



UNITED STATES MARINE CORPS
MARINE CORPS AIR STATION
BEAUFORT, SOUTH CAROLINA 29904-5001

IN REPLY REFER TO:
ASO P10340.11B
FUELS

26 FEB 2021

AIR STATION ORDER P10340.11B

From: Commanding Officer, Marine Corps Air Station Beaufort
To: Distribution List

Subj: STANDARD OPERATING PROCEDURES FOR THE AVIATION FUELS DIVISION

Ref: (a) NAVAIR 00-80T-109
(b) NAVSUP Publication 558
(c) DoD 4140.25M
(d) MIL-HDBK-844 (AS)
(e) MIL-STD-3004A
(f) M02205 Unit TO&E
(g) NAVAIR 00-80R-114
(h) ASO P5090.4A

1. Situation. This Order establishes the proper policies and procedures for the Aviation Fuels Division of Marine Corps Air Station (MCAS) Beaufort.

2. Cancellation. ASO P10340.11A.

3. Mission. To promulgate information and procedures for aviation fuels aboard MCAS Beaufort to ensure compliance with established standards.

4. Execution

a. Commander's Intent and Concept of Operations

(1) Commander's Intent. This Order provides instruction regarding the Standard Operating Procedures (SOP) for the Aviation Fuels Division aboard MCAS Beaufort.

(2) Concept of Operations. The enclosure outlines the policies and procedures for the Aviation Fuels Division.

5. Administration and Logistics. Recommendations concerning the contents of this Order may be forwarded to the Commanding Officer via the appropriate chain of command.

6. Command and Signal

a. Command. This Order is applicable to all personnel aboard MCAS Beaufort.

b. Signal. This Order is effective the date signed.


K. R. ARBOGAST

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LOCATOR SHEET

Location: BLDG. 620A (1), BLDG. 1007A (2), BLDG 1226 (1)

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TABLE OF CONTENTS

<u>IDENTIFICATION</u>	<u>TITLE</u>	<u>PAGE</u>
CHAPTER 1	MISSION, ORGANIZATION, DUTIES, AND TRAINING.....	1-1
1.	Mission.....	1-1
2.	Priority for Fuel Services.....	1-1
3.	Duties and Responsibilities.....	1-1
4.	Mobile Refueling and De-Fueling Services.....	1-2
5.	Hydrant Fueling System.....	1-3
6.	Training of Personnel.....	1-3
CHAPTER 2	INVENTORY AND ACCOUNTING MANAGEMENT.....	2-1
1.	Standards and Criteria for Measurement.....	2-1
2.	Requisitioning, Receipts and Issues.....	2-1
3.	Returned Fuel.....	2-2
4.	Contaminated Petroleum Products and Hazardous Material.....	2-2
CHAPTER 3	QUALITY SURVEILLANCE.....	3-1
1.	General.....	3-1
2.	Acceptable Fuel Quality.....	3-1
3.	Quality Surveillance.....	3-1
4.	Fuel Contamination.....	3-1
5.	Guidance for Fuel Samples and Testing.....	3-2
6.	Frequency of Sampling and Testing.....	3-3
CHAPTER 4	FUEL HANDLING AND OPERATIONS.....	4-1
1.	General.....	4-1
2.	Characteristics of Aviation Fuels.....	4-1
3.	Hydrant Pressure Refueling Operations (Hot Pits).....	4-1
4.	Personnel Requirements.....	4-1
5.	Equipment Requirements.....	4-2
6.	General Procedures.....	4-2
7.	Specific Aircraft Type Procedures.....	4-3
8.	Cold Pressure Refueling Operations.....	4-5
9.	Receiving Fuel Deliveries.....	4-6
10.	Delivering Fuel to Refueling Trucks.....	4-7
11.	Aircraft Defueling Procedures.....	4-7
12.	Contingency Plans.....	4-9
13.	Alarms.....	4-9
14.	Fire in the Fuel Storage Area.....	4-9
15.	Ruptured Fuel Tank.....	4-9
16.	Aircraft Crash in the Vicinity of Fuel Storage.....	4-10
17.	Aircraft Crash Near the Refueling Truck Parking Area.....	4-10
18.	Refueling Truck Delivery Tank Fuel Leak.....	4-10
19.	Fuel Truck Overflow at the Fill Stand.....	4-10
20.	Spill Not Within Containment System Capability.....	4-11
21.	Fuel Handling Safety.....	4-11
22.	Responsibility.....	4-11
23.	Fire and Explosion.....	4-11
24.	General Safety Precautions.....	4-12
25.	Avoiding Health Hazards.....	4-14

CHAPTER 5	MAINTENANCE.....	5-1
1.	General.....	5-1
2.	Types of Maintenance.....	5-1
3.	Performance of Maintenance.....	5-2
4.	Inspections.....	5-4
5.	Aircraft Fueling Equipment Checklist.....	5-4
6.	Filter/Separator Element Change.....	5-6
7.	Records and Reports.....	5-6
CHAPTER 6	RECORDS AND DOCUMENTATION RETENTION.....	6-1
1.	General.....	6-1
2.	Records Retention.....	6-1
3.	Offsite Storage Retention.....	6-1

APPENDIX

APPENDIX A	- OPENING PROCEDURES.....	A-1
APPENDIX B	- CLOSING PROCEDURES.....	B-1
APPENDIX C	- TANKER UNLOADING PROCEDURES.....	C-1
APPENDIX D	- REFUELING EQUIPMENT CHECKLIST MCASCP.....	D-1
APPENDIX E	- FORM DD-250 BILL OF LANDING.....	E-1
APPENDIX F	- AIRCRAFT DANGER ZONES.....	F-1

CHAPTER 1

Mission, Organization, Duties, and Training

1. Mission. The Fuels Division is charged with providing aircraft hydrant (hot) refueling, mobile (cold) refueling, and de-fueling support to tenant units and transient aircraft. The Aviation Fuels Division is responsible for the requisition, receipt, storage, issue, quality control, and fiscal/environmental accountability of aviation fuel at MCAS Beaufort. The principal objectives of fuel handling are: maintenance of an adequate supply of uncontaminated fuel to ensure uninterrupted aircraft operations; delivery of correct fuel to the aircraft in a safe, timely, and efficient manner; proper operation of fueling equipment to reduce maintenance; and assurance of consistent quality control surveillance from receipt to issue of fuel.

2. Priority for Fuels Services

a. Priority 1. Aircraft designated for medical evacuation or search and rescue.

b. Priority 2. Aircraft in support of missions deemed to be of operational necessity.

c. Priority 3. Aircraft in support of other missions.

d. Aircraft or missions may be assigned a higher priority by the Operations Officer, their direct representative, or the Commanding Officer (CO).

e. Visiting Aircraft Line (VAL) personnel will support all VAL aircraft and Headquarters and Headquarters Squadron (HQHQRON) aircraft. The VAL is the primary refueler for all VAL and HQHQRON aircraft requiring cold fuel with Station Fuels serving as the alternate refueler. VAL and Station Fuels will support VAL aircraft requesting hydrant pressure refueling operations (hot pits).

3. Duties and Responsibilities

a. Fuels Management Officer (FMO). The FMO is directly responsible to the Airfield Operations Officer in the performance of their duties. They direct and supervise all aspects of hot refueling operations conducted aboard MCAS Beaufort and serve as the contract officer's representative for the contract providing mobile cold aircraft refueling and de-fueling. This includes, but is not limited to, responsibility for fiscal and environmental accountability, quality control, safety, fuel handling practices, personnel training, operations, and corrective maintenance of facilities and equipment. The FMO's specific duties include:

(1) Determining and consolidating fuel stocking level requirements based on historical demand and anticipated needs while maintaining 10 days-of-supply.

(2) Maintaining an adequate quantity of proper quality fuel through the appropriate means of surveillance testing and implementation of proper inventory procedures for fuel received, stored, and issued aboard MCAS Beaufort.

(3) Coordinating with the appropriate agencies for corrective and preventive maintenance and/or improvement of storage tanks and fuel distribution systems as necessary or required.

(4) Coordinating with the Operations Department and other appropriate agencies to maintain appropriate personnel manning levels.

b. Fuel Division. The staff noncommissioned officer in charge (SNCOIC)/assistant FMO is responsible to the FMO and will assume the FMO duties as necessary. The SNCOIC's specific duties include:

(1) Supervise all phases of operations of the Fuel Division duty section.

(2) Monitor all training activities to ensure compliance with orders, directives, LOAs, and SOUs as appropriate.

(3) Supervise the establishment and maintenance of individual training jackets on all Fuels Division personnel and ensure that required training is documented in each individual's training jacket as required or necessary.

(4) Maintain an understanding of published instructions and ensure that they are current, complete, and in accordance with the directives and policies of senior commands.

(5) Be intimately familiar with the operational missions of the Air Station.

(6) Advise and assist in the elimination of hazards related to fuel operations.

(7) Advise and assist in the planning and execution of the operating budget and completion of necessary administrative reports.

(8) Conduct periodic inspections to ensure the overall cleanliness and maintenance of the building and grounds within the fuel area.

(9) Supervise all fuel ordering, receiving, testing, and issuing.

(10) Plan and direct all enlisted training to include special training and all directed annual requirements.

(11) In the absence of FMO, verify and sign the monthly fuel report, and sign and send the accompanying invoice to the Defense Logistics Agency (DLA) via email.

4. Mobile Refueling and De-Fueling Services (Cold Refueling/De-Fueling).

Mobile aircraft refueling and de-fueling is provided by qualified fuels personnel from 2230 Sunday until flight line closure on Friday (no fuel is issued from 2300-0100 for accounting reasons) and during weekend flight line operating times identified by Base Operations. Requests for this service outside of the normal operating hours will be made through Air Station Base Operations at (843) 228-7301 or (843) 228-7302. Requests must be made by 0900 on the day preceding the day refueling is required. Exceptions are published on the MCAS Beaufort flight schedule and Provisioning Performance Report (PPR) log.

5. Hydrant Fueling System (Hot Pits). The hot pits are open during prescribed airfield hours. Requests for hot refueling outside normal hours will be made through the MCAS Beaufort Operations Department at (843) 228-6343. Requests for this service must be made by 0900 on the work day preceding the day refueling is required. Exceptions are published on the MCAS Beaufort Daily Flight Schedule and PPR.

6. Training of Personnel. Bulk Fuel Specialists assigned to the Fuels Division must be designated or in the process of attaining the MOS 1391. Installation specific training for the MCAS Beaufort Fuels Storage/Aircraft Hydrant Fueling Facility shall be a minimum of two weeks and will be provided under the direction of the Fuels Division noncommissioned officer in charge (NCOIC). Additionally, they must complete Naval Education and Training 43288-C, personnel qualifications standards (PQS) 101, 301, 302, 303, and 307 and underground storage tank training as required. Additionally all personnel in training to operate a commercial fuel truck possessing 500 gallons or more of fuel must meet the following minimum standards: 40 hours of assistant driving observation time with a certified operator to gain familiarity with truck and fueling system; 40 hours driving and operation time with a certified operator to ensure compliance with local SOP, Naval Air Systems Command 00-80T-109, and all references; complete a statement of understanding for truck fueling operations; perform three successful defuels with certified operator; and complete all PQS associated with operation of commercial fuel trucks. Military applicants shall pass a physical examination and hold an OF-346 license. Civilian applicants shall maintain both a valid state drivers' license and OF-346. In addition to these requirements, the below training objectives must be met before personnel are authorized to operate any part of the fuels facility.

a. Military Personnel

- (1) Aviation Fuels Receiving Operations.
- (2) Fuel Quantity and Quality Control.
- (3) Truck Fill Operations.
- (4) Aircraft Refueling Operations.
- (5) Emergency Fire and Rescue Procedures.
- (6) Fuel Spill Prevention and Clean up Procedures (Environmental/Hazardous Materials).
- (7) Safety.
- (8) Lab Procedures.
- (9) FSII (Fuel System Icing Inhibitor).
- (10) Flash Point Testing.
- (11) Fuel Testing, Visual, American Petroleum Institute (API), CCFD (Combined Contamination Fuel Detector), DFWD (Digital Free Water Detector).

b. Civilian Personnel

- (1) Six Month Assigned Billet On-The-Job Training.
- (2) All mandatory Air Station Safety and Annual Training Requirements.
- (3) Person-In-Charge Initial Training.
- (4) Facility Response Team Annual Training.
- (5) Individual Development Plan Training.

Chapter 2

Inventory and Accounting Management

1. Standards and Criteria for Measurement. Accurate temperature and API gravity readings are necessary to calculate volumes of bulk petroleum product received, stored, and issued. All thermometers and hydrometers must conform to American Society for Testing and Materials (ASTM) design specifications.

a. Correction for Temperature. As required by the API, bulk petroleum product volumes are corrected to a standard temperature of 60 degrees Fahrenheit in computing inventories or quantities transferred.

b. Temperature Measuring Procedures. ASTM Designation D-1086 contains guidance on equipment and procedures for temperature measurements. ASTM designation D-287 contains procedures on use of API hydrometers.

c. Calibration of Thermometers. ASTM D-1086 requires calibration of thermometers with a National Bureau of Standards certified thermometer before use. These thermometers shall be calibrated annually.

d. Hydrometers. API hydrometers shall conform to ASTM designation E-100 API hydrometers for various gravity ranges and are available through the federal supply system. The following procedures apply for measuring the amount of fuel in the tanks:

(1) Fuel Division personnel will ensure all active fuel tanks are gauged daily using an Advisor Training Group (ATG) printout or manual gauge. At a minimum, fuel tanks (active and inactive) will be gauged weekly.

