



MASTER DIRECTIVES

UNITED STATES MARINE CORPS

MARINE CORPS AIR STATION
NEW RIVER, JACKSONVILLE
NORTH CAROLINA 28545-5001

MAR 21 1995

ASO 10345.1E

SUP

10 Mar 87

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SGT MAJ [Signature]
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AI 5-3

AIR STATION ORDER 10345.1E

From: Commanding Officer
To: Distribution List

Subj: Standard Operating Procedure (SOP) for Station Fuel Division

Ref: (a) DOD 4140.25M
(b) MIL-HDBK-200F
(c) NAVFAC MO-230
(d) NAVSUP Vol II
(e) NAVAIRINST 10340.3B
(f) NAVAIR-06-5-502
(g) BO 11090.1B
(h) ASO 3710.7L
(i) ASO 5100.14
(j) ASO 10341.1A
(k) ASTM Standards Parts 23, 24, 25
(l) ASTM D-1250-80 Vol II (AP STD 540)

Encl: (1) Fuel Division
(2) Safety and Fire Prevention
(3) Quality Control and Surveillance of Aviation Fuels
(4) Petroleum Accountability
(5) Fuel Spills and Prevention
(6) Fuel Farm Operation
(7) Mobile Refueler and Defueler Operation Instructions
(8) Laboratory Operation
(9) Maintenance
(10) Aircraft Direct Refueling Operation
(11) Hot Refueling Rotary Wing Aircraft

1. Purpose. To publish a standard operating procedure for the management of the Station Fuel Division, and to establish guidance for operation, receipt, storage, quality assurance, accountability, and issue of fuels within Marine Corps Air Station, New River (MCAS, NR) Fuel Division.

2. Cancellation. AS(H)O 10345.1D.

3. Action. Station, Group and Squadron personnel, associated with the operation of the Fuel Division will be familiar with the contents of this Order and references (a) through (l). (See enclosures (1) through (11).)

MASTER DIRECTIVES

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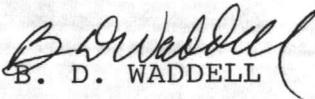
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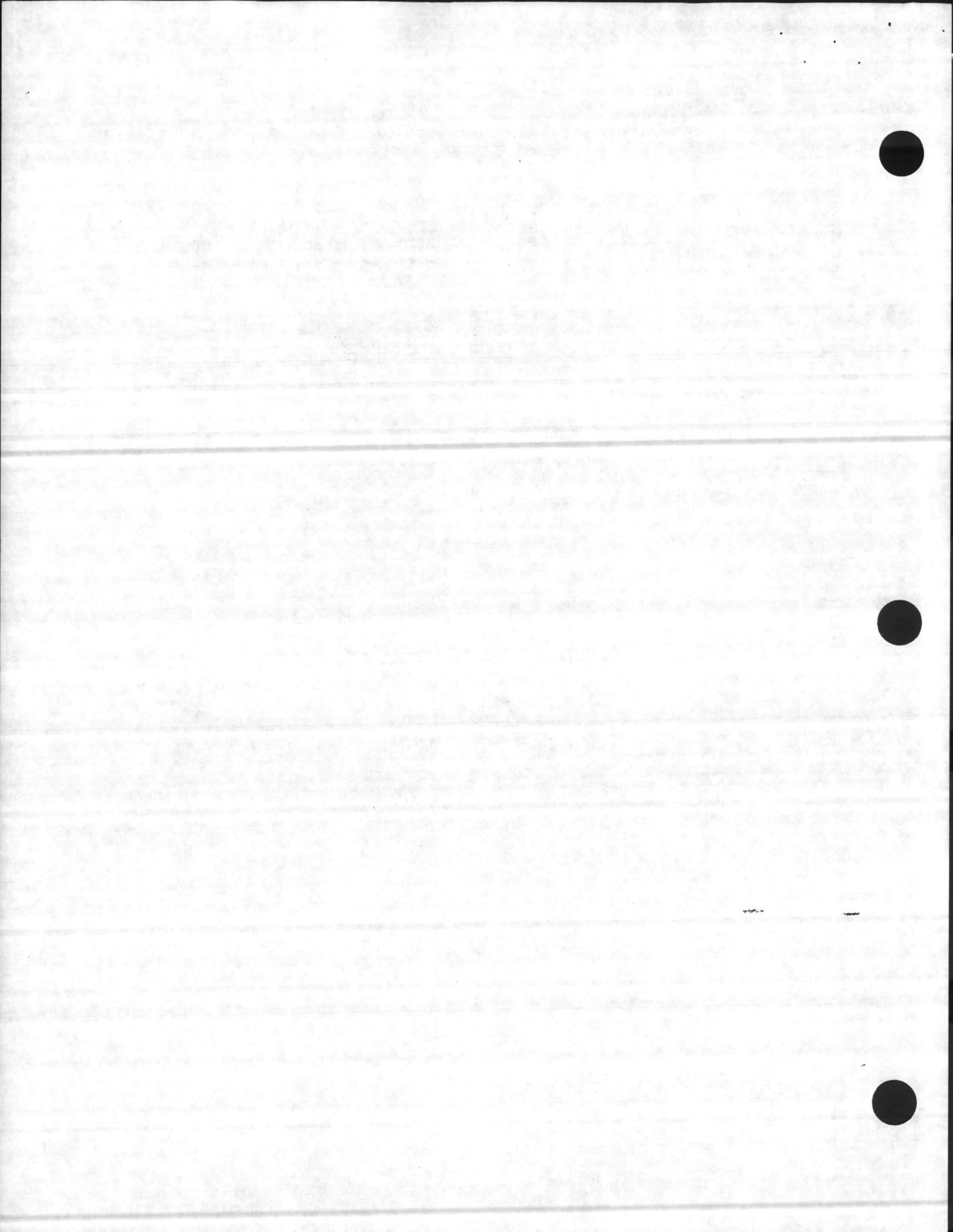
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4. Summary of Revision. This revision has a number of changes and should be completely reviewed.

5. Concurrence. The Commanding Officers of Marine Aircraft Group 26, Marine Aircraft Group 29, Marine Wing Support Squadron 272, Marine Air Traffic Control Squadron 28, and the Officer in Charge, Marine Wing Communications Squadron 28 Detachment "A", concur with this Order, insofar as it pertains to tenant unit integrated fuel support.


B. D. WADDELL

DISTRIBUTION: Cat I (A), Cat III



FUEL DIVISION

1. Applicability. This Order is applicable to those personnel and organizations involved in fueling operations of aircraft aboard MCAS, New River. Inclusive are those responsible for refueling/defueling Aircraft Direct Fueling System (ADFS) and bulk fuel handling.

2. Responsibility

a. The Station Fuels Officer is responsible to the Station Supply Officer for receipt, storage, issue, quality control and accountability of all aviation turbine fuel grade JP-5 and motor gasoline, regular (unleaded) handled by the Station Supply Department, Fuel Division.

b. Direct and supervise a completely integrated fuel operation, performing the following special duties:

(1) Estimate quantities of petroleum products to be consumed and servicing requirements.

(2) Prepare fuel budget.

(3) Prepare and revise activity fuel instructions.

(4) Represent fuel interest on boards and committees.

3. Hours of Operation:

a. Operation hours for the Fuel Division are as follows:

(1) Fuel Farm main storage and distribution system:

(a) Motor gasoline regular (unleaded).

1 Daily 24-hour service.

(b) Aviation Turbine Fuel Grade JP-5 Bulk Issues:

1 Monday through Friday 0800-1600

(2) Aircraft Direct Fueling System (JP-5 only):

