM Filter-Separator. The 100 GPM Filter Separator was designed to filter and separate particles of contamination and water from light petroleum fuels. The separator can handle fuels at a rate of 100 GPM. This assembly is self-contained with a removable cover, five

replacement filter elements and canisters, a pressure differential indicator and a water-level gauge. In addition, a manual water drain and air vent are provided to ensure cleanliness of the fuel and efficient operation. The inlet and outlet valves are equipped with cam lock fittings for quick disconnects. This system has a maximum working pressure of 75 psi and the unit has a dry weight of 100 pounds.

c. Fuel Monitor. The fuel monitor assembly referred to as a GO-NO-GO gauge is installed downstream from the filter-separator in the fuel system. The monitor will remove both solid contaminants and undissolved water from the fuel being distributed and, more importantly, it acts as a fuel cleanliness monitor. If solid contaminants or water exceed a safe level, filter elements within the unit will shut off all fuel flow. When this occurs, it indicates the filters or water separators upstream are not performing properly. The GO-NO-GO gauge is mounted horizontally on a roll over aluminum skid frame.

d. The 500 Gallon POD. The 500 gallon pod is a durable, nonvented, collapsible container. When filled, the bladder assumes a cylindrical shape and has an approximate width of 6 feet, 8 inches and a diameter of 3 feet, 10 inches. This system can be helicopter lifted in numbers dependent on lift capabilities of aircraft for the given day (normally one pod per CH-46, one to three pods for CH-53D, and up to six pods for CH-53E). Pods are considered to be expendable.

e. Two-inch Pressure Locking Nozzle. These nozzles are furnished with a positive shut-off device in order to prevent fuel and vapors from escaping when an aircraft is being refueled with its engines operating.

f. The Hand Service Nozzle. This nozzle is used for dispensing fuel to vehicles, drums and for cold refueling aircraft.

2. M-970. Is a 5,000 gallon fuel dispensing semitrailer designed for under/over wing refueling of aircraft. It is equipped with a filter separator, recirculation system and two refueling systems, one for under wing and one for over wing servicing. Normal fuel capacity is 5,000 gallons for highway travel and degraded to 3800 gallons for cross-country travel.

3. SIXCON Tank Modules. The SIXCON fuel tank module is primarily used for transporting fuel and other supplies to remote locations. It can be transported by helicopter, LVS, or 5-ton truck. Five fuel storage modules and one 125 GPM fuel pump module join together to form a 8x8x20 - foot ISO/ANSI configured module which can pump and store approximately 4500 gallons of fuel. Each module can hold approximately 900 gallons.

R. Personnel Requirements

1. Helicopter Expeditionary Refueling System (HERS). In order to man four refueling points, eleven personnel are normally required. The personnel breakdown is as follows:

   a. Four nozzle operators

   b. Four aircraft directors

   c. Two pump operators

   d. One tallyman

   e. For each additional two refueling points added, there will be a requirement for five additional personnel - two nozzle operators, two aircraft directors, and a pump operator.

2. Ordnance. A minimum ordnance crew of four trained personnel are normally required during any arming/de-arming or loading/downloading sequence. Additional ordnance personnel will be required based on mission load requirements.

3. Aircraft Recovery and Fire Fighting (ARFF). Normally, one crew and rescue vehicle will support a FARP. The vehicle may consist of a P-19 or 1028/TAU, depending upon the size and complexity of the FARP.

4. FARP Control. A FARP OIC or NCOIC should be appointed during all FARP operations. A radio operator and a Corpsman will normally be assigned to the FARP OIC or NCOIC.

S. Ordnance Procedures

1. Loading/downloading of ordnance and fueling of aircraft must be conducted as separate evolutions. Aircraft may be fueled with loading/downloading of ordnance occurring at the same time, when in the judgment of the commander, operational necessity and benefits of reducing ground time outweigh the risk involved.

   a. The arming/de-arming and loading/downloading locations will be briefed to all aircrews utilizing the FARP.

   b. Appropriate NATOPS checklists should be utilized by ordnance personnel during all ordnance evolutions.