(2) Fuel Division personnel are responsible for the accuracy of the gauge readings and shall be held accountable for errors in gauging.

(3) All readings will be corrected utilizing the API Petroleum Measurement Tables which provide tank gauge conversion strapping charts. Fuel Division personnel shall convert gauge readings to the appropriate net gallons.

2. Requisitioning, Receipts, and Issues

a. Requisitioning fuel must be ordered through the Aquatics Maximum Power Intensity Training Account Management and Provisioning System. This system can only be accessed by MCAS Beaufort Fuel Division Personnel and Contracting Accountants that have been processed through the DLA Energy System and have been authorized to order fuel.

b. Receipt of fuel is the responsibility of the Fuel Division. The Fuel Division will conduct an initial inspection for quality of fuel samples drawn from each delivery truck and/or barge to ensure the fuel being accepted meets the required military specifications, with discrepancies noted on the delivery document at time of receipt. All fuel deliveries aboard MCAS Beaufort are made via barge or commercial truck and will be accompanied by a Material Inspection and Receiving Report.

c. Issuing NAVSUPINST 7300.28 (Enclosures (1) through (4)) provides instructions for the processing of into-plane fuel transactions utilizing the

Aviation (AV) Fuels "identaplate" (DD Form 1898) or (DD Form 1898-D). Whenever possible, the AV Fuels Intro-Plane Contract Sales Slip DD Form 1898/DD Form 1898-D will be used for all fuel issues to Department of Defense aircraft regardless of classification.

(1) Each issued amount of aviation fuel will be entered on a Fuel Issue Tally Sheet by issuing personnel along with the tail number of each aircraft and the Unit Identification Code.

(2) Personnel issuing fuel will obtain a legible signature in the space provided. Fuel Tally Sheets will be maintained on file for 3 years.

(3) Each fuel transaction (to include VAL transactions) will be recorded in the automatic fuel accounting system by the fuels dispatcher as it occurs. The fuels dispatcher will be notified by fuel handlers when fuel transactions occur, in order to track all aspects of the fuel operation process.

3. Returned Fuel

a. Minimum Standard. Fuel from de-fueled aircraft or fuel returned from field operations conducted off the Air Station will be tested and if found to meet the minimum military specifications (Flashpoint of a minimum of 140 degrees Fahrenheit, API Range of 36 to 48) and found to be clear/bright, will be returned to the Fuel Division storage tanks.

b. Procedures for Returning Fuel

(1) Squadrons will submit a fuel sample from the aircraft that needs to be de-fueled to the MCAS Fuel Division Lab for flash testing, no exceptions.

(2) Fuel obtained from an aircraft will be stored in a mobile refueling truck until the fuel has been flash tested a second time to ensure that it meets all military specifications before being reissued to aircraft or being put back into the system.

(3) In the event that the fuel from an aircraft is determined to be contaminated, the requesting Squadron must notify the Hazardous Material (HAZMAT) Department to have the contaminated fuel disposed of properly.

(4) Units conducting operations off station will submit a fuel sample to the Fuel Division Lab for testing. Once fuel has been accepted from the using unit, a credit will be issued through the fuel accounting office for that unit. In the event that the fuel is determined to be contaminated, the requesting squadron must notify the HAZMAT Department for proper disposal.

4. Contaminated Petroleum Products And Hazardous Material. Contaminated petroleum products have the potential to be extremely volatile, highly corrosive, and may pose severe health risks. Adherence to the current edition of reference (h) is mandatory. Notify the HAZMAT Department for disposal of all contaminated petroleum products or hazardous material.

CHAPTER 3

Quality Surveillance

1. General. High performance aircraft engines use fuel at high rates and require clean fuel to operate properly. Fine contaminants may block engine fuel supply systems and erode critical parts of the engine and fuel control systems. The separation of contaminants from aviation turbine fuel, particularly JP-5, is complicated because of the higher viscosity specific gravity, which increases the required settling time. Aircraft engine filters are not designed to remove fine contamination or excessive amounts of contamination. Therefore, fuel purity must be assured before it enters the aircraft.

2. Acceptable Fuel Quality. Although there are strict standards for acceptable fuel quality, indications of unacceptable quality are somewhat subjective.

a. Clean And Bright. In addition to aviation fuel meeting specifications and any deterioration limits, it must be clean, bright, and contain no more than ten parts per million (PPM) of free water as well. The terms "clean" and "bright" are independent of the normal color of the fuel. Aviation jet fuels are not dyed and may be any color from water-white to amber. A cloud, haze, specks of sediment, or entrained water indicates the fuel is unsuitable for use. This represents a breakdown in fuel handling equipment or procedures, and steps shall be taken to find the source of the issue and correct it immediately.

b. Clouded Fuel. Clouded fuel is unacceptable for use.

c. Visible Sediment. Visible sediment in the fuel indicate particulate size larger than 2 milligrams per liter. In a sample of clean fuel, sediment will not be visible.

3. Quality Surveillance. Surveillance of the petroleum products being received, stored, and issued is the lynchpin in quality assurance. As part of the quality assurance program, fuel samples will be taken and visually inspected as frequently as necessary. If the established quality limits are exceeded, aggressive corrective action will be implemented immediately. Identifying the source of contamination is the most important aspect in determining necessary corrective action to prevent future occurrences of fuel contamination. Existing and potential problem areas should be promptly identified and reported to the FMO, SNCOIC and fuel distribution worker.

4. Fuel Contamination

a. Contamination with Other Petroleum Products (Commingling). This usually occurs through inadvertent mixing with other petroleum products during transportation and storage.

b. Contamination with Water, Solids, and Microbiological Growth. Contamination from these sources is frequently detected visually since these sources do not mix with the fuel.

(1) Fresh or salt water may be either dissolved or free water. Dissolved water may appear as a cloud, emulsion, or droplets. Any water in

fuel may lead to icing in the aircraft fuel system, malfunctioning of fuel quantity probes, and corrosion of fuel system components.

(2) Solids or sediments appear as dust, powder, flakes, granular or fibrous materials, and may include both organic and inorganic materials. The presence of appreciable quantities of fibrous materials is indicative of a filter element breakdown, either because of a ruptured element or mechanical disintegration of the filter element in the fuel system. (Usually a high metal content consisting of relatively large particles indicates a mechanical failure). The presence of a high metal content consisting of relatively large particles usually indicates a mechanical failure.

(3) Microbiological growth consists of living organisms that grow at the fuel water interface. Products of microbiological organisms and fungus hold rust and water in suspension and are effective stabilizing agents for fuel-water emulsions. These suspensions cling to glass and metal surfaces and cause erroneous readings in fuel quantity systems, sluggish fuel control operations, and sticking of flow dividers. The presence of microbiological growth in fuel is a reliable indication of the failure of fuel filtration equipment, inadequate water stripping of storage tanks, and a need for more frequent cleaning of fuel storage tanks.

5. Guidance for Fuel Samples and Testing

a. General. MIL-STD 3004 establishes the minimum requirements for maintaining the quality of aviation fuels. The following is a list of general guidelines.

(1) All incoming shipments of liquid fuels received into the system are pre-inspected by the assigned fuel inspector. Each shipment of fuel will be accompanied by a Material Inspection and Receiving Report (DD 250). The certification of the DD 250 by the assigned fuel inspector constitutes assurance that the product is of the proper grade and quality.

(2) The quality of products is maintained by the fuel personnel carefully following established operating and maintenance procedures as well as by periodically sampling and testing the product in various tanks, pipelines, and issue facilities. The frequency of sampling will depend upon such factors as the condition of the system components, suspicion of contamination, and length of storage. At a minimum, monthly samples will be taken by Fuel Division personnel for delivery to the Petroleum Testing Laboratory, Defense Fuel Support Point (DFSP) in Jacksonville, Florida (FL).

b. Fuel Samples. Fuel samples shall be taken from prescribed points in the fuel farm and fuel distribution system in accordance with instructions contained in references (a) through (c) and ASTM Method D270. The observed quality of the fuel sample shall be recorded on the Fuel Sample Logbook maintained in the fuel laboratory office. Any sampling taken improperly or contained cannot be declared to be representative of the fuel in question. To obtain truly representative samples, the following procedures will be followed:

(1) Rinse each sample bottle three times and drain it thoroughly with the fuel being sampled. Remove the polyethylene cap insert, rinse the cap, and insert the final rinse material from the bottle.

(2) Use the same type fuel for rinsing as will be sampled, as traces of another fuel will contaminate the sample. Use filtered fuel from the sampling probe downstream of the filter units at the fuel nozzle.

(3) A one-quart sample will be extracted from each of the prescribed points and locations in the fuel farm and distribution system. The fuel samples will be obtained from the fuel nozzle while re-circulating fuel. These samples will be examined by the shift supervisor and/or the Fuel NCOIC.

(4) Visually inspect each of these samples for sediment and free water, and if either is found, drain the sediment and/or water from the tank bottoms and repeat the visual inspection after each draining until no sediment or free water can be detected by visual inspection. Inspectors will pay particular attention to the minor point of the vortex (at the bottom and in the center of the glass receptacle): all heavy foreign substances will accumulate at this point and will give an immediate indication as to the amount of contaminants present in the fuel hose. Study the fuel above the vortex point for flecks of substance floating in the fuel. These flecks could be minute particles of air, sediment or moisture. If the flecks of substances are air, the motion of the flecks will be upward toward the surface. If the migration of the flecks of substance is toward the bottom of the sample container, the flecks are contaminants which should not be in the sample.

(5) A representative sample of the fuel tested will be retained until the Fuel Quality Assurance Chief permits disposal of the sample. Fuel samples are valid for 24 hours after tests are conducted with acceptable results.

(6) The Petroleum Lab, Downtown Ecumenical Services Council Jacksonville, Florida will be consulted to provide guidance to resolve any discrepancies in fuel samples.

(7) Dispose of wash material utilizing appropriate Hazardous Materials procedures.

6. Frequency of Sampling and Testing

a. Daily. All active fueling points are sampled and tested locally every 24 hours.

b. Monthly. In addition to taking samples for local testing, a prescribed number of issue point samples will be submitted to the Petroleum Lab at DFSP Jacksonville, FL for comparison testing. (The scheduled points and the contracted mobile refueling trucks will take three extra samples for the comparison testing). Three extra samples will be taken from the scheduled points and the contracted refueling trucks for comparison testing.

c. Barge/Commercial trucks delivering fuel will be tested before fuel is transferred into the storage system. An all level sample shall be taken from the top of each truck or barge storage compartment.

(1) The Fuel Quality Assurance Chief will visually check the sample for sediment.

(2) Fuel System Icing Inhibitor (FSII) contents shall not exceed (0.04 to 0.20) PPM before fuel is transferred into the storage system.

(3) The API test must be within 3 degrees of the loading API reading on the DD 250.

CHAPTER 4

Fuel Handling and Operations

1. General. Fuel handling includes all operations where fuel is received, stored, transported, issued, or tested for quality assurance. Fuel is delivered to aircraft through a variety of means and methods. Gravity refueling is the transfer of fuel from mobile refueling trucks or fixed refueling points through a low-pressure open nozzle system. Gravity refueling in fixed pressure refueling system point is also known as hot pit refueling. Pressure refueling is the transfer of fuel from mobile refueling trucks or fixed refueling points through a high-pressure closed-circuit nozzle system. Pressure refueling of aircraft by mobile refueling trucks shall not be performed with the aircraft's engine(s) operating. Hot refueling is defined as pressure refueling of an aircraft while the aircraft's engines(s) are operating. Aboard MCAS Beaufort, hot refueling of aircraft shall only be conducted from a fixed pressure refueling system in a designated hot refueling area. Concurrent on loading/off loading and aircraft fueling operations is defined as the transfer of personnel, cargo or equipment aboard or from an aircraft while fueling or de-fueling is in progress. Concurrent personnel/cargo on-loading/off loading and aircraft fueling operations shall not be performed at MCAS Beaufort without authorization from the MCAS Beaufort Airfield Manager.

2. Characteristics of Aviation Fuels. Aviation jet fuels are classified as flammable liquids which will burn in the presence of heat and oxygen. Volatility of these fuels varies over a wider range than that of gasoline. JP-5 has both gasoline and kerosene components and forms explosive vapors at ordinary temperatures, requiring more care in handling than gasoline. Since the vapor space above JP-5 fuel in a tank normally falls in the explosive mixture range, it can be ignited by a static electric discharge. Under proper conditions, these fuels will explode with a force similar to trinitrotoluene. In liquid forms, aircraft fuels are lighter than water, and in vapor form they are heavier than air. Consequently, any free water present in fuels will settle to the bottom of the container. Vapors of these fuels, when released in the air, tend to remain close to the ground, thus increasing the danger to personnel and property. JP-5 has a natural color when received from the refineries. This color may vary from water-clear to a straw color. JP-5 is kerosene-based fuel, and will burn when heated or sprayed, or when it vaporizes from fuel soaked clothing, rags, etc. In addition, improper handling of aviation jet engine fuels can pose serious health and safety hazards. Inhalation of fuel vapors can be toxic and result in brain damage or death. Skin contact with the fuel can lead to severe irritation.