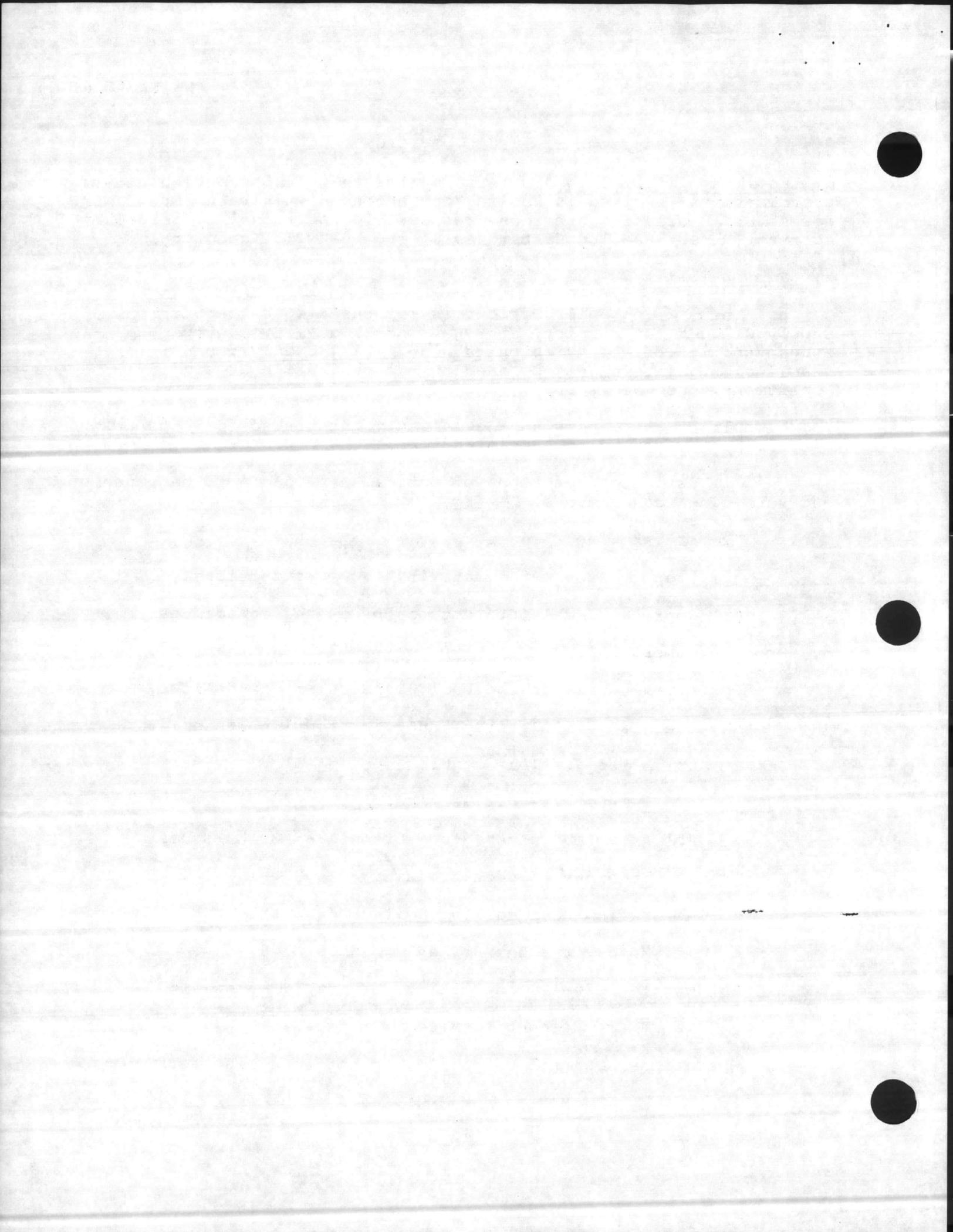
(a) Monday through Friday 0700-2300

(3) Mobile refueling/defueling service (JP-5 only):

(a) Daily 24-hour service.

b. Operational control of mobile and hot refueling service to

ENCLOSURE (1)



ASO 10345.1E

include hours of operation and priorities resides with the Airfield Operations Officer.

(1) Aircraft requiring service will be serviced on a first show/request basis.

(2) Ready, stand-by and VIP aircraft have priority. Prior coordination is required with the Station Operations Officer/Operations Duty Officer to establish priorities. All priorities will be directed to the fuel division via station operation.

(3) Requests for extended hours of operation for hot refueling service to meet special operational requirements will be directed to the Airfield Operations Officer for approval.

ENCLOSURE (1)



SAFETY AND FIRE PREVENTION

1. Safety In Fuel Handling Operations

a. Reference (f) identifies specific procedures in the safety of fuel handling operations.

b. The greatest danger associated with aircraft fuels is during handling operations. Failure to comply with even one safety precaution could jeopardize the entire fueling operation, resulting in possible loss of life, injury, and/or destruction of valuable property. Training of fuel handling personnel should be directed toward overcoming initial fear through knowledge and respect for potential danger. A greater source of danger is the possibility of experienced personnel becoming overconfident and careless. Therefore, continual surveillance of dangers involved and careful supervision of operating procedures must be adhered to at all times.

2. Sources Of Ignition

a. The elimination of all sources of ignition is the most important method of preventing fires and/or explosions in fuel handling operations.

b. There are many ignition sources, but the ones most likely to be present during refueling and defueling operations are:

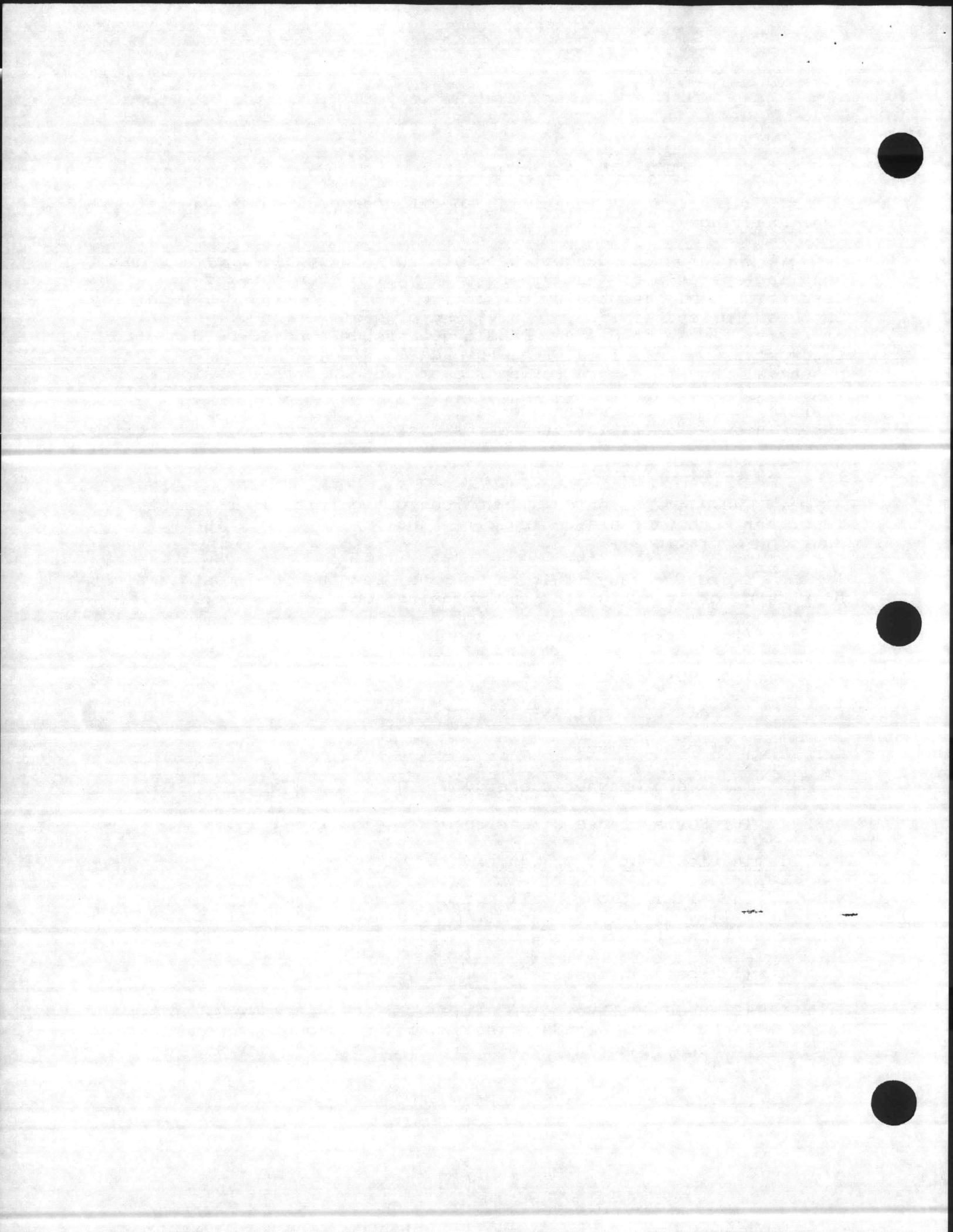
- (1) Sparks generated by static electricity.
- (2) Operating engines.
- (3) Arcing of electrical outlets.
- (4) Open flames.
- (5) Electromagnetic energy.
- (6) Hot surfaces or environment (electrical storms).

3. Elimination Sources Of Ignition

a. The elimination of all potential sources of ignition is the responsibility of all fuel handling personnel. Specific procedures and precautions to prevent sources of ignition are as follows:

- (1) Post and observe No Smoking signs.
- (2) Shoes with exposed nails or metal plates will not be worn. Flight boots, standard issue shoes, and boots have nailed on heels. Personnel should periodically inspect footwear for serviceability.

ENCLOSURE (2)



(3) Clothing of fuel personnel will be non-static producing (do not wear service sweaters).

(4) Exhaust piping on mobile refuelers should be inspected daily.

(5) All bonding connections should be clean, unpainted, and in good condition.

(6) No fueling operations should begin until all equipment is properly bonded.