2. Ordnance Area. During refueling at stationary fuel points, landing areas shall be established for aircraft requiring ordnance loading/downloading and arming/de-arming. These locations should be the pre-refueling and post-refueling staging areas. Aircraft headings should be determined in advance to avoid accidental discharges into the FARP refueling area. Arming/de-arming and loading/downloading areas should be no closer than 300 feet from the FARP. During mobile refueling, refueling equipment should be no closer than 300 feet from an aircraft requiring ordnance arming/de-arming.

3. Crew-Served Weapons. After refueling, aircraft landing in the post-refueling staging area requiring ammunition for crew-served weapons will signal the ordnance personnel utilizing prearranged signals stating their ammunition requirements. Arming and de-arming of crew-served weapons shall be accomplished in accordance with applicable checklists.

4. Ordnance Safety. Safety precautions will be strictly adhered to.

    a. Smoking will not be allowed within 100 feet of any form of ordnance.

    b. A qualified ordnance safety observer will be present to observe all phases of ordnance evolutions being conducted.

    c. For refueling at stationary refueling points, arming/de-arming and loading/downloading areas must be located a minimum of 300 feet from the refueling area.

    d. For mobile refueling, refueling equipment should be located a minimum of 300 feet from the arming/de-arming area.

    e. Aircraft loaded with ordnance will not point the nose of the aircraft at the refueling area during landings, takeoffs, arming/de-arming and loading/downloading.

T. Safety

1. Safety is the responsibility of all personnel and shall be the determining factor before, during, and after all evolutions involving Class V(A) munitions and refueling operations. Any unsafe situation, practice, or procedure observed by any person should immediately be brought to the attention of all hands, and all ordnance/refueling evolutions will immediately stop until the unsafe condition can be eliminated.

2. To provide adequate protection there should be a minimum of one fire extinguisher (PKP, 15 pound or Halon, 30 pound) at each pumping unit and at each fuel nozzle.

3. Emergency Fire and Rescue Procedures. The following general procedural steps are guides for what FARP personnel should do in a fire or crash emergency. So much depends on the specifics of each emergency situation that only basic reaction steps can be outlined.

   a. Ground Crew. In case of fire, crash or other accidents that could lead to fire, members of the ground crew should:

      (1) Stop the flow of fuel - Shut down the pump, close the valves in the refueling system and, if possible, uncouple the hose lines between the tanks and pump.

      (2) Free the aircraft - If possible, separate all aircraft being refueled from the fuel lines. Disconnect the nozzles and grounding wires so that aircraft can lift off and get clear of the danger area if necessary.

      (3) Sound the alarm - Sound the alarm by using the emergency alarm system that has been established at the refueling point. The aircraft directors will direct approaching aircraft away from the danger and direct aircraft on the ground to lift off in a safe and orderly manner.

      (4) Attempt rescue and contain the fire - If the emergency is a crash or if the fire involves an aircraft, the most immediate need is to see that all personnel are out of the aircraft. Attempt the rescue immediately, using fire fighting equipment as necessary to approach the aircraft and to provide a fire-free escape route for aircrew members. After all personnel are out of the aircraft, fight the fire. Attempt to isolate and control the fire until it is extinguished or help arrives.

   b. Aircrews. A member of the air or ground crew should be manning the nozzle fire extinguisher during a fire or crash emergency. In case of a fire that involves the aircraft, the pilots should shut down the aircraft as quickly as possible. In helicopters, no one else should be in the aircraft during refueling; however, in a crash, the full crew and passengers may be aboard. The person manning the nozzle fire extinguisher should use it immediately, first to assure the pilots, aircrews and passengers have an escape route, and second, to extinguish or isolate the fire. The pilot of each aircraft that is not involved in the fire or emergency should bring his engines up to operating RPM as quickly as possible. He should lift off and move away from the danger, either at the direction of the aircraft director (in situations where several aircraft are in the FARP) or independently (in situations where his is the only aircraft or where he can clearly see the movements of all other aircraft). Aircrew members should remain on the ground to assist ground crew members

with the rescue and fire fighting efforts, using equipment available at the FARP.