3. Hydrant Pressure Refueling Operations (Hot Pits). Eight hydrant pressure refueling points are available on six refueling islands. All eight points can be used simultaneously, provided adequate refueling personnel are available. Base Operations will be notified every morning of which refueling lanes have been tested and operational. All large and rotary aircraft will be directed to 4A and 5A.

4. Personnel Requirements. Aside from the minimum aircrew for manning the aircraft, the following personnel are the minimum required for hot refueling of aircraft in the hot refueling area.

a. One additional aircraft pilot, plane captain, or qualified designated substitute to act as the refueling coordinator.

- b. One refueling nozzle operator.
 - c. One fire watch duty provided by the respective squadron, to man the fire extinguisher throughout the entire refueling operation.
5. Equipment Requirements. The minimum equipment required for each aircraft being fueled is listed below.
- a. One approved D-2 type pressure refueling nozzle.
 - b. Aircraft wheel chock.
 - c. Double sound attenuating ear protectors for all members of the fueling crew.
 - d. Eye protection for all members of the fueling crew.
 - e. All fuel crew member must wear long sleeves and pants.
 - f. One 150 pound wheeled Halon Tron fire extinguisher per every two aircraft refueling stations.
6. General Procedures. The following are general procedures for hot pressure fixed fueling:
- a. Fuel personnel/fuels distribution workers shall check all fueling equipment, including firefighting equipment, daily utilizing the Aircraft Fueling Equipment Checklist.
 - b. The use of vaping products is not authorized within 100 feet of the refueling points.
 - c. The aircraft crew and/or fuel operators will ensure that there are no fires, open lights, welding operations, or other possible ignition sources within 50 feet of fueling operations.
 - d. All aircraft will approach the refueling pits via the Bravo 4. The aircraft will not enter the refueling pit until signaled into the hot refuel pits by fuel personnel/qualified taxi personnel. The aircraft will then be chocked. Passengers will disembark the aircraft and move to the identified safe distance area prior to being connected to the hydrant system until refueling is completed.
 - e. Prior to connecting the refueling nozzle, all electrical and electronic equipment not required for fueling shall be secured.
 - f. MCAS Beaufort ground control will not direct aircraft movement until refueling is complete and the aircraft has repositioned outside the refueling pit.
 - g. Fuel personnel will designate the refueling point for the aircraft.
 - h. Pressure refueling requires that the aircrafts automatic fuel shutoff valve and fuel cell venting system in the aircraft to be operational. An automatic shutoff valve failure can cause fuel tanks to rupture from over filling, resulting in large fuel spillage and possible personnel injuries. Aircraft shutoff control systems must be pre-checked using the controls

located on the aircraft. If any part of the shutoff control system fails to shut off the fuel flow, the fueling operation shall be stopped. Similarly, failure of the fuel cell venting system can result in over-pressurization and possible rupture of the fuel cell. The fuel cell vent shall be checked for proper venting during refueling. If the vent is not working properly, refueling operations shall be stopped immediately.

i. After signal from crew chief/aerial observer/taxi director/refueling coordinator/nozzle operator that all pre-operation checks have been performed and the aircraft is prepared to receive fuel, the fueling personnel will start the pumps by turning on the proper switch and engaging the dead man control to start the flow of fuel.

j. Fuel personnel will monitor the hose for kinks or leaks. If a kink or leak occurs, fueling will be suspended immediately. The defect will be corrected before the operation is resumed.

k. After the crew chief/aerial observer/taxi director/refueling coordinator indicates the completion of fueling, the deadman will be released to stop the transfer operation and the pump switch will be turned off.

l. At no time during the conduct of refueling operations will be the hand-held deadman control be blocked open, bypassed, or otherwise inhibited. This defeats the purpose of the device and can lead to a catastrophic accident.

m. Any person observing any unsafe conditions will immediately signal to stop the flow of fuel.

7. Specific Aircraft Type Procedures

a. CH-53 and UH-1 Aircraft

(1) Crew chiefs/aerial observers will direct UH-1 and CH-53 aircraft to the refueling point designated by refueling personnel.

(2) Aircraft are prohibited from passing another aircraft in the pit area unless under the direct control of a designated taxi director.

(3) CH-53 aircraft are prohibited from turning in place.

(4) CH-53 aircraft shall taxi into the fueling area to present their left side to the fueling facility. These aircraft are equipped with a standard North Atlantic Treaty Organization (NATO) fuel fitting and require a D-1 nozzle to be fueled.

(5) CH-53 aircraft equipped with internal auxiliary fuel tanks will station a crewmember inside the aircraft to monitor the internal tanks and vents as necessary.

(6) UH-1 aircraft are authorized to conduct pedal turns under the direction of a taxi director. The pressure refueling port is a standard NATO fuel fitting, requires a D-1 nozzle, and is on the right side of the aircraft.

(7) An aircraft crewman will perform the duties as the fuel nozzle operator for CH-53 and UH-1 aircraft.

(8) When refueling is complete, the crewman serving as taxi director/fuel coordinator/nozzle operator will direct the aircraft out of the pit area.

(9) The air crew, taxi director, and any passengers will board the aircraft at the passenger marshalling area. Aircraft will contact MCAS Beaufort ground control at this point for further instructions.

b. AH-1 Aircraft

(1) Trained and qualified fuel personnel will direct the taxi of AH-1 aircraft.

(2) AH-1 aircraft are authorized to conduct pedal turns under the direction of a taxi director.

(3) Aircraft are prohibited from passing another aircraft in the pit area unless under the direct control of a designated taxi director.

(4) The pressure refueling port is a standard NATO fuel fitting, requires a D-1 nozzle, and is on the right side of the aircraft.

(5) Trained and qualified crew members will perform the duties of the fuel nozzle operator to include conducting the aircraft automatic fuel shut-off tests and fuel cell vent check.

(6) When refueling is complete, fuel personnel will direct the aircraft out of the pit area.

(7) Aircraft will contact MCAS Beaufort ground control at this point for further instructions.

c. MV-22 Aircraft

(1) Crew chiefs/aerial observers will direct MV-22 aircraft to the refueling point designated by refueling personnel, aircraft will have the Nacelles between 75 to 90 degrees depending on wind and gearbox temperatures.

(2) Aircraft are prohibited from passing another aircraft in the pit area unless under the direct control of a designated taxi director.

(3) MV-22 aircraft are prohibited from turning in place.

(4) MV-22 aircraft shall taxi into the fueling area to present the left side of the aircraft to the fueling point. These aircraft are equipped with a standard NATO fuel fitting and require a D-2 nozzle to be fueled.

(5) MV-22 aircraft equipped with internal auxiliary fuel tanks will station a crewmember inside the aircraft to monitor the internal tanks and vents as necessary.

(6) MV-22 pressure refueling port is a standard NATO fuel fitting, requires a D-2 nozzle, and is on the left side of the aircraft.

(7) An MV-22 crewmember will perform the duties as the fuel nozzle operator for the Aircraft.

(8) When refueling is complete, the crewmember serving as taxi director/fuel coordinator/nozzle operator will direct the aircraft out of the pit area.

(9) The air crew taxi director and any passengers will board the aircraft at the passenger marshalling area/VAL ramp. Aircraft will contact MCAS ground control at this point for further instructions.

(10) During refueling operations all personnel should approach the Aircraft from the rear at a 45-degree angle; this provides the widest safety margin for personnel.

d. F-18/F-35 Aircraft

(1) Trained and qualified personnel will direct the taxi of F-18/F-35 aircraft into pit area.

(2) Aircraft are prohibited from passing another aircraft in the pit area unless under the direct control of a designated taxi director.

(3) The pressure refueling port is a standard NATO fuel fitting, requires a D-2 nozzle, and is on the right side of the aircraft.

(4) F-18/F-35 aircraft are normally hot refueled with both engines operating. Never assume the right engine is turned off.

(5) Trained and qualified crew members will perform the duties of the nozzle operator to include conducting the aircraft automatic fuel shut-off tests and fuel cell vent check.

(6) When refueling is complete, trained taxi personnel will direct the aircraft out of the pit area.

(7) Aircraft will contact MCAS ground control at this point for further instructions.

8. Cold Pressure Refueling Operations. Cold fueling operations in the hot pits must be approved by Air Field Operations by calling (843) 228-7301.

a. Personnel Requirements. Pressure fueling without engines operating requires the following minimum personnel.

(1) One aircraft pilot, plane captain or qualified designated substitute to act as refueling coordinator.

(2) One fuel equipment operator.

b. Equipment Requirements

(1) Wheel chocks.

(2) Auxiliary power unit (APU) as required or necessary. The APU will be positioned on the opposite side of the aircraft from the refueling operation. APU's must be connected and started prior to any fueling has begun.

(3) Fire protection equipment shall consist of 150 pound wheeler Halo Tron fire extinguisher per three every aircraft, located in the immediate vicinity of the fueling operation.

(4) Cold pressure refueling in the hot refueling pits requires a tow tractor for movement of the aircraft. The tow tractor can remain connected to the aircraft, but the tow must secure its engine while refueling is occurring.

9. Receiving Fuel Deliveries. Fuel Division personnel shall employ proper accounting procedures to combat fraud or theft and shall take stringent safety precautions to prevent mishaps. The procedures detailed in Appendix C will be followed for unloading commercial tankers.

a. The following procedures shall be implemented when receiving fuel deliveries by commercial tanker trucks or barges.

(1) Determine which tank will be receiving the fuel and that all valves to that tank are open.

(2) Inspect the DD-250 form to ensure that all numbers match and that JP-5 is being delivered.

(3) Attach the grounding cable to the tanker truck/barge, bare metal for grounding.

(4) Inspect the seals on the tanker, ensuring they match the receipt document. Fuel will not be received if seals are missing or broken.

(5) Pull all-level samples from each tank compartment per section 9.2.1.3 of the NAVAIR 00-80T-109.

(6) Attach the receiving hose to the tanker/barge.

(7) Set valves and switches for operation, ensure that Program Logic Controller is set for the right tank.

(8) When cargo is off-loaded, inspect the tank truck/barge to ensure the full cargo has been received.

(9) Drain/strip the receiving hose, disconnect it from the tank truck and store it in its proper place.

(10) Close the receiving valves and secure all electrical switches.

(11) Clean the receiving strainer, if required.

(12) Check quantity received, and note the difference on the DD-250.

(13) When receiving fuel at night, use only approved safety lanterns. Use only approved flashlights that are stamped: "Approved for use with Class 1, Group D products."

10. Delivering Fuel to Refueling Trucks

a. Refueling trucks will remain at least 100 feet from the issue point if the issue point is occupied or otherwise unavailable. Hand brakes shall be set, and the engine turned off.

b. When the issue stand is available, the fueling truck operator shall position his truck at the load rack, the brakes shall be set. All electrical switches turned off unless required to operate the Scully System.

c. The fueling truck driver shall:

(1) Verify the amount of fuel being taken on, equals the amount missing from the truck.

(2) Attach the Scully grounding cable, then attach the bottom load nozzle to the bottom load adapter on the refueling truck.

(3) Aviation Refueling Capability, Assault Craft Unit 5, and six containers must use the by-pass system, because they do not have the required electrical hook ups required by NAV-AIR 00-80T-109.

d. The driver shall reset and verify the meter and make the necessary entries on their paperwork.

e. The driver shall utilize the handheld deadman control. At no time will the hand-held deadman control device be blocked open, bypassed, or otherwise positioned in a manner that would prevent immediate shut-off of the flow of fuel.

f. The normal pressure differential through the filter/separator is between two and three pounds. Pressure differentials of ten or more pounds indicate that the filter elements may be dirty. If the pressure rises, stop the operation, investigate the cause, repair the issue and continue.

g. Upon completion of the operation, the driver will disconnect the nozzle from the bottom load adapter.

h. After all connections on the tank have been closed, the fueling truck operator shall remove all bonding wires and Scully.

i. The issue stand operator will inspect for fuel spills or leaks from the fueling truck. A fueling truck with a leak in any location should not be moved until the proper safety equipment is standing by or a correction has been made. If a leak occurs, follow the appropriate HAZMAT procedures to clean up and/or contain the spill.

j. Prior to parking the truck, the operator will notify the dispatcher of the top gallons and ask if there are more fuel requests.

11. Aircraft Defueling Procedures. Improperly conducted aircraft defueling operations can be very dangerous. In addition, contaminated fuel from aircraft that is re-introduced into the air station fuel system can pose severe safety hazards to personnel and equipment. All defueling procedures must be strictly adhered to. Defueling operations will follow all safety precautions and procedures that apply to refueling operations as well as the following additional procedures.