(7) No smoking within 100 feet of fuel handling operations.

(8) Do not permit open flames within 100 feet during fueling operations.

(9) Do not carry lighters or matches.

(10) Defer all repair work during refueling/defueling operations.

(11) Do not use drop or flood lights or any other lighting, except those approved by proper authority for use in hazardous locations.

(12) Never fuel or defuel during electrical storms (refer to reference (h) for guidance).

(13) Be certain that no repair or maintenance work is being conducted on the aircraft before beginning the refueling or defueling operation.

(14) Fuel spillage of any size presents an increasing possibility of fire and should be controlled through good housekeeping clean-up.

(15) Do not operate fuel system within 300 feet of ground radar equipment or 100 feet from airborne equipment.

(16) Internal combustion engines operating within 100 feet of fuel handling operations should be equipped with spark arresting mufflers.

(17) No engines shall be started within 50 feet of refueling or defueling operations. This includes aircraft being serviced within a 50 foot radius.

4. Controlling Vapor Generation

a. The following procedures will help prevent fires by reducing or controlling vapor generation:

ENCLOSURE (2)

(3) Clothing of fuel personnel will be non-static producing (do not wear service sweaters);

(4) Exhaust piping on mobile refuelers should be inspected daily.

(5) All bonding connections should be clean, unspliced, and in good condition.

(6) No fueling operations should begin until all equipment is properly bonded.

(7) No smoking within 100 feet of fuel handling operations.

(8) Do not permit open flames within 100 feet during fueling operations.

(9) Do not carry lighters or matches.

(10) Defer all repair work during refueling operations.

(11) Do not use gas or low lights or any other lighting which is not approved by proper authority for use in hazardous areas.

(12) Never fuel or defuel during electrical storms (refer to reference (a) for guidance).

(13) Be certain that no repair or maintenance work is being conducted on the aircraft before beginning the refueling or defueling operation.

(14) Fuel spillage of any size presents an increasing possibility of fire and should be controlled through good housekeeping clean-up.

(15) Do not operate fuel system within 300 feet of ground radar equipment or 100 feet from airborne equipment.

(16) Normal combustion engines operating within 100 feet of fuel handling operations should be equipped with spark arresters and filters.

(17) No engines shall be started within 50 feet of refueling or defueling operations. This includes aircraft being serviced within a 50 foot radius.

4. Controlling Vapor Generation

a. The following procedures will help prevent fires by reducing or controlling vapor generation:

1. (2)

- (1) Do not refuel aircraft, drain aircraft or conduct fuel handling operations in a hanger or any confined area.
- (2) Avoid spilling fuel. Spills present one of the greatest sources of vapor generation.
- (3) Fuel vapors are heavier than air and will collect in low places, such as pits, sumps, and open sewers.
- (4) Never dispose of fuel in storm drains or sewage systems.

Note: Common sense, attention to duty, and good sound judgement are essential in the handling of petroleum products.

5. Procedures For Avoiding The Health Hazards Of Aircraft Fuels

a. The following list of procedures will minimize the dangers to the health of fuel handling personnel.

(1) Do not enter enclosed areas where fuel vapors are present. If necessary to enter a confined area where fuel vapors may be present, use a blower-type mask, positive pressure hose mask, boots, and gloves. Contact your safety officer/gas free engineer for entrance approval. (Refer to reference (i).)

(2) In areas of fuel handling operations or where a large spill is present, stay on the windward side.

(3) Aircraft fuel vapors are heavier than air. Low areas such as pits, sumps, and ditches should be avoided when possible.

(4) Use only clear, unleaded gasoline for stoves and lanterns. Never use leaded fuel.

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

(6) Avoid skin contact with liquid fuels.

(7) Never wash hands in gasoline or aviation fuels.

(8) Remove fuel-soaked clothing or shoes at once.

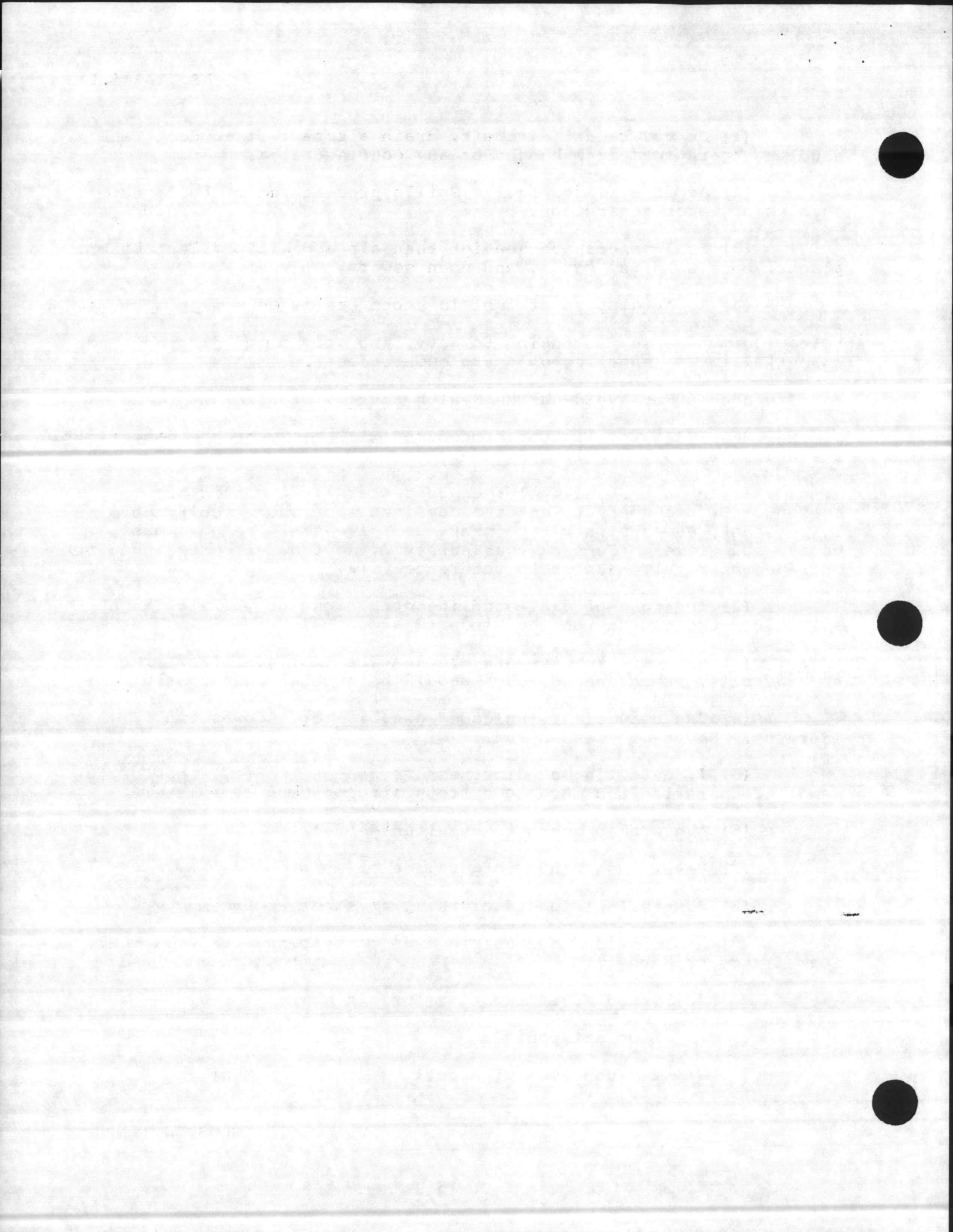
(9) Avoid splashing fuel in eyes or rubbing eyes with fuel soaked rags or hands.