U. Farp Checklist. The following checklist should be used by all designated FARP planners.

1. Location (Primary/Alternate)

   a. Area description

   b. Obstacles

   c. Coordinates

   d. Elevation

   e. Slope

2. Setup

   a. Number of refueling points needed

   b. Truck FARP or HERS

   c. Number of gallons needed/available

   d. Type of pumps to be utilized

      (1) 50 gpm

      (2) 125 gpm

   e. Pumping start time

   f. Zone markings

   g. Personnel

      (1) Aircraft directors

      (2) Refuelers

      (3) Ordnance

      (4) Ground Security

(5) LAAD

(6) Aircraft Fire Fighting and Rescue (AFFR)

h. Type aircraft requiring refueling (number/time)

i. Ordnance type/amount

j. Time of aircraft arrival/priority

k. Time of FARP breakdown

3. Pre-staging Area

a. Location

b. Spacing

c. Marking

d. Heading

e. Movement in/out

4. Post-staging Area

a. Location

b. Spacing

c. Marking

d. Heading

e. Movement in/out

5. Arm/De-arm and Load/Download Area

a. Location

b. Spacing

c. Marking

d. Heading

e. Movement in/out

f. Location of ordnance personnel

g. Location of built-up ordnance

6. Security

a. Reconnaissance of FARP

b. Setup in/out of MEZ

c. Defense

(1) Organic

(2) Embarked assault troops from transports

(3) Location of LAAD teams, fighter aircraft

(4) CAS

7. Communication

a. Frequencies

(1) Primary

(2) Alternate

b. Call signs

c. Visual Signals Day/Night

(1) Aircraft lighting

(2) Hand signals

(3) Light signals for night ops/NVG ops

8. Procedures to and from Refueling Points

a. Pattern

(1) Assault

(2) Attack

b. Procedures for arrival to FARP

c. Movement to refueling points (45° in)

d. Troop debark/embark area

e. Down refueling point

f. Down refueling truck

g. Down aircraft at refueling point

h. Movement out of refueling points (30° out) to post-refueling staging area

i. Departing FARP area (section/division/flights)

9. Fuel Loads

a. Fuel allowed per aircraft (Qty)

b. Fuel Planning Guide:

(1) JP-5 gals X 6.8 = lbs
lbs/6.8 = gals

(2)

TYPE A/C	CAPACITY (lbs)	BURN RATE	TIME
CH-46	2,400	1200 lbs/hr	2+00
CH-46(bullfrog)	4,400	1400 lbs/hr	3+30
CH-53D	13,000	2200 lbs/hr	5+54
CH-53E	15,545	3300 lbs/hr	4+42
UH-1N	1,300	750 lbs/hr	1+44
AH-1W	2,000	800 lbs/hr	2+30

c. Disposal of fuel left in bladders (last aircraft drain bladders)

d. How to replenish/resupply

(1) External bladders

(2) Truck

10. Emergencies

a. Wave off

(1) Assault pattern

(2) Attack pattern

b. Non-fire aircraft emergency (while in or taxiing near FARP area)

c. Fires emergency

(1) FARP/refueling points.

(2) Aircraft fire

(a) Arming

(b) Staging

(c) Refueling point

(3) Emergency procedures

(a) Stop the fueling

(b) Free the aircraft

(c) Sound the alarm

(d) Attempt a rescue/contain the fire

11. Administration

a. Frag requests

(1) Refuelers

(2) Aircraft directors

(3) Ordnance

(4) Security

(5) Replenishment aircraft

(a) KC-130

(b) CH-53

(c) CH-46

(6) Transportation

(7) Logistical support (food, clothing, etc.)

(8) FARP diagram published

12. Arming/De-arming, Loading/Downloading Guide

a. Type ordnance required

b. Quantity ordnance required

c. Tools required for build-up

d. Ground support equipment/quantity

(1) K-4 trailers

(2) SATS loaders

(3) Trucks

III. Summary

During this period of instruction we have discussed the mission and objective of a FARP, the advantages/disadvantages of the routing placement, as well as the tactical planning considerations. We have also discussed the guidelines for sound decisions on the placement, defense and operation of a FARP to extend the combat radius of aircraft.

Reviewed and Approved

_____ (Instructor)

_____ (Coordinator)