- a. All Marine and civilian personnel shall complete the statement of understanding (Appendix G) before conducting any refueling/defueling operations to ensure all required training has been completed and documented in record training jackets.
- b. The defuel truck operator will ensure that the product return line (middle hose) is not used for conducting defueling of aircraft. This line will remain chained and locked to prevent usage. This line shall only be utilized for returning fuel back into fuel storage via product recovery tank. When returning fuel back into the system, the operator will coordinate with the duty crew leader to obtain the key to remove the lock and chain for use of the middle hose to return fuel back into the system.
- c. All requests for aircraft defueling services will be accompanied with a fuel sample and proper paperwork for defuel/testing before a defuel truck is authorized to commence defueling operation. If the sample fails, there will be two opportunities for retest otherwise if the sample is suspect or fails, squadrons must contact MCAS Beaufort public works for proper removal of fuel at (843) 228-7527. Note: Public works will not connect to aircraft, fuel must be drained into secondary containment for removal.
- d. Maintenance shall not be conducted on an aircraft undergoing defueling operations.
- e. The defueling operator shall ensure the aircraft is properly located away from all possible ignition sources. If not, defueling must be delayed until the aircraft is moved or the ignition sources eliminated.
- f. Park the defueling truck as far from the aircraft as possible and in a position so that it may be quickly driven away in the event of an emergency. The defueling truck should be parked parallel to or headed away from the wing or any obstructions that may prevent it from being driven away in an emergency.
- g. After parking the defueling truck, set the handbrake and secure all unnecessary lights and electrical equipment.
- h. Confirm the aircraft to be defueled with squadron maintenance personnel.
- i. Confirm with squadron maintenance personnel that all aircraft electrical and electronic equipment is secured and that no repair work is being performed on the aircraft.
- j. The defueling truck operator should re-check to ensure that no ignition sources are within 50 feet of the aircraft before preparing the defueling truck for operations.
- k. The defueling truck operator will ensure the defuel suction mode switch is engaged/selected before connecting ground/bond wires or defuel hose to aircraft to prevent inadvertently pushing fuel into the aircraft.
- l. The defueling truck operator is to ensure that the aircraft and defueling truck are properly bonded using the appropriate bonding cables.
- m. The suction hose nozzle must be in contact with some metal part of the aircraft remote from the fuel tanks to ensure there is no static

differential. The nozzle bonding wire shall also be connected to the aircraft. All of the above steps must be taken before the aircraft fuel tanks or the defueling truck tanks are opened.

n. Extreme caution must be observed to ensure the nozzle tube does not damage the aircraft tank bottom.

o. The aircraft tank fill cap shall be replaced immediately after the fuel has been removed and before removing the cap of any other tank.

p. Defueling personnel will instruct squadron maintenance personnel on defueling procedures, signals, responsibilities, and safety concerns during the defueling operation.

q. Squadron maintenance personnel will signal the defueling truck operator when the aircraft fuel tanks are empty.

r. After all aircraft fuel tanks have been emptied, ensure that all aircraft fill caps have been replaced before any grounding or bonding wires are removed.

s. Following completion of the operation, the defueling truck operator shall ensure that all defueling equipment is secured. The aircraft fuel in the defueling truck shall be disposed of in accordance with instructions from the supervisor of the Fuels Division.

12. Contingency Plans. This plan outlines basic step-by-step procedures for emergencies most frequently encountered in shore-based fueling operations. All personnel in the Fuel Division shall be familiar with this plan. The Fuel Officer shall conduct periodic training as necessary to ensure all personnel remain current and cognizant of this plan. In addition, the FMO shall ensure that copies of this plan are readily accessible in the Fuel Division Office.

13. Alarms. Any and all alarms are grounds for immediate shut down of all operations; this includes shutting off flow of fuel to the hot pits regardless if aircraft are being fueled.

14. Fire in the Fuel Storage Area

a. Notify the Fire Department at 911 and the MCAS Beaufort Crash Fire Rescue Section [extension (843) 228-6416 or (843) 228-7969 and state the exact location and type of fire, i.e. Class A, B, or C].

b. Cease all operations in the area of the fire; secure pumps, valves, and electrical power, where possible, to isolate the area of fire.

c. Fuel personnel will stand by in a safe location and assist the firefighters as directed.

15. Ruptured Fuel Tank

a. Cease all operations in adjacent areas, and secure all pumps, valves, and tanks.

b. Determine the severity of the leak and minimize losses by transferring fuel from the ruptured tank to another storage tank, this will require opening and turning on pump switches manually.

c. Remove any fuel in the dike area by using a portable pump located outside of the dike area. Pump the fuel into waste fuel container or defueling truck.

d. Execute appropriate HAZMAT procedures.

16. Aircraft Crash in the Vicinity of Fuel Storage

a. The fuel operator shall notify ARFF of the exact location and type of fire, if any.

b. Cease all operations in the within 2000 feet of the crash or as directed by the Incident Commander. Close all valves and turn off all electrical power to the crash area.

c. Remove all personnel to a safe distance.

17. Aircraft Crash Near the Refueling Truck Parking Area

a. The fuel operator shall notify Crash Fire Rescue at (843) 228-6416 or (843) 228-7969.

b. Attempt to move all re-fueling trucks to normally at least 2000 feet or as directed by the Incident Commander.

18. Refueling Truck Delivery Tank Fuel Leak

a. The operator shall secure all electrical switches not needed for operation.

b. The operator shall secure all internal valves.

c. For a small leak which evaporates, the operator shall proceed to the refueling truck parking lot for repairs.

d. Execute appropriate HAZMAT procedures.

19. Fueling Truck Overflow at the Fill Stand

a. The fuel storage operator shall turn off the pump switch, close the fueling valve, and call Crash Fire Rescue if the spill is large enough to warrant a stand-by.

b. The truck operator shall ensure all switches are off and valves are closed on the truck. Stand by with the fill stand fire bottle until Crash Fire Rescue arrives.

c. Call the Air Station Natural Resources and Environmental Affairs Office (NREAO) for a waste truck to salvage any amount of fuel in the spill tank. After removing all fuel in the spill tank, the storage operator shall close the spill tank valve and continue with spill clean-up plan.

d. The dispatcher shall send a defuel truck to remove the excess fuel from the truck that overflowed before it is moved.

20. Spill Not Within Containment System Capability. When a spill occurs in an area not serviced by a spill containment, emergency action will be initiated utilizing the Spill Emergency Action Plan.

21. Fuel Handling Safety. The handling or transfer of fuel poses the greatest danger associated with aviation fuels. Failure to comply with the established procedures and safety precautions could jeopardize the total fueling operation, resulting in loss of life, injury, and/or destruction of valuable property. Frequent and detailed training will instill respect for the dangers associated with fuel handling and will give personnel confidence that the established procedures will mitigate the dangers involved. Vigilant supervision will prevent personnel from becoming over confident or complacent.

22. Responsibility. Safety is an individual and a command responsibility. Report any unsafe conditions, warn others who may be endangered, report any injury or evidence of impaired health, and in the event of an emergency or hazardous condition, exercise reasonable caution appropriate to the situation.

23. Fire and Explosion

a. Three factors are necessary for combustion of fuel: (1) fuel in the form of vapor; (2) oxygen from the air; and (3) sufficient heat to raise material to the flash point. The removal of any one of the factors will prevent combustion. Since all refueling or defueling operations contain two essential factors, fuel and air, the elimination of the source of ignition is the most effective way to prevent fire. There are many potential ignition sources, but the most likely during refueling and defueling operations include the following:

- (1) Sparks generated by static electricity.
- (2) Operating aircraft engines.
- (3) Operating vehicles or other internal combustion engines.
- (4) Arcing of electrical circuits.
- (5) Open flame.

(6) Energy from operating high frequency radar equipment mounted in aircraft.

b. To extinguish a fire, one of the three factors (fuel, air, and heat) must be removed. This may be accomplished by one of the following principles:

(1) Starving. Starving a fire is accomplished by removing the fuel from the fire. In some instances, this may be accomplished by shutting off the flow of fuel.

(2) Smothering. If combustion-supporting oxygen is removed, the fire is extinguished by smothering. The smothering principle is used as the most effective means to fight fuel fires.

(3) Cooling. If heat is removed from a fire, the fire is extinguished by cooling. In ordinary fires, this usually is done by the

application of water. However, water is not used in fighting fuel fires because water striking the surface of burning fuel will disburse the fuel and spread the fire.

24. General Safety Precautions. The fuel operator is responsible for proper operation of the fuel equipment and shall ensure that no fuel is transferred until all prescribed checks and safety precautions have been met. Safety precautions are outlined as follows.

a. Only authorized personnel will be permitted in aircraft refueling areas.

b. All personnel shall be trained and qualified in accordance with existing aircraft refueling instructions and safety precautions and PQS.

c. Personnel fueling fixed wing aircraft shall be continually warned of the hazards of jet engine intake and exhausts.

d. Personnel fueling rotary wing aircraft shall be continually warned of the hazards of moving/spinning rotors. Fueling personnel will be familiar with the specific aircraft danger zones depicted in Appendix F.

e. All personnel in the fueling areas must be alert to prevent Foreign Object Debris by checking pockets and policing the area to ensure loose gear will not imperil the operation.

f. All personnel must be at their stations prior to the aircraft entering the fueling lane or commencement of any fueling operation. Aircraft will not enter the fueling lane during hot refueling operations until required ground personnel are present and safety checks are accomplished.

g. Aircraft with hot brakes shall not enter a rapid fueling area.

h. The pilot shall maintain communications with ground control during hot refueling operations to report any emergency. The pilot shall notify ground control immediately of any evidence or suspicion of fire. Fuel personnel will notify the MCAS Beaufort Crash Fire Rescue Section at extensions (843) 228-6416 or (843) 228-7969.

i. Sound attenuating headgear and earplugs will be worn by all personnel involved while hot fueling is accomplished.

j. Shoes with exposed nails, metal sole plates, or hobnails will not be worn.

k. "Non-static" producing clothing such as cotton shall be worn by fueling personnel. Long sleeved clothing will be worn, and sleeves will be rolled down.

l. Refueling will not begin until all required personnel and safety measures are in place.

m. Metal objects, such as knives, keys, or other objects which might produce sparks will not be carried or worn in fueling areas.

n. Hats will not be worn in fuel pits/rapid fueling areas.

- o. Exhaust piping or mobile equipment will be inspected daily to ensure holes, cracks, or breaks do not exist.
- p. All grounding and bonding equipment will be kept clean, unpainted, and in good condition at all times.
- q. The quick-disconnect coupling assembly shall be inspected before each use to determine if it is securely attached to the hose and the refueling nozzle and is free of any leaks.
- r. Refueling equipment operators will operate the deadman control device by hand and release it in the event of an emergency. The deadman controls will not be tampered with or held in the "On" position by mechanical means.
- s. Aircraft fuel vents shall be monitored constantly.
- t. The fueling coordinator shall stand where he can be seen by the pilot, nozzle operator, and the refueling equipment operator during the entire fueling operation.
- u. Fuel handling operations will not begin until all equipment is properly grounded or bonded.
- v. Utmost care will be taken to prevent the kinking of fuel hoses.
- w. There will be no smoking or vaping in the vicinity of a refueling or defueling truck, or within 50 feet of fueling operations.
- x. Open fires, matches, cigarette lighters, oil lanterns, or similar open flames will not be permitted within 50 feet of fuel handling operations.
- y. No repair work on fueling equipment will be performed during fuel handling operations.
- z. Maintenance or mechanical work on aircraft will not be permitted during refueling operations or in the fuel pits.
- aa. Only lights approved by proper authority (non-sparking, spark-arresting, safety-type) for use in hazardous locations will be used.
- ab. Fueling operations will not be conducted while lightning within five miles (L-5). L-5 is an electrical activity within five miles, as issued by Station Weather via telephone, the Airfield Hazards Notification Light System, and/or the base loud system.
- ac. All aircraft electronic equipment not required for refueling operations shall be secured with the exception of necessary radio equipment to maintain communications with the controlling agency to report emergencies. F-35 external lighting located under the forward portion of the aircraft do not need to be turned off since they are non-arcing or non-spark producing.
- ad. Heaters, welding torches, or blow torches will not be used within 50 feet of fuel handling operations.
- ae. Fuel handling operations will not be performed within 300 feet of active radar equipment.

af. All internal combustion engines operated within 50 feet of fuel handling operations will be equipped with spark-arresting mufflers, except authorized maintenance vehicles.

ag. Unless authorized by proper authority, fuel pits shall be adequately lighted when refueling is accomplished during hours of darkness. Only approved flashlights will be used for night refueling operations.

ah. Aircraft refueling/defueling or other fuel handling operations will not be conducted in hangars or confined areas.

ai. Aircraft shall not be gravity fueled with engines running in accordance with reference (a).

aj. Keep all fuel containers, such as aircraft fuel tanks, closed except when necessary to open for actual operations.

ak. Individual hot pits are meant solely for the purpose of refueling aircraft and will not be used as a taxiway shortcut to parking apron or to exit the taxiway.

al. At no time will an aircraft be hot refueled with a mobile refueling truck in accordance with reference (a).

am. If a fire occurs, fueling shall be stopped immediately and Aircraft Rescue and Firefighting (ARFF) will be notified at extensions (843) 228-6416 or (843) 228-7969. NOTE: If able, contact MCAS Beaufort ground controllers via frequency modulated radio immediately and advise them of the situation. Air Traffic Control will activate the Crash Phone to notify ARFF and redirect taxiing aircraft away from the area.

an. When a small spill occurs, fueling shall be stopped until the spill is cleaned up. A small spill is defined as any spill that causes a wet surface less than six feet in diameter.

ao. When a large spill occurs, fueling shall be stopped, the aircraft engine(s) shut down, and MCAS Beaufort ARFF notified at extension (843) 228-6416 or (843) 228-7969. A large spill is defined as any spill that causes a wet surface more than six feet in diameter. (Refer to paragraph 5011 for spill emergency action plan).

ap. Aircraft shall be removed from the fueling areas immediately after fueling is completed. Pre-flight tests will not be conducted until aircraft has cleared the fueling area.

aq. Liquid Oxygen (LOX) operations or LOX equipment will not be located within 100 feet of fuel operations.

ar. Aircraft are prohibited from restarting engines while in the hot pits as per reference (a).