(a) Immediate action for fuel in eyes:

1 Do not panic.

2 Flush eyes with cool water for 15 minutes.

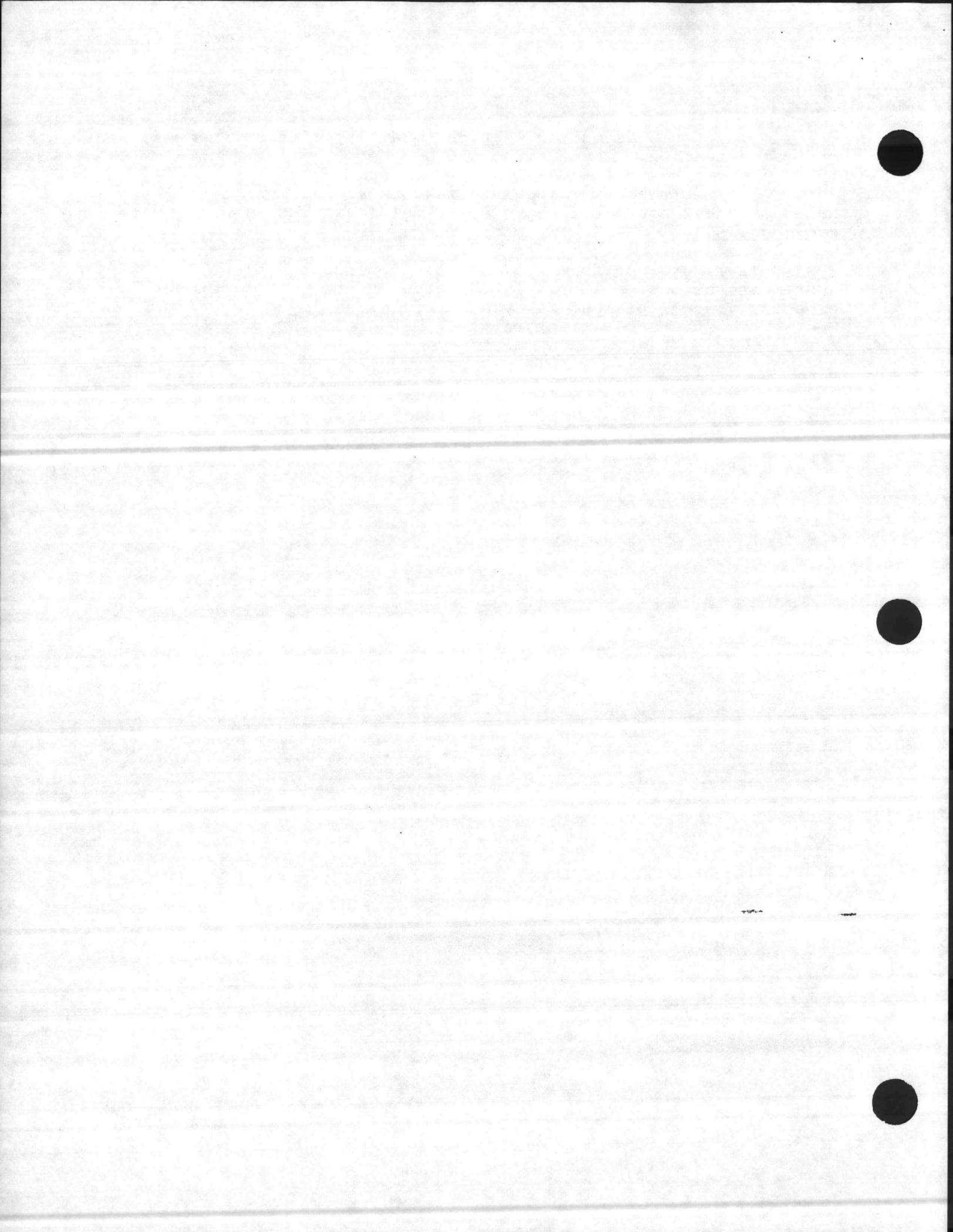
ENCLOSURE (2)



3 No matter what the quantity of fuel in eyes, seek medical attention as soon as possible.

(b) When working in hazardous situations (i.e., handling hoses or other equipment above eye level (overhead)), wear protective eye goggles.

(10) Never perform fuel handling operations alone. A buddy system is the best policy. In the event there is an accident, especially fuel splashed in eyes, a fellow employee can aid or obtain emergency assistance immediately.



QUALITY CONTROL AND SURVEILLANCE OF AVIATION FUELS

1. Quality Control And Surveillance Of Aviation Fuel

a. References (b) and (e) provide the minimum standards for quality surveillance of all Petroleum, Oil, and Lubricants (POL). It is the responsibility of all activities storing, issuing, and consuming petroleum products to monitor and preserve fuel quality. Quality surveillance is found in all areas of distribution from initial procurement to final consumption. The quality of fuel is the single most important factor along with safety in all petroleum handling operations.

b. Aviation fuels are the most critical fuels and require the highest quality standards. It is essential that all aviation fuel dispensed to aircraft meet military specifications and/or deterioration limits.

2. Testing Requirements. The following testing requirements will be performed in accordance with references (b), (e), and (k) by quality surveillance personnel as they apply to the following products and situations.

a. Aviation turbine fuel grade JP-5, tank trucks receipts prior to discharge. All level samples will be obtained from each railcar or from each tank truck compartment. Test for:

(1) API Gravity - (To be compared with shipping document) (ASTM D-287).

(2) Visual color.

(3) Visual water and solid contamination.

b. Motor gasoline, regular grade (unleaded) tank truck receipts prior to discharge. All level samples will be obtained from each compartment. Test for:

(1) API Gravity - (To be compared with shipping document) (ASTM D-287).

(2) Visual color.

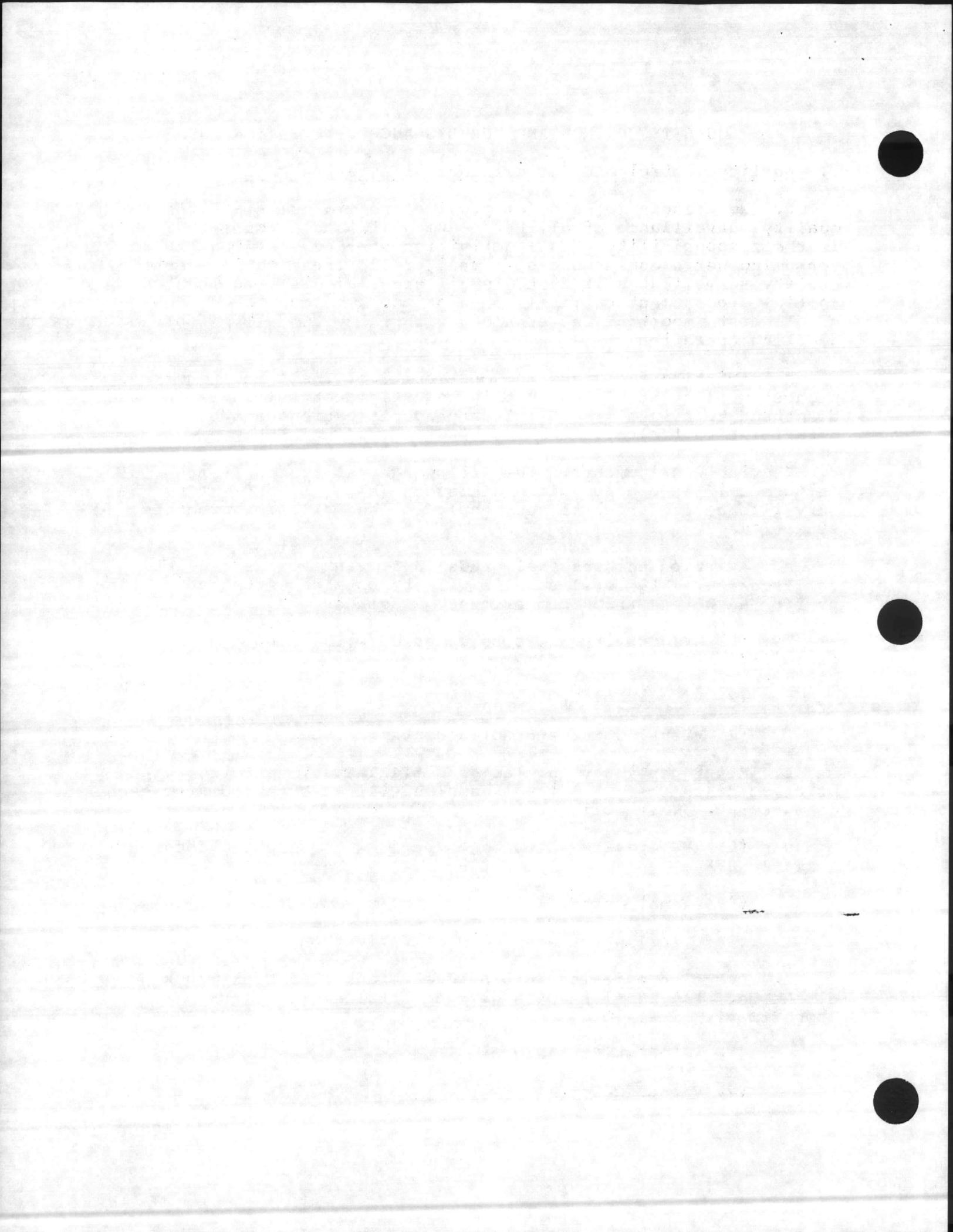
(3) Visual water and solid contamination.

c. Defueled aviation Turbine Fuel grade JP-5 Tank Truck prior to discharge. All level samples will be obtained from tank compartment. Test for:

(1) API Gravity (ASTM D-287).

(2) Visual Color.

ENCLOSURE (3)



(3) Visual water and solid contamination.

(4) Flash Point (ASTM D-93).

(5) Distillation (ASTM D-86).

d. Aviation turbine fuel grade JP-5 fuel servicing equipment (all mobile refuelers and aircraft direct fueling stations) daily prior to issue. Direct line sample will be obtained from nozzle. Test for:

(1) API gravity (D-287).

(2) Visual color.

(3) Visual water and solid contamination.

(4) Fiber count.

(5) Solid contamination (Mark III).

(6) Water (Mark II).

e. Aviation turbine fuel grade JP-5 main storage tanks after new item receipt or blending and prior to issue. All level samples will be obtained. Samples will be forwarded to NARF for testing. Complete B-2 analysis will be requested.

f. All aircraft fuel servicing equipment will be tested for filter effectiveness on a monthly basis. Direct line samples downstream of the filter separator or from the nozzle will be obtained. All samples will be forwarded to NARF laboratory for testing.

3. Samples. A sample is a representation of a given quantity. Sampling technique and equipment will conform to reference (k) method ASTM 270.

a. The following are types of samples:

(1) All level. Obtained by submerging a closed sampler as near possible to the draw off level. Open the sampler and raise it at such a rate so that it is 75%-85% full recovered.

(2) Top. Taken 6 inches below the top surface of the tank contents.

(3) Middle. Taken from the middle of the tank contents.

(4) Lower. Taken from the middle of the lower 1/3 of the tank contents.

ENCLOSURE (3)



(5) Bottom. Taken from the bottom surface of tank.

(6) Line. Taken from a draw-off, discharge valve or nozzle.

b. Only those sample containers designated for petroleum products are authorized.

c. One (1) quart line sample from each piece of fuel servicing equipment used to issue product to aircraft will be maintained for that day's flight operations.

4. Sampling Procedures. Samples are as good as the sampler. The following are basic procedures to obtain satisfactory samples:

a. Samplers hands shall be clean.

b. Sample container/caps and equipment should be thoroughly cleaned.

c. Containers and sampling equipment should be flushed with the product being sampled several times.

d. Fill sample containers to 90% capacity to allow for product expansion. (One quart glass bottles to the base of the bottle shoulder.)

5. Identification Of Samples

a. Procedures for proper identification of samples set forth in reference (b) are mandatory to ensure accurate records so that test results may be correlated with the sample submitted.

b. The following will be used as a guide for sample identification and labeling:

(1) Product (grade, nomenclature, and specification).

(2) From (activity submitting sample).

(3) Sample number (year and assign consecutive numbers as samples are submitted, i.e., 8301, 8302, etc.).

(4) Amount sample represents.

(5) Sample source (tank or truck number, other cans, drums, etc.).

(6) Sampled by (name of person who took sample).

(7) Date sampled (date sample was actually taken).

(8) Bill of lading number (on new item receipts only).

ENCLOSURE (3)



(9) Type of testing required:

- (a) Routine surveillance.
- (b) Filter effectiveness.
- (c) Special.

(10) Type Sample:

- (a) Top.
- (b) Middle.
- (c) Bottom.
- (d) Composite.
- (e) All level.

(11) Point of Contact (person to contact if further information is required).

(12) Remarks (any information to further aid in processing the sample, or special tests required).

c. A sample log will be maintained on all outgoing samples for analysis. Samples will be numbered consecutively by year and item number (example: 84001, 84002, 84003, etc.) for accurate identification:

(1) Upon notification of sample status after analysis, log entries will be made corresponding to sample indicated and the appropriate action taken.

(2) All laboratory report forms will be maintained along with sample log for a period of two years.



PETROLEUM ACCOUNTABILITY

1. Petroleum Accountability. Reference (d) outlines procedures for proper accounting of petroleum products.

a. Accounting for bulk petroleum products is unlike any other inventory control procedure: Fuel expands and contracts with temperature change, therefore reflecting a daily loss or gain by volume. The following procedures will be used to maintain proper inventory control.

(1) Bulk issues of 3,500 gallons or less will be accounted for and billed as gross amounts obtained from meter readings.

(2) Bulk issues of 3,500 gallons or more will be accounted for and billed as net amounts (corrected to 60' in accordance with reference (k)).

(3) Individual issues to aircraft regardless of quantities will be accounted for and billed as gross amounts obtained from meter readings.

(4) All receipts will be accounted for as net amounts.

2. Stock Balance Records

a. Stock balance records will be maintained daily by accounting clerk reflecting:

(1) Opening balance (to include line fill quantities).

(2) Daily issues.

(3) Receipts.

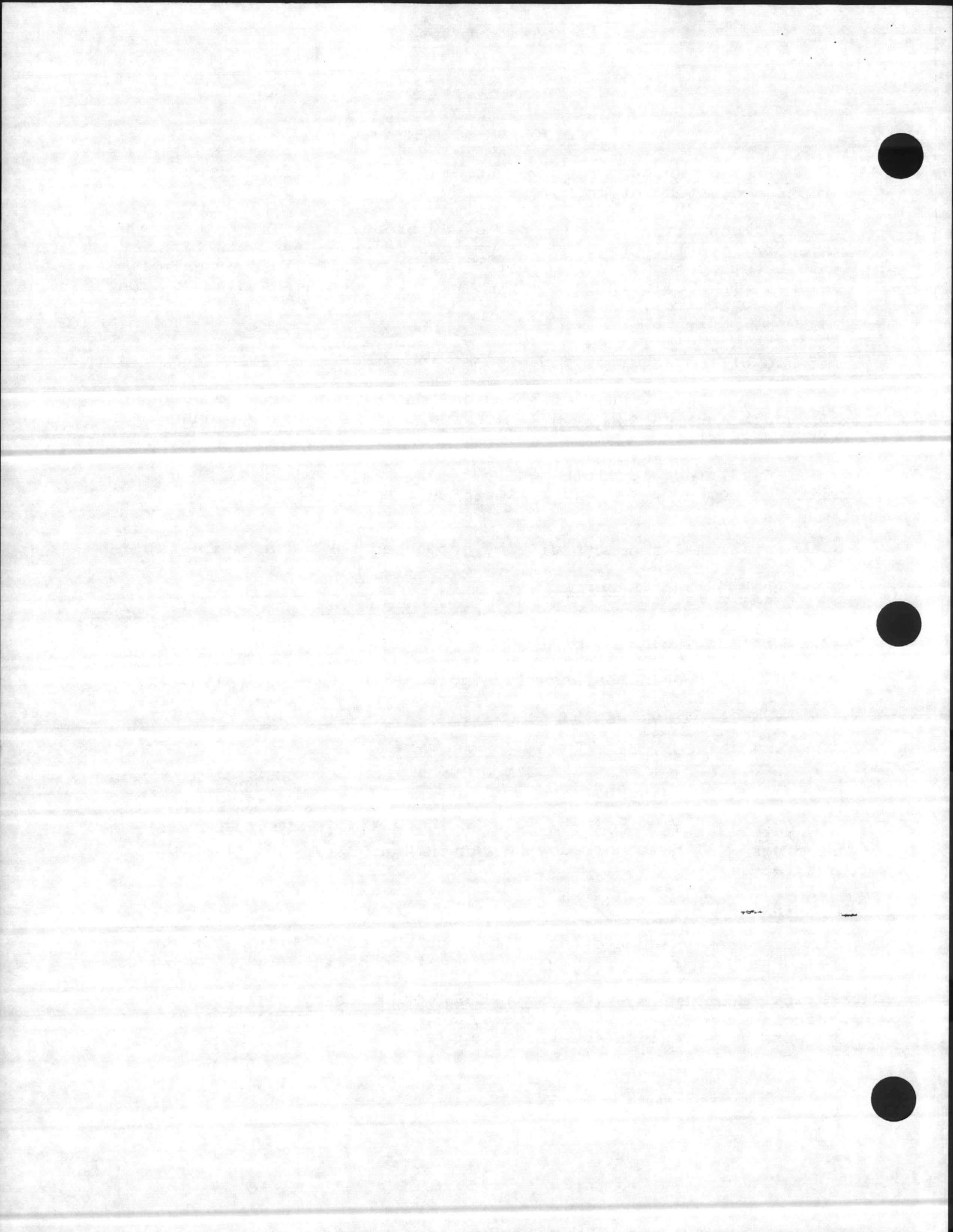
(4) Closing Balance.

3. Meters. Will be calibrated semi-annually. Totalized meter readings will be compared with tank gages daily to verify meter accuracy.

4. Inventory

a. Weekly inventories will be conducted by Fuel Division personnel and results compared with stock balance inventories.

b. Monthly inventories will be conducted by Fuel Division personnel and verified on site by selected Supply Department personnel as designated by the Supply Officer.







FUEL SPILLS AND PREVENTION

1. Petroleum Spills/Prevention. Petroleum spills generate complex technical, legal, environmental, and public relation problems. By strict adherence to proper operational procedures, daily inspections, good maintenance practices and overall good housekeeping, spills would be nonexistent.

a. It is the responsibility of all fuel handling personnel to prevent fuel spillage. The following preventive measures will reduce the possibility of spillage:

(1) Daily inspections of fuel servicing equipment to include storage tanks.