25. Avoiding Health Hazards. The following precautions will help to mitigate the health risks associated with fuel handling operations.

a. Avoid entering enclosed areas where fuel vapors are present.

b. If it becomes necessary to enter a confined area where fuel vapors may be present, use a blower-type mask or positive pressure hose mask, boots and gloves which may be obtained from the MCAS Beaufort CFR Section.

c. When necessary to remain in an area where a large spill has occurred, stay on the upwind side of the spill.

d. When conducting fuel handling operations and the formation of vapors is unavoidable, stay on the upwind side.

e. Never enter a tank which has contained fuel until all appropriate safety precautions have been followed in accordance with NAVFAC MO-230 (Maintenance and Operation of Petroleum Fuel Facilities) and then only when competent supervision is present. The buddy system will be employed under these circumstances.

f. If a feeling of dizziness or nausea occurs, stop the fuel handling operation and move to fresh air immediately.

g. Remove fuel-soaked clothing or shoes at once.

h. Avoid skin contact with liquid fuels. If fuel contacts the skin, wash with soap and water immediately.

CHAPTER 5

Maintenance

1. General. The objective of the maintenance program is to optimize the use of manpower, material, facilities, and financial resources the references to maintain the MCAS Beaufort's fuel delivery systems and facilities. Maintenance actions can be categorized as scheduled/preventative or unscheduled. Scheduled, or preventative, maintenance actions are those actions that are normally performed at periodic intervals to prevent deterioration or wear of critical components to the point of failure. Unscheduled maintenance actions are those actions taken to fix a component or system that has failed, to upgrade an existing system to comply with new rules and regulations or to take advantage of technological advances. The intent is to establish an aggressive preventive maintenance program with smart scheduled maintenance actions to prevent catastrophic failures in order to eliminate unscheduled down time of the MCAS Beaufort's fuel delivery system. Attention to detail by all personnel is the cornerstone of a successful preventative maintenance program. It is essential that fuel handling personnel operate all equipment properly and in accordance with applicable technical manuals, instructions and regulations. Personnel must be extra vigilant and report any unusual conditions at once to the immediate supervisor.

2. Types of Maintenance

a. Breakdown or emergency maintenance is performed when equipment breaks, and immediate corrective action is required to restore it to operating condition. A breakdown is an unscheduled interruption of service and can be the cause of spills, leaks, fires, or damage to other equipment. Some breakdowns are unavoidable, but most can be avoided through preventive measures.

b. Operator Maintenance (OM) is performed by equipment operators as part of regular periodic inspections and includes cleaning, lubrication, minor adjustments and repair of fueling equipment.

c. Preventive Maintenance (PM) is a program of recurrent or scheduled work designed to preserve or maintain equipment, apparatus or facilities in good working condition. Detailed accounting of timelines for recurring maintenance requirements are maintained and used to initiate job orders for preventative maintenance. In addition, a viable PM program incorporates vigorous inspections included in OM and a complementary reporting system to initiate specific job orders for corrective maintenance as necessary or required.

d. Corrective maintenance is performed as required. It can either be as a result of breakdown or it can be planned. Some corrective maintenance may be performed by fuel personnel or the local Public Works Department. Most corrective maintenance is DLA funded through the Army Corps of Engineers Recurring Maintenance and Minor Repair Program.

e. Programmed maintenance for major replacements, alterations or additions stemming from changes in operational requirements, safety or environmental considerations, or advances in the state-of-the-art of fuel handling, usually entail the long term development of plans, budgets,

authorization of funds, procurement of materials, and award of contracts. Programmed maintenance should be well-coordinated with the Public Works Department, MCAS Beaufort, and outside agencies as necessary or appropriate.

3. Performance of Maintenance

a. Fuel equipment operators constitute the front lines in maintaining MCAS Beaufort's fuel delivery system. They are the eyes and ears of the Fuel Division and their action, or inaction, can be the difference between maintaining a fully operational system and, perhaps, facilitating a catastrophic failure. Below is a list of smart guidelines for the fuel equipment operators to follow:

- (1) Listen to operating machinery for unusual sounds.
- (2) Open and close valves slowly except in case of emergency.
- (3) Lubricate all equipment regularly.
- (4) Feel bearings for overheating from misalignment or lack of lubrication.
- (5) Never operate a pump without liquid in the valve.
- (6) When a discrepancy is first noticed, make repairs and adjustments promptly. Quickly repair small but significant defects, such as leaking glands, loose couplings, or broken bonding cables.
- (7) Use only designated hoses, gaskets, greases, and equipment.
- (8) Do not kink or allow sharp bends in hoses during handling.
- (9) Prevent excessive dragging of hoses.
- (10) Never drop or drag nozzles on the pavement or ground. Never throw hoses and nozzles from aircraft.
- (11) Keep machinery, free of dirt and corrosion.
- (12) Keep all equipment and premises clean and neat.
- (13) Clean up oil/fuel spills quickly. Keep sources of ignition away and prevent vapors from entering buildings.
- (14) Never hesitate to call the Fire Department or other assistance in the event of large fuel spills or if other potentially hazardous situations exist.
- (15) Refueling trucks should never be pushed or pulled by other vehicles except by refueling truck maintenance personnel.
- (16) Keep complete and accurate maintenance records.

b. Operator maintenance includes preventive maintenance performed by equipment operators and includes, but is not limited to, some of the following:

- (1) Lubricating valves and other equipment.
- (2) Adjusting pump glands.
- (3) Performing continuity checks and repairing bonding and grounding cables.
- (4) Changing gaskets.
- (5) Cleaning line strainers.
- (6) Changing filter elements.
- (7) Cleaning and testing separator elements.
- (8) Testing pipelines and transfer systems.
- (9) Bench checking, adjusting, and repairing nozzle assemblies and couplings.
- (10) Checking and testing hoses.
- (11) Calibrating meters and gauges.
- (12) Checking and cleaning pumping areas.
- (13) Checking vents.
- (14) Painting all exposed surfaces, such as valves, railings, and pipelines.
- (15) Cutting grass in hazardous areas.
- (16) Maintaining cleanliness of buildings, facilities, equipment, and grounds.
- (17) Maintaining historical records.
- (18) Replacing equipment components or complete assemblies.

c. Minor corrective maintenance is performed within the capability of Fuels Division personnel and available tools. Minor corrective maintenance items include, but are not limited to, the following:

(1) Lubrication of plug valves, valve shafts on rising stem valves, and the bottom loading stations and component parts.

(2) Minor corrective mechanical repair or replacement of fueling nozzles, hose gauges, meters, filter/separators, monitor elements, swivels, dead-man switches, and all other equipment associated with the receiving, issuing, storing or transferring of petroleum, oil, lubricants products with the exception of electrical equipment and the replacement or repair of mechanical pump seals.

d. The following additional preventative and minor corrective maintenance is performed by fuel equipment operators:

(1) Lubricate valves monthly. Plug valves shall be lubricated in the open position. Repack valves as needed.

(2) Filter/separator elements will be changed at 20 pounds per square inch (psi) differential pressure or 36 months, whichever occurs first.

(3) Bonding cables shall be inspected daily and replaced as needed.

(4) Aircraft fueling nozzles will be inspected daily and repaired or replaced as needed.

(5) Inspect meters daily and calibrate semi-annually, and repair or replace as needed.

e. Major repair is any required corrective repairs beyond the capability of Fuel Division personnel. The recurring maintenance contractor will provide parts and labor required to complete any item of major maintenance.

4. Inspections. The formal inspection program is designed to complement the PM program. Often a second set of eyes will uncover an otherwise overlooked discrepancy enhancing the overall effectiveness of the PM program. The formal inspection program includes inspections of equipment and facilities prior to use, inspections prior to major operation, seasonal or special inspections and routine inspections and checklists.

a. Inspections Prior to Use. New construction, facilities that have been out of service, equipment which has been broken down, and facilities and equipment upon which corrective or programmed maintenance has been performed, should be inspected prior to acceptance or reactivation. Special attention should be given to rated capacities of hardware, pipeline sizing, drainage, accessibility, emergency controls, safety, and fire prevention features.

b. Inspections Prior to Major Operations. Inspections should be conducted prior to starting major operations such as receipt of a product by pipeline and transfer of a product between large storage tanks. Inspections should cover equipment performance, pipeline integrity, valve positioning, tank arrangement and personnel manning following any storm, flood, fire, earthquake, and lightning strike, suspected act of sabotage or vandalism. Special inspections are required when abnormal variations for performance, flow rates, pressures, or capacities are experienced or noted by operators. Special inspections, performed by personnel from other departments, may be conducted upon request or as required on electrical equipment, communications equipment, buildings, security fences, roadways, and fire prevention equipment.

c. Routine Inspections and Checklists. Each time fuel personnel operate a pump, open a valve, start an engine, drive a refueling truck, service an aircraft or perform any other assigned duties, valuable routine inspection checks are concurrently performed. Checklists completed at established intervals afford the additional advantage of supervisor review and/or historical comparisons.

5. Aircraft Fueling Equipment Checklist

a. The fuel distribution worker will ensure that all items on the daily/weekly/monthly checklist are performed. Complete daily the checklist

for all issue points, load stands, and refueling truck sections prior to beginning the daily operations.

b. Record any discrepancies noted during the inspection in the comments section of the checklist and notify the section leader/senior noncommissioned officer (NCO) immediately. Section leaders/NCOs will review the checklist, take immediate action as necessary and forward it to the SNCOIC for action. The weekend checklist will be forwarded with the Monday morning checklist. Operational maintenance personnel at MCAS Beaufort will maintain a file of completed checklists.

c. The NCOIC and the FMO will review the checklist and take the required action.

d. Complete the daily checklist once every 24 hours for all aircraft fuel delivery equipment in continuous use. However, the inspection is not to interfere with aircraft servicing.

(1) Fire Extinguishers. Report discrepancies immediately and do not use the equipment until repairs are made.

(2) Nozzles. Inspect nozzles for damage, check hose seal for cracks or nicks, outer shell for tightness to top connection, handles for tightness, valve handle and sequence rod for excessive wear and sleeve adjustment. Inspect nozzle screen only as required.

(3) Hoses. Inspect the entire length of hoses with special emphasis on the area close to the nozzle. Press around the circumference of the hose to test for soft spots. Be alert for blisters and wet spots. Replace any hose where hose reinforcement material has exposed fabric. This situation provides a source for water to enter, migrate and ultimately rot the fabric. Inspect the area around the hose end couplings for slippage. This is evidenced by misalignment of hose end couplings and/or scored or exposed areas. Do not pressure test the hose above 100 psi or 1.5 times normal pressure because this may actually weaken the hose and could subsequently cause a rupture during aircraft fueling operations.

(4) Cables. Bonding cables shall be in place, in good condition, clean, and securely attached.

(5) Leaks. Carefully inspect tanks, piping, valves, pumps, meters, couplings, and if leaks are found, record the location under remarks and deadline the equipment.

(6) Emergency Valves. Emergency valve controls shall be checked for condition and ease of operation. Keep emergency valves in the closed position at all times except when delivering fuel or circulating the product.

(7) Filter/Separator Drain. Open the filter/separator manual drain valve and drain off all water. After all the water has been drained, draw about one pint of fuel into a clean container and visually inspect for water. Repeat as necessary.

(8) Circulation of Product. Always perform circulation through the recirculation receptacle at standard revolutions per minute (RPM) settings where flow rates can be measured and differential pressure readings can be obtained.

(9) Nozzle Sample. Draw the sample and visually check its cleanliness, brightness, and color. Swirl the fuel to form a vortex and check for sediment and free water on the bottom just below the vortex. Check the brightness or clarity under good light conditions. The sample should be free of any emulsion, cloud, or haze, run Combat Center Fire Department (CCFD) test if suspicious.

(10) Pressure Differential Readings. Under prearranged standard flow conditions, record a pressure drop across the filter/separator and enter the differential psi calculation under remarks on the checklist.

6. Filter/Separator Element Change. The life span of filter elements in refueling equipment or at truck-fill stands is three years unless an earlier change is required due to filter elements reaching 20 psi.

7. Records and Reports

a. Observation of abnormal operating conditions is vital to a good PM program. All fuel personnel will report any fuel delivery equipment abnormal operating occurrences or any occurrences of the equipment operating outside normal established parameters.

b. The FMO shall keep a file of all equipment failures and resultant down time.

c. The FMO shall maintain data on the mean time to failure for all dynamic components. This data will be used to aide in the quality control of the fuel delivery equipment.

d. The FMO shall ensure that all other required reports and records are maintained in accordance with the references as appropriate.

CHAPTER 6

Records and Documentation Retention

1. General. The objective of the records and documentation retention program is to retain on site all fuels sales/issues receipts and associated fuels inventory documents while preventing records deterioration through the deterioration. The intent is to establish and maintain six years and three months of records on site but to make every effort to pursue offsite records retention and disposition according to DLA Energy P-3. Attention to detail by all personnel involved in this process is the cornerstone of a successful records and documentation retention program. It is essential that all personnel handling sales receipts or other documents make every effort to prevent erroneous, invalid, incorrectly completed, or duplicate receipts leading to an inaccurate sales ledger and fuels accounting by product. Personnel must be vigilant and verify all sales receipts, fuel issue tally sheets, and all other documents prior to submitting to the fuels accountant and to report any unusual conditions at once to the immediate supervisor.