(2) All waste products will be collected in suitable containers prior to disposal.

(3) Good housekeeping preventive maintenance.

(4) Utilization of catch basins (drip pans) when disconnecting and/or servicing equipment.

(5) Daily inspections of oil water separators.

(6) Empty all drip pans and secure all container tanks to prevent water seepage.

(7) The monitoring of storage tanks and mobile equipment during filling operations.

(8) Ensure proper valve settings on pipe lines, storage tanks, and mobile equipment prior to pumping operations.

2. Immediate Action Procedures

a. Seal off fuel flow and provide for initial containment, if possible.

b. All fuel spills occurring in the Fuel Division area will be reported immediately to the Fuel Division NCOIC/OIC. The following areas will be reported as follows:

(1) Aircraft Operating Areas:

(a) Station Crash Crew, phone #6629.

(b) Station S-4/Officer of the Day, Phone #6518/6524.

ENCLOSURE (5)



(2) Nonaircraft operating areas:

(a) Fire Department, phone #6333.

(b) Station S-4/Officer of the Day, phone #6518/6524.

c. When reporting spills, ensure the following information is provided:

(1) Location.

(2) Type product.

(3) Approximate amount spilled.

(4) Cause of spill.

d. All spills will be cleaned up ASAP.



FUEL FARM OPERATION

1. Fuel Farm Operation. The Fuel Farm Manager (Noncommissioned Officer in Charge) is responsible for the receipt, issue, storage, and quality control of all petroleum products handled within the fuel distribution systems.

2. New Item Receipts

- a. Aviation Turbine Fuel Grade JP-5 is received by tank truck.
- b. Motor gasoline regular (unleaded) is received by tank truck.

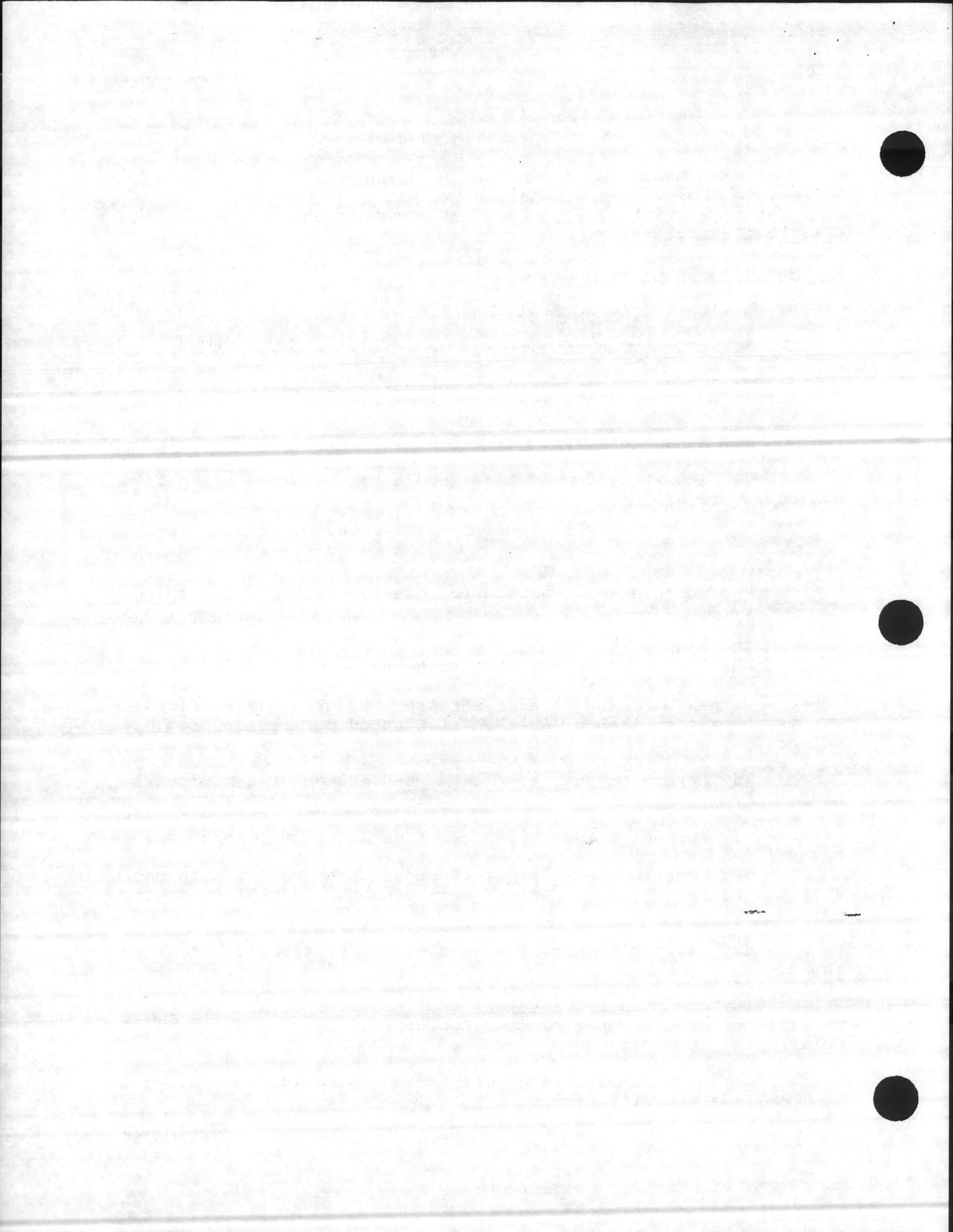
c. Fuel Farm attendants will, prior to offloading either type product, perform the following:

- (1) Ensure shipment coincides with bill of lading.
- (2) Ensure that all valves and domes have been properly sealed.
- (3) Inspect all seals ensuring that there is no evidence of tampering.
- (4) Compare seal numbers to those annotated on shipping document.
- (5) Ensure that product amount in the container corresponds with amount indicated on shipping document.

Note: If there are any noted discrepancies during pre-offloading checks, DO NOT offload product until granted permission from higher authority.

- (6) Ensure trucks, tank cars, and equipment are properly bonded.
- (7) Inspect all shipping containers for water bottoms.
- (8) Sampling and testing of products as outlined in enclosure (3) will be completed by Fuel Farm attendants and quality control personnel.
- (9) Perform opening tank gauges on the receiving tank or tanks.
- (10) One pump operator and one tank monitor will be positioned prior to offloading operations. Radios will be used to communicate during pumping operations.
- (11) Upon completion of offloading operations, ensure all equipment is properly secured.

ENCLOSURE (6)



(12) After allowing approximately two hours for product settling and static dissipation time, perform closing tank gauges.

Note: During motor gasoline receipts, no fuel will be issued from the service station until opening and closing gauges are completed and all quantity discrepancies resolved.

3. Defueler Receipts

a. Defueled aviation turbine fuel will be collected by Station Fuel Division or MWSS-272. Mobile Refuelers prior to discharge will be inspected by the Quality Control Branch. The product sampling and testing will be performed as outlined in enclosure (3).

b. Fuel Farm attendants will ensure the following:

(1) That the defuelers' contents has been examined and released by the Quality Control Branch prior to discharge (offloading) and as directed by the Fuel Farm Foreman.

(2) Perform opening tank gauges.

(3) Ensure amount to be received will not exceed the available ullage of the receiving tank.

(4) Ensure that all valves are properly set.

(5) Properly bond equipment.

(6) Established radio communication.

(7) Offload product.

(8) Upon completion of offloading, secure all equipment and close all valves.

(9) Perform closing tank gauges after settling and static dissipation time.

c. Tanks will be sampled and the samples forwarded for testing as outlined in enclosure (3) after tank has been completely filled.