2. Records Retention

a. All records associated with inventory, receipts, sales issues, shipments, and management of the DWCF energy products shall be maintained in accordance with DoD Directive 5015.2 "DoD Records Management Program." All DFSPs are required to maintain records locally from the current fiscal year, plus the two previous fiscal years. DWCF energy records that have retention periods longer than three years may continue to be stored locally at the DFSP facility if adequate climate-controlled storage is available.

(1) Sales/Credits Documentation Retention. All sales/credits receipts or associated paperwork shall be maintained for a period of ten years.

(2) Physical Inventory Records. Maintain these records for a period of three years (current year plus two fiscal years).

(3) Military Construction (MILCON) Project Data. These documents are kept on file until facility is no longer in service or is demolished or documentation is no longer needed.

(4) Quality or Quantity Discrepancy Reports. These documents are kept on file for three years (current year plus two fiscal years).

(5) For all other documents or forms retention time periods, refer to DLA Energy P-3 Appendix 1.

3. Offsite Records Retention

a. If onsite storage capacity is insufficient to properly safeguard all documentation or if the storage area is not environmentally controlled such as temperature and humidity, then the DFSP may pursue offsite records retention. DFSP must coordinate transfer of records to the appropriate regional area Federal Records Center (FRC).

(1) Records Storage at an FRC. The Responsible Officers (RO) or Technical Manuals may contact the DLA Energy Records Officer by electronic mail at descrecords@dla.mil to request transfer of inactive Defense Working

Capital Fund (DWCF) energy transaction records to an FRC. The Records Officer will provide a transfer number to identify the DFSP records to be stored. The RO or TM shall then prepare an SF 135 Records Transmittal and Receipt and present it to the DLA Energy Records Officer for review/approval before shipping records to the FRC.

(2) Shipping boxes can be obtained through purchase through the supply system and are available for pick up through SERVMART at the expense of the section.

(3) Upon approval from the Records Officer, the DFSP shall ship records to the nearest regional FRC, as determined by the Records Officer, who will also provide the DFSP with the proper address. Place a copy of the SF 135 in the first box of each records transfer when shipped. Contact the DLA Energy Records Officer at descrecords@dla.mil for detailed packing and shipping instructions. For records retrieval, contact DLA-E Records Officer for instruction.

(4) Disposition of Records Stored at FRCs. The respective FRC will notify the DLA-E Records Officer approximately 90 days prior to records disposition/destruction. The DFSP is allowed 20 working days to either concur with the records destruction or provide written justification to the DLA-E Records Officer for extension of FRC storage.

APPENDIX A

Opening Procedures

1. The midnight crew will serve as the opening crew for the next business day. On occasions that a duty crew will be needed for the weekend, personnel will be designated by the Operations Chief or a Crew Leader prior to closing for the work week, and will be provided with the weekend airfield hours.
2. The above mentioned personnel will have one Marine report to Building 601 prior to the start of the shift to sign out the shop keys from the Station Duty Officer. The remainder of the crews will meet at building 1007 (B Farm office) no later than 2230 on Sunday, or one hour prior to the flight line opening.
3. Upon arrival to B Farm, the crew will open all buildings. They will retrieve sample bottles from building 1226 (Fuels Laboratory), preventative maintenance paperwork from building 2072 (Dispatch), and a radio from the office before departing to either the east or west pits.
4. All pit lanes will have a minimum of 2,500 gallons recirculated before samples are pulled, also receive checks and service. Three samples bottles will be filled from each issue point, two will be tested for sediment and water via the CCFD and DFWD, the other will be maintained for 24 hours as a visual sample. The following day of business this will be repeated for all duty pits. Duty pits will alternate between east (2-4A) and west (5A-7) according to systems status, at a minimum of once a month or as operations allow.
5. After the pit samples are pulled and the system checks and services have been completed the crew will return to B Farm to perform the same steps to the duty refueler truck(s). Afterwards, they will place the paperwork in the dispatch office or on the truck clipboards accordingly and place the samples in the laboratory to be tested. All discrepancies from 0700-1600 Monday through Friday will be addressed to the civilian maintenance personnel. Outside of these hours, the issues will be brought to the Platoon Sergeant or Operations Chief as needed.

APPENDIX B

Closing Procedures

1. The Crew Leader shall ensure that all closing procedures are in place before they secure the fuel areas for the week/weekend.
2. All tanks will be gauged via the ATG sheet and Automated Fuel Handling Equipment computer system no earlier than 2300 and no later than 0000, all trucks will be manually gauged and annotated on the truck gauging sheet. These sheets will be hung on the read board inside dispatch.
3. The Pit noncommissioned officer/crew leader will inspect the hot pit lanes to ensure the proper valves are opened or closed to avoid leaks and over pressurizing the system, and that all switches are in the off position.
4. The crew leader will ensure all tally sheets and dispatch logs are placed in the appropriate bins inside dispatch.
5. The Crew Leader or an individual designated by them will secure the gates and turn the keys into the Station Duty Officer located in building 601.

APPENDIX C

Tanker Unloading Procedures

1. Preparations for Receiving Tankers or Barges

a. The Fuels Officer shall have direct responsibility for tanker receipt operations and will ensure that all guidelines established in references (a), (f), (g), and Fuels Operations Manual are strictly adhered to. The Fuels Officer will notify Fuels Storage and Fuels Operations of tanker/barge name, arrival date, arrival time, product type, and quantity.

b. Prior to arrival, the Fuels Officer via the Operations Chief will post a written Operations Order (OPORD) designating the following:

- (1) OPORD number.
- (2) Cargo number.
- (3) Estimated time of arrival, start discharge, stop discharge, and departure.
- (4) Product type and quantity.
- (5) Pier preparation and inspection.
- (6) Pipelines to be used.
- (7) Number of load arms to be connected.
- (8) Tanks into which cargo are to be received.
- (9) Pump house and pumps to be operated.
- (10) Number of fuel samples and location where samples are to be delivered.
- (11) Fuel tests required.
- (12) Communications to be used.
- (13) Personnel assignment.
- (14) Barge Operation Supervisor.
- (15) Special instructions and procedure requirements.

c. The Fuels Operations Chief will provide personnel assignments for the tanker evolution. Prior to arrival, the Fuels Operations Chief will post operations order and designate personnel on duty, locations, and shift hours.

d. The Fuels Operations Chief will ensure the Barge Order is prepared and submitted to the Provost Marshal, South Carolina Department of Health and Environmental Control, Fire Department, and the NREAO. This document includes a date, time, and description of vessels entering the restricted waterway.

APPENDIX C

e. Prior to tanker arrival, the Operations Supervisor will ensure all required pipelines are packed and all valves required for receipt evolution are positioned properly.

f. Operations Supervisor will maintain a Tanker Events Log to include at a minimum:

- (1) Names of the Officer in Charge and Barge Operation Supervisor.
- (2) Vessel arrival time.
- (3) Safety briefing.
- (4) First line.
- (5) Name of vessel moored.
- (6) Samples taken to lab.
- (7) Deploy oil spill containment boom.
- (8) Load arms connected.
- (9) Tanker samples and documents cleared and ready to discharge.
- (10) Commence pumping.
- (11) Hourly pier and pipeline inspections.
- (12) Hourly discharge rates report.
- (13) Secure pumping.
- (14) Load arms removed.
- (15) Retrieve oil spill containment boom.
- (16) Close out documents completed.
- (17) Last line, tanker underway.

g. When tanker is securely moored to the fuel pier a boarding ladder will be secured to the tanker. No Fuels Division personnel shall be permitted to board the tanker until quarantine clearance is granted by the ship's representative.

h. Barge Operation Supervisor will notify the support personnel to deploy the oil spill containment boom. At minimum four handlers and a supervisor are required to deploy oil spill containment boom. Life jackets are the only mandatory personnel protective equipment required for all handlers.

i. The Operations Supervisor will instruct the barges representative of all local safety and anti-terrorism and force protection procedures currently in effect during the off-loading evolution.

APPENDIX C

j. Barge personnel will connect the bonding cable from the pier to the tanker.

k. Fuel Pier personnel will operate marine loading arms and assist tanker personnel in connecting load arms to tanker manifold.

l. Fuel Pier personnel will be responsible for ensuring the load arms from pier to tanker manifold are properly connected and valves are positioned correctly.

m. The Barge Operation Supervisor will ensure ship tanks are gauged for volume, water, and temperature. Seals on cargo tanks will be inspected and seal numbers compared with those on the DD Form 250-1. Any broken, missing, or different numbered seals will be reported to the Fuels Officer prior to offload commencement. The quantity will be determined by factoring the quantity received by the receipt meter to 60 degrees Fahrenheit and comparing to the quantity loaded on the DD Form 250-1. Any variance under/over 0.005% shall be reported to the Fuels Officer.

n. The Barge Operation Supervisor will complete the following documents with the tanker's Chief Officer:

- (1) Declaration of inspection.
- (2) Tanker and barge discharge report.
- (3) Notice of readiness.
- (4) Tanker ullage sheet.
- (5) DD Form 250-1.

o. The Barge Operation Supervisor will determine estimated time required to perform discharge from start to finish.

p. Laboratory personnel shall pull one all-level-sample from each cargo tank from which the product will be discharged. A composite of all samples shall be tested as follows:

- (1) Color and appearance.
- (2) FSII.
- (3) Flash point.
- (4) API gravity.
- (5) Particulates by CCFD.
- (6) Free water by DFWD.

q. Laboratory personnel will ensure fuel chemical tests are performed to comply with reference (a) prior to commencement of the discharge evolution.

APPENDIX C

(1) If product does not meet specification limits, all cargo tanks will be re-sampled and individually tested to determine the source of the off-specification fuel.

(2) Tanks off specification will be segregated. Naval Supply Systems Command (NAVSUP) Jacksonville Quantem Aviation Services (QAS) will be notified immediately. Tanks shall remain segregated until NAVSUP FLSC Jacksonville QAS provides disposition direction of the off specification fuel.

r. Laboratory personnel shall notify the Barge Operation Supervisor when the sample results meet specifications.

2. Tanker and Barge Discharge Operations

a. The Barge Operation Supervisor will notify the tanker's Chief Mate or senior officer when the samples are cleared and authorized to begin the discharge operation.

b. The tanker's Chief Mate or senior officer will begin discharging product at minimum operating pressure.

(1) Pier personnel will inspect load arms and manifold on tanker for leaks.

(2) Fuels Storage will notify Barge Operation Supervisor that the shore tank is receiving product.

(3) Barge Operation Supervisor will notify tanker's Chief Officer that the shore tank is receiving and to increase pump discharge pressure to a maximum of 110 PSI pier side.

(4) Barge Operation supervisor will notify the dispatcher, at (843) 228-6823, that fuel discharge is commenced.

c. Pressure gauges will be closely monitored and any sharp drop or rise in pressure will be reported to the Barge Operation Supervisor for determination as whether or not to halt the operation and identify corrective actions to be taken.

d. The pipelines will be patrolled hourly throughout the entire discharge operation. All leaks will be reported to Barge Operation Supervisor to determine action to be taken. The Pier Fueling Station area will be inspected at a minimum every 30 minutes for presence of fuel or sheen in the water.

e. Hourly gauge readings will be conducted on the receipt tanks and results reported to the Operations Supervisor.

f. During the estimated final 30 minutes of receipt, radio or telephone communication will be established between the Pier and Receipt Tank personnel until complete shutdown of the operation is determined.

(1) If a full tanker discharge occur, the tanker Chief Mate or senior officer will provide notification of the completion of ship discharge.

APPENDIX C

(2) For a partial discharge, the Fuels Division representative at the receipt tank will provide the notification.

g. Upon completion of tanker discharge.

(1) Load arms will be stripped and drained prior to being disconnected from tanker manifold.

(2) All valves will be secured in their proper positions.

h. The Barge Operation Supervisor will ensure all tanker tanks to be off-loaded are empty.

(1) Dry tank certificate will be completed.

(2) Closing tanker ullage sheet.

i. Barge Operation Supervisor will notify the support personnel to retrieve the oil spill containment boom. At minimum four handlers and a supervisor are required to retrieve the oil spill containment boom. Life jackets are the only mandatory personnel protective equipment required for all handlers.

j. Secure fuel pier and gate.

k. Turn in a receipt paperwork to the FMO or Fuels Division Supply Technician.