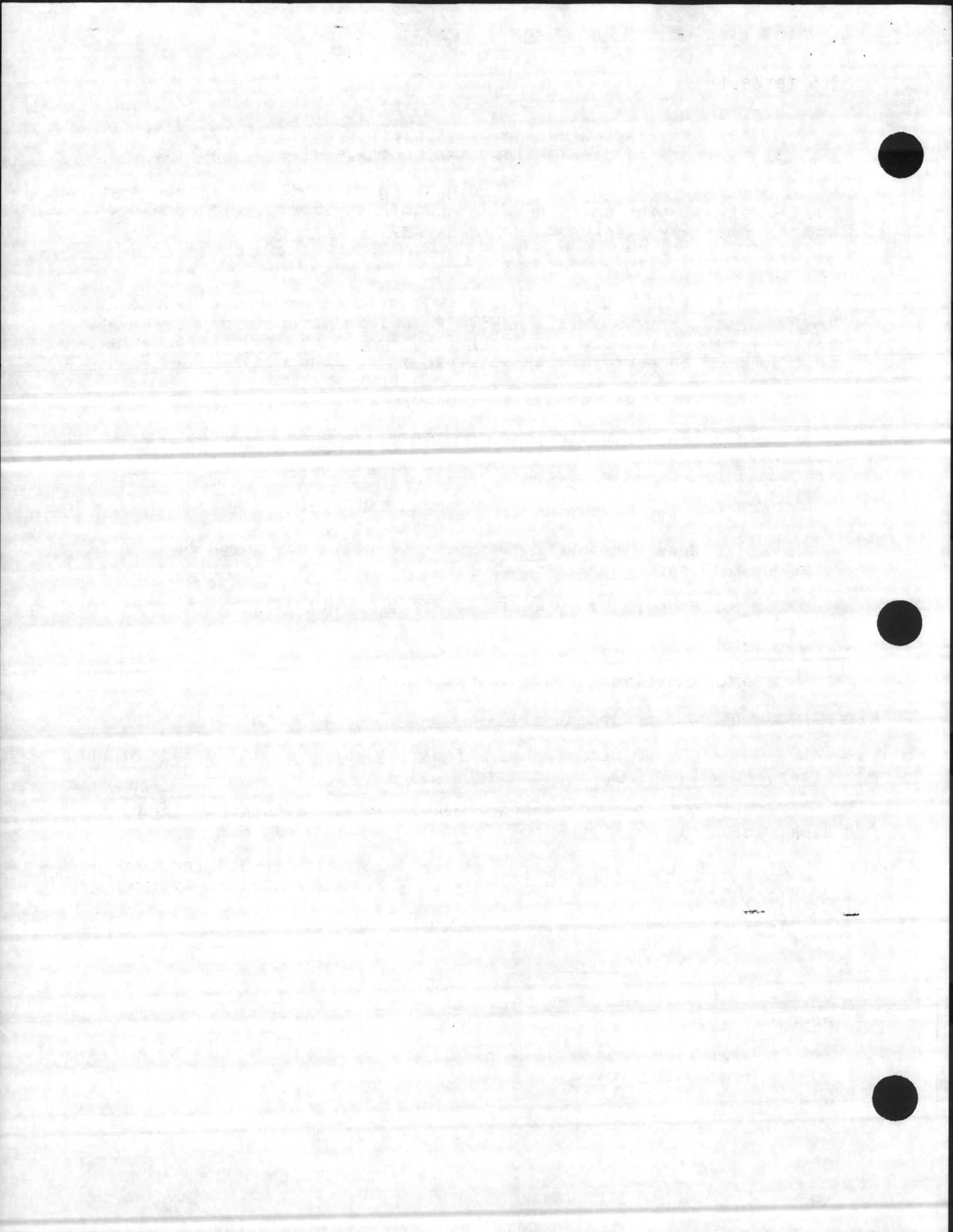
4. Issues

a. JP-5 Bulk Issues

(1) Bulk issues of aviation turbine fuel grade JP-5 will be accounted for as outlined in enclosure (4).

(2) A DD Form 1348 (6 part) will be presented for bulk issues by the requesting unit.

ENCLOSURE (6)



(3) Bulk issues will be made from the Fuel Farm storage area fill stand. Fuel Farm attendants will complete the following:

- (a) Ensure that a DD Form 1348 has been presented.
- (b) Inspect receiving truck/container to prevent possible contamination.
- (c) Reset meter (perform opening tank gauges for issues of 3,500 gallons or more).

Note: Issues to Fuel Division mobile refuelers for the purpose of aircraft refueling regardless of amount does not require tank gauge readings. However, all meter readings will be logged in fill stand operator's log.

b. JP-5 Issues to Aircraft (Aircraft Direct Fueling Station and Mobile Refueling Units).

(1) Daily issues of JP-5 to all tenant squadrons will be recorded on Daily Tally sheets. Tally sheets will be submitted daily to the Fuel Farm accounting clerk by 0800.

(2) Visiting aircraft will utilize customer service credit cards and DD Form 1898.

c. Motor Gasoline Issue

(1) Issues will be made only to those units possessing a valid credit card. Credit cards for specific types of garrison mobile equipment will not be interchanged with other vehicles. If a discrepancy exists between card and vehicle, no fuel will be issued.

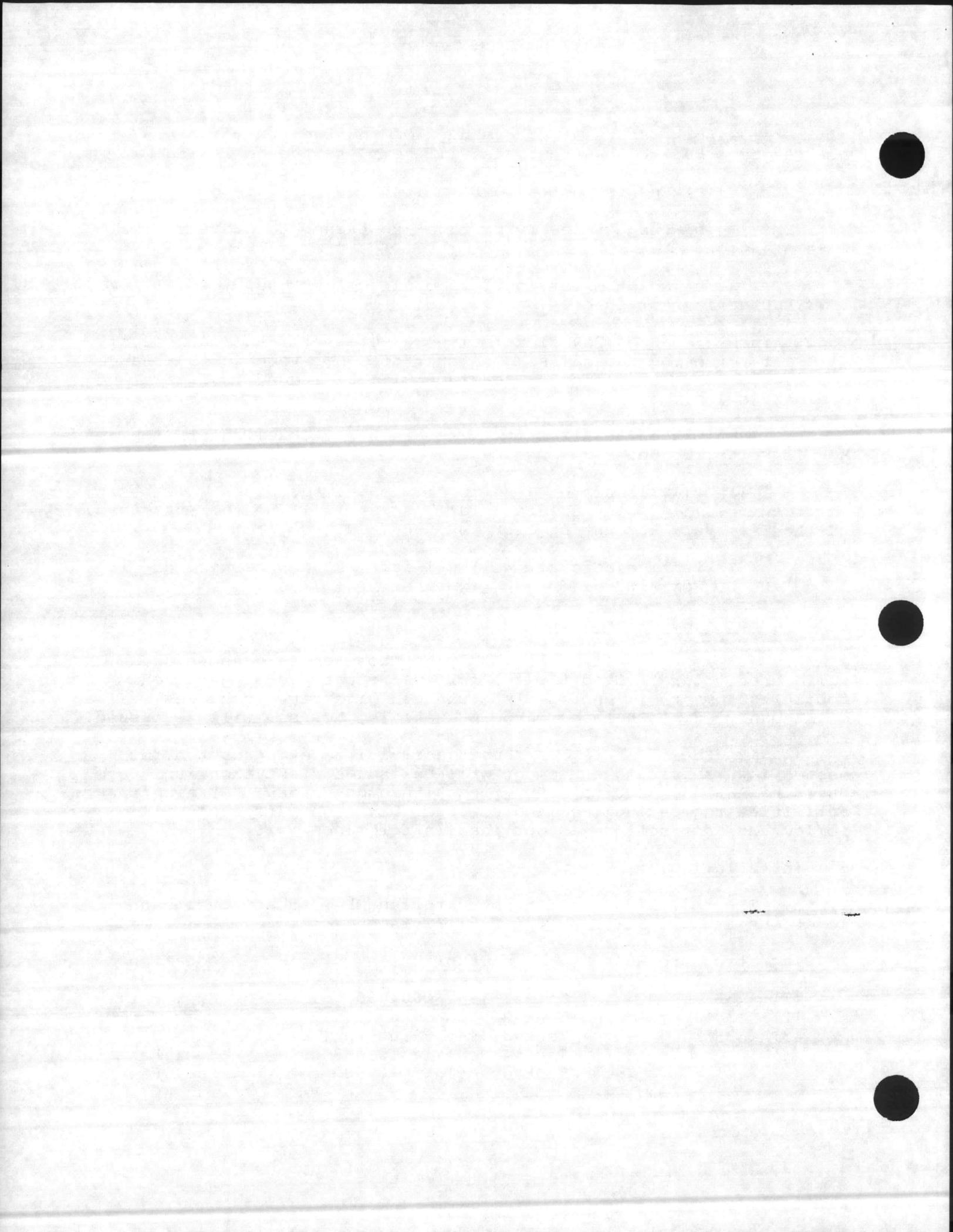
(2) Fuel for station/tenant activities having custody of issued lawn servicing equipment will be issued at Station Fuel Farm Building AS-143, 0800 to 1600, Monday through Friday. Station/tenant activities requesting fuel and all Fuel Division personnel will follow the instructions as outlined in reference (j).

5. Installation

a. The following building/structure number, description and locations are provided for the Fuel Division.