APPENDIX D

REFUELING EQUIPMENT CHECKLIST

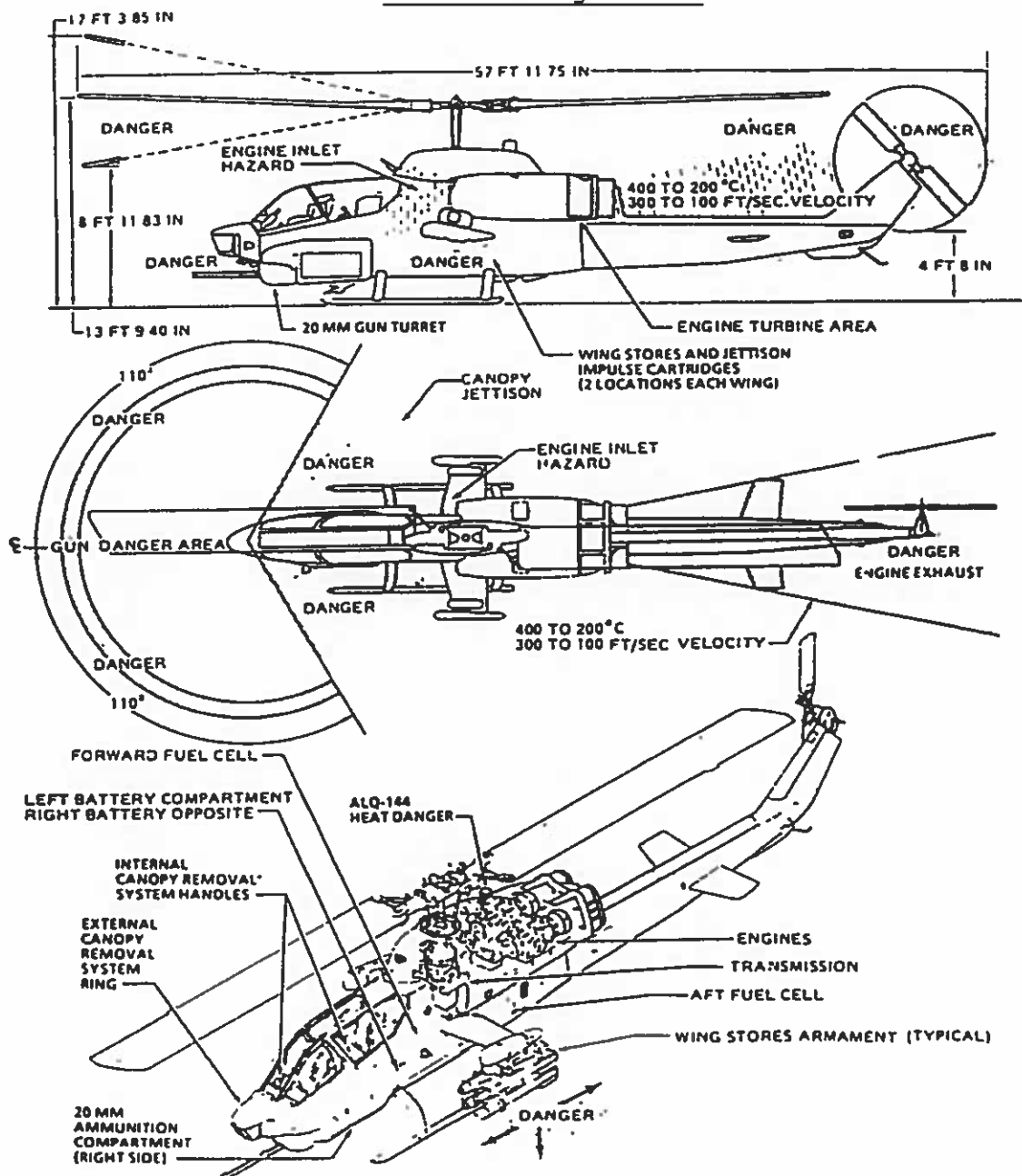
Figure 13-1. Daily Aircraft Refueling Equipment Checklist

Vehicle or Hydrant #		Meter Reading		Product	Date_____Time_____
#	Item (See paragraph 13.3.3.1)	OK	Adjust	Repair	REMARKS
1	Fire extinguishers (in place, filed, operable, current inspection tag)				
2	Nozzle stowage dust cover and bonding cable on gravity nozzle				
3	Hook up nozzle to bottom loading adapter or recirculation fitting, and check entire nozzle assembly				
4	Hose: Check entire length for cuts, cracks abrasions, and fuel saturation				
5	Static bonding cable, plug/clip				
6	Leaks (tank, piping, valves, pumps, etc.)				
7	Emergency valves (operation of controls)				
8	Cleanliness				
9	No FOD in tires				
10	Battery, radiator, gas, and oil levels				
11	Lights, reflectors, rearview mirrors				
12	Drain all low point drains (tank, filter/separator, relaxation chamber)				
13	Exhaust pipe and spark arresting muffler (leaks, cracks, or noise)				
14	Emergency brakes				
15	Drain water from air tanks				
16	Fill hose with full pump pressure and check entire system for leaks				
17	Open nozzle valve, check nose seal for leaks, circulate fuel, and check flow rate				
18	Pump (noise, overheating, vibration)				
19	Draw nozzle sample, visually inspect for water, solids and color and record results	Water _____ Sediment/Particulates _____ Color _____			
20	Take samples during recirculation and test using CFD and FWD	Sediment/Particulates by CFD _____ Water by FWD _____			
21	Record pressure differential reading from filter/separator	Pump Pressure _____ Filter Pressure _____ Diff _____ Pump RPM _____ Flow Rate _____			
COMMENTS:					
INSPECTOR'S SIGNATURE			SUPERVISOR'S SIGNATURE		

APPENDIX E

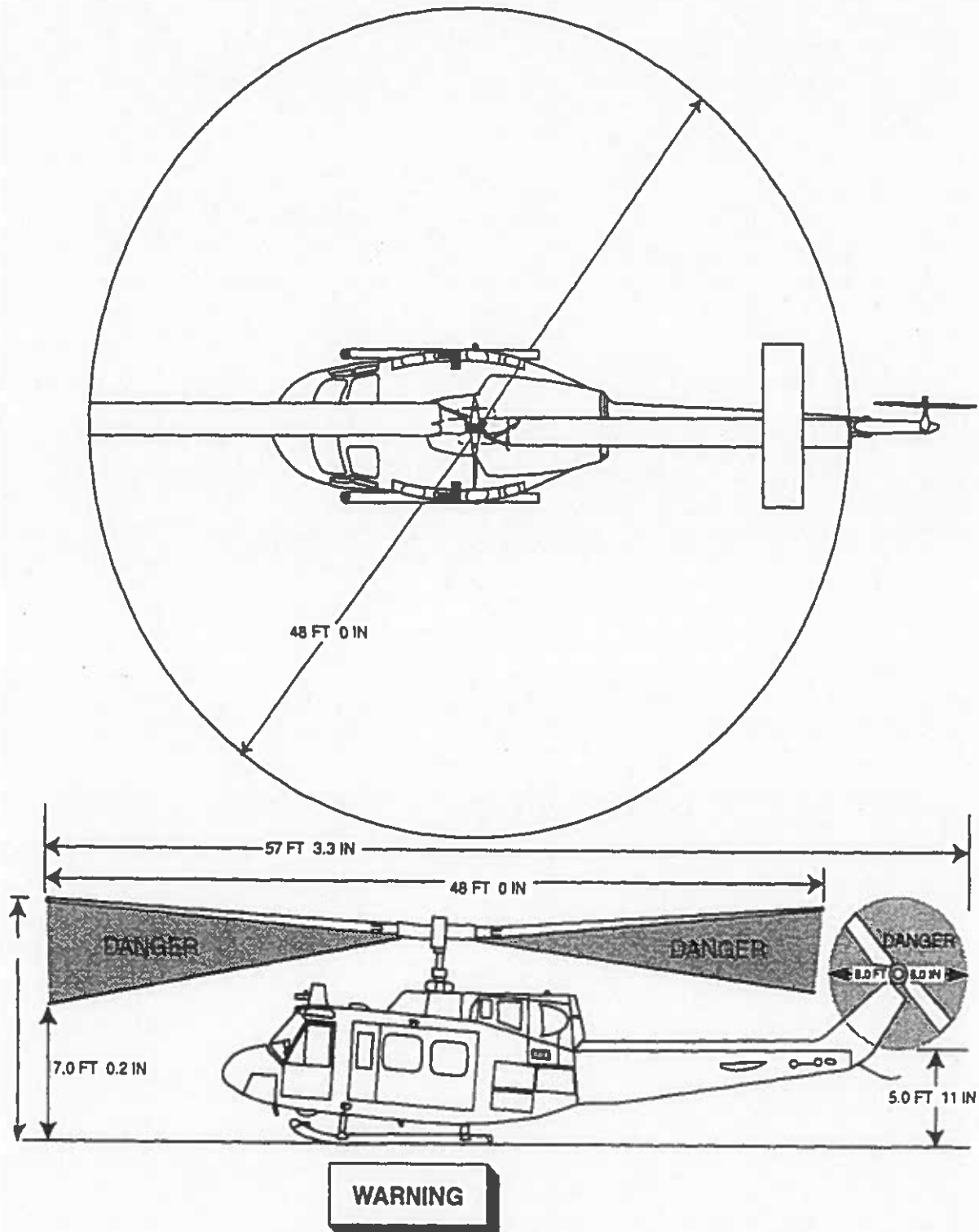
MATERIAL INSPECTION AND RECEIVING REPORT						Form Approved OMB No. 0704-0248		
<small>The public reporting burden for this collection of information is estimated to average 30 minutes per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing the burden, to Department of Defense, Washington Headquarters Services, Directorate for Information Operations and Reports (0704-0248), 1215 Jefferson Davis Highway, Suite 1204, Arlington, VA 22202-4302. Respondents should be aware that notwithstanding any other provision of law, no person shall be subject to any penalty for failing to comply with a collection of information if it does not display a currently valid OMB control number.</small>								
PLEASE DO NOT RETURN YOUR COMPLETED FORM TO THE ABOVE ADDRESS. SEND THIS FORM IN ACCORDANCE WITH THE INSTRUCTIONS CONTAINED IN THE DFARS, APPENDIX F-401.								
1. PROCUREMENT INSTRUMENT IDENTIFICATION (CONTRACT) NO.			ORDER NO.		6. INVOICE NO./DATE		7. PAGE OF	
2. SHIPMENT NO.		3. DATE SHIPPED		4. B/L TCN		5. DISCOUNT TERMS		
9. PRIME CONTRACTOR CODE				10. ADMINISTERED BY CODE				
11. SHIPPED FROM (If other than 9) CODE				12. PAYMENT WILL BE MADE BY CODE				
13. SHIPPED TO CODE				14. MARKED FOR CODE				
15. ITEM NO.	16. STOCK/PART NO. <small>(Indicate number of shipping containers - type of container - container number.)</small>			17. QUANTITY SHIP/REC'D *	18. UNIT	19. UNIT PRICE	20. AMOUNT	
21. CONTRACT QUALITY ASSURANCE <div style="display: flex; justify-content: space-between;"> <div style="width: 48%;"> a. ORIGIN <input type="checkbox"/> CQA <input type="checkbox"/> ACCEPTANCE of listed items <small>has been made by me or under my supervision and they conform to contract, except as noted herein or on supporting documents.</small> </div> <div style="width: 48%;"> b. DESTINATION <input type="checkbox"/> CQA <input type="checkbox"/> ACCEPTANCE of listed items has <small>been made by me or under my supervision and they conform to contract, except as noted herein or on supporting documents.</small> </div> </div> <div style="display: flex; justify-content: space-between; margin-top: 10px;"> <div style="width: 48%;"> DATE _____ <small>SIGNATURE OF AUTHORIZED GOVERNMENT REPRESENTATIVE</small> TYPED NAME: _____ TITLE: _____ MAILING ADDRESS: _____ COMMERCIAL TELEPHONE NUMBER: _____ </div> <div style="width: 48%;"> DATE _____ <small>SIGNATURE OF AUTHORIZED GOVERNMENT REPRESENTATIVE</small> TYPED NAME: _____ TITLE: _____ MAILING ADDRESS: _____ COMMERCIAL TELEPHONE NUMBER: _____ </div> </div>					22. RECEIVER'S USE <small>Quantities shown in column 17 were received in apparent good condition except as noted.</small> <hr/> DATE RECEIVED _____ <small>SIGNATURE OF AUTHORIZED GOVERNMENT REPRESENTATIVE</small> TYPED NAME: _____ TITLE: _____ MAILING ADDRESS: _____ COMMERCIAL TELEPHONE NUMBER: _____ <small>* If quantity received by the Government is the same as quantity shipped, indicate by (X) mark; if different, enter actual quantity received below quantity shipped and encircle.</small>			
23. CONTRACTOR USE ONLY <div style="height: 100px;"></div>								

APPENDIX F

Personnel Danger Zones

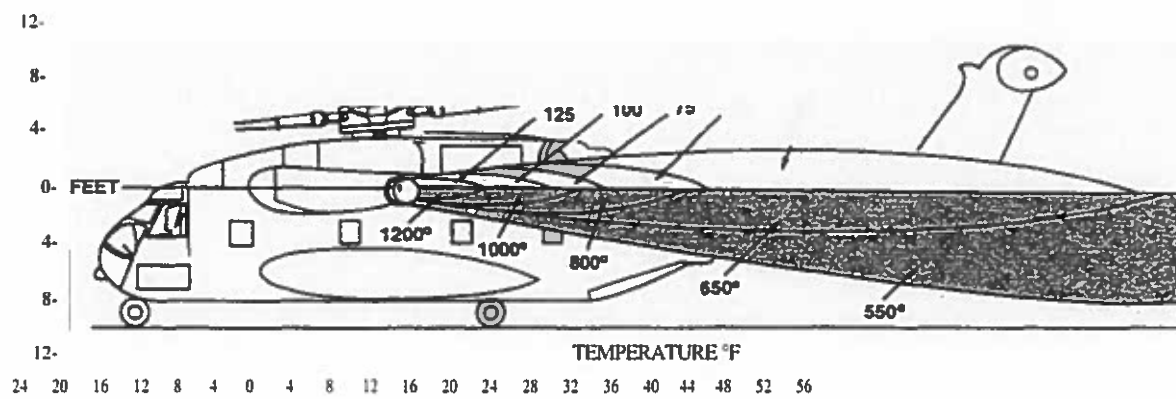
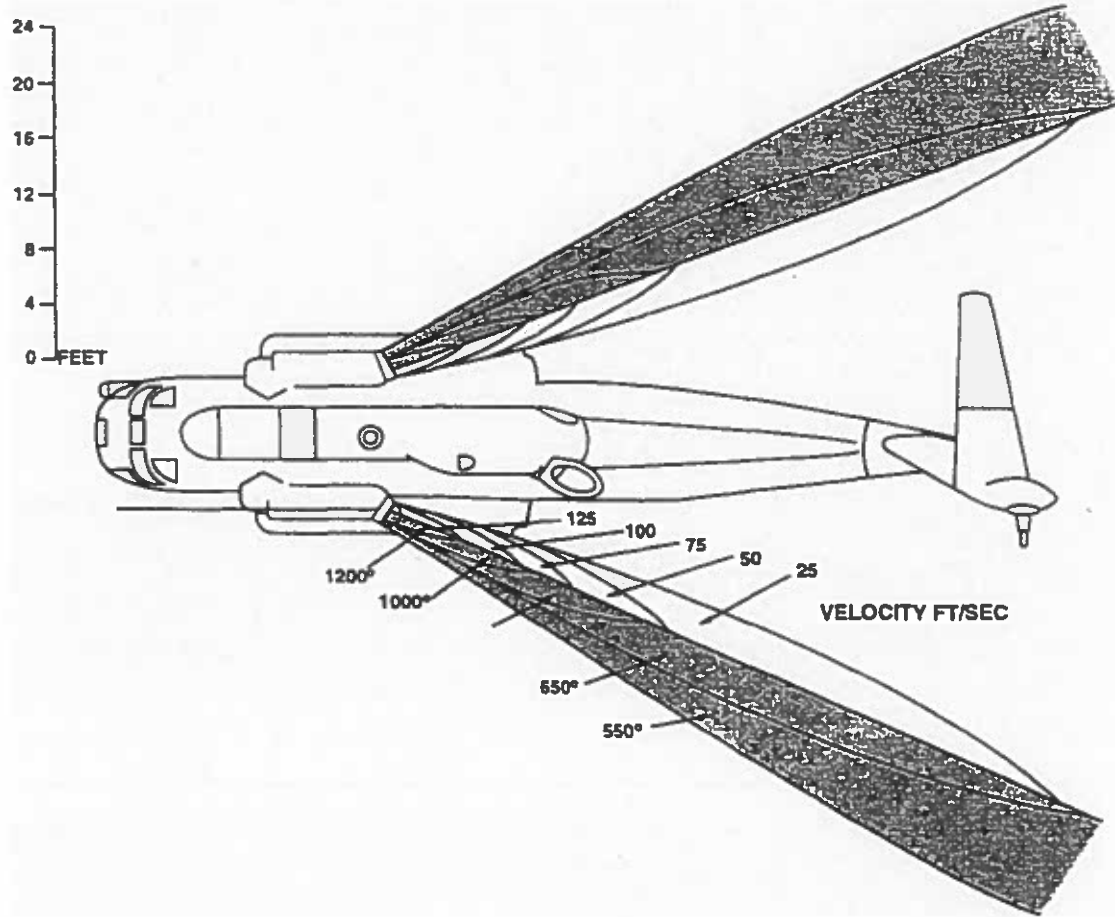
AH-1

APPENDIX F



UH-1

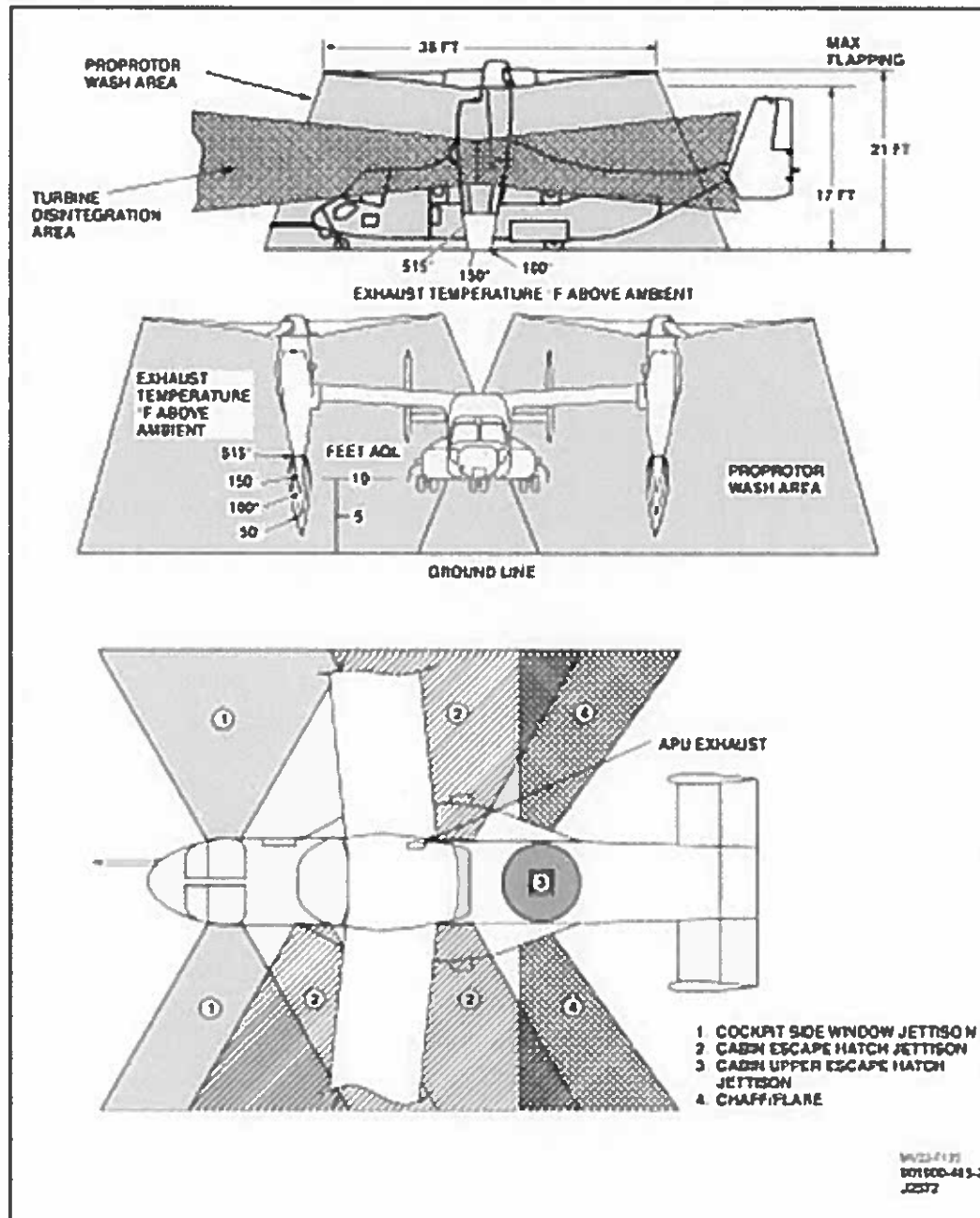
APPENDIX F



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APPENDIX F

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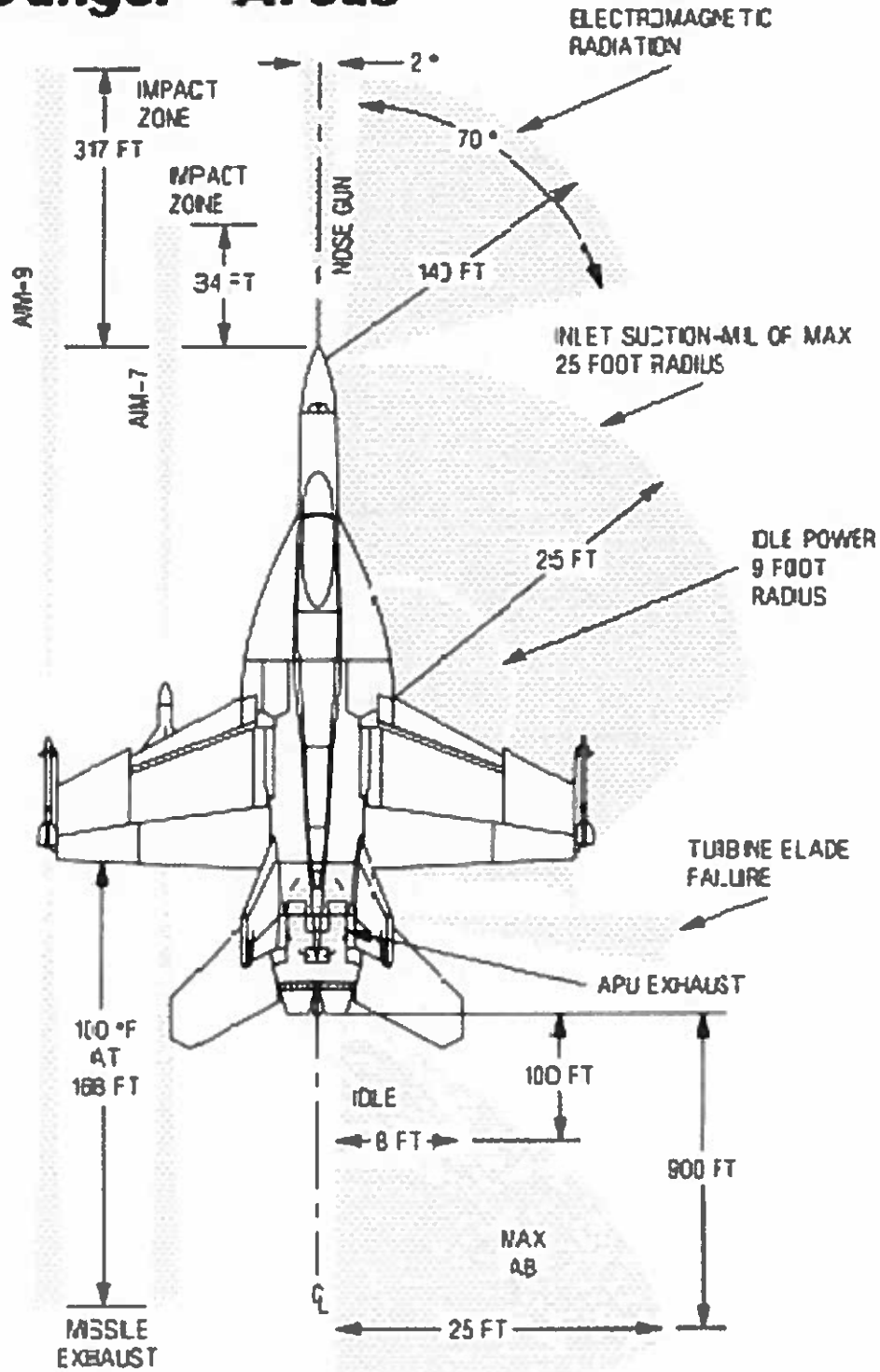


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F-4

APPENDIX F

Danger Areas



FNS26-18-1-001

F-18

F-5

APPENDIX G



UNITED STATES MARINE CORPS
HEADQUARTERS AND HEADQUARTERS SQUADRON
MARINE CORPS AIR STATION
BEAUFORT, SC 29904-5010

IN REPLY REFER TO:
1000
S3FU

From: Fuels Officer in Charge, Marine Corps Air Station Beaufort
To: APPLICANT LAST NAME, FIRST MI MOS/EDIPI

Subj: STATEMENT OF UNDERSTANDING ON MOBILE REFUELING/DEFUELING
PROCEDURES AND CERTIFICATION REQUIREMENTS

1. The purpose of this statement of understanding (SOU) is to emphasize the safety aspect and requirements to operate a tanker truck with a capacity storage of more than 500 gallons.

2. The Standard Operating Procedures for obtaining a license is as follows:

- a. Obtain a medical certification.
- b. Obtain an AVOIC license.
- c. Perform a 360 degree Pre-Trip Inspection. (Field test)
- d. Complete a 25-question written test.

e. Complete 40 hours observed time as an A-driver and be thoroughly familiarized with all PQS requirements.

f. Complete 40 hours behind the wheel as a driver and perform all PQS successfully along with three Defuels.

g. Complete Ammo/Explosives Course.

3. By signing this SOU, you have acknowledged the process of obtaining a license.

4. In case of a mishap, the driver will be re-evaluated and possible re-trained on steps c, d, e and f from the SOP.

5. This SOU can be used as a legal document in case of an investigation due to a vehicular incident report.

6. Three minor mishaps in less than 6 months can result in permanently losing the fuel tanker operator license.

Last, First, MI
(Applicant)

Signature

Date

Last, First, MI

Signature

Date