<u>Bldg/Structure No's</u>	<u>Description</u>	<u>Location</u>
(1) 136	Tank#1 JP-5 100,000 gal	Fuel Farm
(2) 137	Tank#2 JP-5 50,000 gal	Fuel Farm
(3) 138	Tank#3 JP-5 50,000 gal	Fuel Farm
(4) 140	Tank#4 Reclaim 10,000 gal	Fuel Farm
(5) 141	Tank#5 Reclaim 10,000 gal	Fuel Farm

ENCLOSURE (6)



<u>Bldg/Structure No's</u>	<u>Description</u>	<u>Location</u>
(6) 142	Mogas Pumps	Bldg# 143
(7) 143	Fuel Division Office	Bldg# 143
(8) 144	Pump house	Fuel Farm
(9) 145	Rail Head	Fuel Farm
(10) 146	Filter House	Fuel Farm
(11) 147	Fill Stand JP-5	Fuel Farm
(12) 149	Tank MOGAS 10,000 gal	Bldg#143
(13) 150	Tank#6 JP-5 105,000 gal	Fuel Farm
(14) 151	Tank#7 JP-5 50,000 gal	Fuel Farm
(15) 154	Tank#8 JP-5 120,000 gal	Fuel Farm
(16) 507	Tank A JP-5 20,000 gal	Adjacent D Taxiway
(17) 508	Tank B JP-5 20,000 gal	Adjacent D Taxiway
(18) 509	Rapid Jet Office	Adjacent D Taxiway
(19) 520	Maintenance	Adjacent E Taxiway
(20) 522	Laboratory	Adjacent E Taxiway
(21) 526	Tank C JP-5 20,000 gal	Adjacent D Taxiway
(22) 527	Tank D JP-5 20,000 gal	Adjacent D Taxiway

6. Refueler Truck Filling Operations

a. Fillstand operators are responsible for the safe operation of the fillstand during loading and will perform or ensure the following:

(1) Prior to loading, refuelers of tenant units ensure that a DD Form 1348 has been presented to the Fuel Division office.

(2) The driver will position truck under fillstand. Brakes will be set. The engine and all electrical apparatus turned off.

(3) Ensure fuel to be loaded coincides with markings on refuelers and inspect tank interior.

(4) Connect bonding cable to the refueler body at an unpainted point before opening the refueler dome cover. Do not connect bonding cable near the dome cover or near any point on the refueler which is near an opening from where gas fumes may escape. The connecting point must be bare metal and provide a positive connection.

(5) Set meters or perform tank gauges, whichever is applicable.

(6) The driver must be on refueler to open the dome cover and maintain visual surveillance of fuel level. If, for any reason, driver must leave dome cover, refueling will cease in order to prevent overflow of refueler.

Note: Drivers will stand upwind from tank dome cover to prevent inhaling escaping vapors.

ENCLOSURE (6)



(7) Ensure all hoses are connected and valves are properly set.

(8) Upon signal from the driver, the pump operator will start pumping operations.

(9) Operator will remain alert and await a signal from driver to secure pumping.

(10) Upon completion of filling operations, secure the dome cover, remove bonding cable, and disconnect hose.

(11) The fillstand operator reads the meter and enters the quantity in the operator's log book. Prior to loading any other vehicles, operator will perform a closing gauge on using tank if applicable (bulk sales only).

Note: Operator/driver will, prior to and during filling operations, ensure that all fire lanes are open. If fire lanes are not open, fueling will be secured until lanes can be cleared.

(12) Once assured that there are no leaks or spillage from the tank and all equipment has been disconnected, the fill stand operator will clear the driver to move the truck from the fillstand loading area.

7. Transfer Line Operations

a. Prior to commencement of transfer operations to Rapid Jet, Fuel Farm personnel will ensure the following:

- (1) Establish radio contact with Rapid Jet.
- (2) Ensure valves in Fuel Farm are properly set.
- (3) Establish quantity required by Rapid Jet.
- (4) Establish pumping start time and start fuel transfer when notified by Rapid Jet.
- (5) Record the following in the booster pump log.
 - (a) Start time.
 - (b) Quantity required.
 - (c) Opening meter reading.
 - (d) Issue tank number.
 - (e) Receiving tank (A, B, C or D).

ENCLOSURE (6)



b. During transfer operations, the following will be performed.

(1) Operators will ensure that the dispatcher is aware of pumping operations and is standing by to assist in any communication problems.

(2) Make radio checks with Rapid Jet personnel every 500 gallons (approximately every 1 1/2 minutes).

(3) Immediately stop pumping if radio contact is broken.

(4) Monitor discharge pressure (any increase/decrease in pressure stop pumping).

(5) If quantity pumped exceeds amount requested, stop pumping.

(6) Record the following information in the booster pump log.

(a) Discharge PSI.

(b) Receiving PSI (obtained from Rapid Jet).

c. After transfer operations, the following will be performed.

(1) Close all valves.

(2) Ensure line pressure is relieved.

(3) Record the following information in the booster pump log.

(a) Closing meter reading.

(b) Quantity pumped.

(c) Stop time.

(d) Operator's name and initials.

8. Storage Tank Water Bottom Stripping Operations

a. Water bottoms will be stripped from tanks as soon as possible after detection through daily or weekly tank gauges.

b. Tank stripping is a two man operation. One positioned at the tank to be sumped and one man at the sump tank. Radios will be used to communicate.

c. Ensure all valves are set prior to pumping and secured upon completion.

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MOBILE REFUELER AND DEFUELER OPERATION INSTRUCTIONS

1. Instructions For Refuelers/Defuelers Operators. Mobile refuelers/defuelers are a highly specialized type of equipment, and the danger of fire or delivering contaminated fuel always exists. Therefore, it is mandatory that this equipment be operated by highly qualified personnel, properly indoctrinated, and thoroughly familiar with its operation. Operators must:

a. Possess a valid government motor vehicle operator's permit with additional qualifications for gasoline carrying vehicles, explosive license, and health certificate.

b. Be thoroughly familiar with station traffic and vehicle regulations and safe driving practices.

c. Be familiar with location and operation of valves and mechanical drives of mobile refuelers.

d. Be familiar with operation of safety devices and fire fighting equipment.

2. Refueler/Defueler Daily Operations. Operators will proceed with the following routine checks prior to daily issue of fuel.

a. Drain the low points and filter separator of each refueler.

b. The trucks will then be recirculated.

c. Daily inspections of trucks and fuel samples will be taken during this time and taken to the Fuel Division lab. An additional sample will be taken from each truck and retained until completion of the day's flight operations for verification and inspection if requested. (Monthly nozzle samples will be taken from each truck and sent the Naval Air Rework Facility, Cherry Point for filter effectiveness.)

d. Nozzle screens will be inspected/cleaned in accordance with reference (f).

3. Duties And Responsibilities For Refueler And Defueler Operators. Reference (f) outlines technical data and requirements for aircraft refueling.

a. Refueling is normally a two man operation, one driver and one crew member. However, when overwing refueling requires the crew member to leave ground level, a second crew member will be required as a fire watch. All defuelings require one truck operator, one crew member (nozzle operator), and one crew member (fire watch).

b. Check exhaust pipes on mobile refuelers and defuelers to be sure that they do not have any holes, cracks, or breaks. Also,

ENCLOSURE (7)



inspect exhaust piping regularly to be sure that there are no large particles of carbon that might burn or glow.

c. Drivers will make a visual check of tank compartments on each vehicle prior to releasing for daily operations.

d. Keep all bonding connections clean, unpainted, and in good condition.

e. Never begin any fuel handling operation until all equipment is properly bonded.

f. Do not kink hose.

g. Never smoke in or around refuelers or defuelers.

h. Do not permit or use open fires, matches, cigarette lighters, oil lanterns, or similar open flame equipment within 100 feet of fuel handling equipment.

i. Never perform any repair work on vehicle or aircraft during refueling/defueling handling operations or while working in a hazardous area.

j. Do not use flashlights, drop lights, etc., except those approved by proper authority for use in hazardous locations.

k. Discontinue fuel handling operations during electrical storms. (If lightning is visible to the operator, cease fueling operations.)

l. Be certain that aircraft radio and radar equipment are switched off prior to beginning the refueling or defueling operation.

m. Never refuel/defuel aircraft inside a hangar or any confined area that would permit vapor collection.

n. The refueler/defueler operator shall be certain that the aircraft is properly located away from all possible sources of ignition. If not, refueling/defueling must be delayed until the aircraft is moved or the ignition sources eliminated.

o. Park the refueler/defueler as far from the aircraft to be filled as the hose will permit. It will be parked in a position so that it may be quickly removed in the event of a fire. This means the refueler/defueler will be parked parallel to the wing permitting easy exit in the event of an emergency. There must be no obstructions at anytime in front of the refueler.

p. Before beginning the refueling/defueling operation, ensure that all equipment, other than that essential to the



refueling/defueling operation, is turned off. No personnel will remain in the aircraft unless essential to the refueling/defueling operation.

q. Be sure that the aircraft and refueler/defueler have been properly bonded by connecting the refueler static cable to the aircraft. (Overwing nozzles require a separate bonding pig-tail which should be connected to the aircraft before tank caps are removed.)

r. "Daily and Weekly Preventive Maintenance" sheets will be completed as required. The pressure drop reading will be logged on daily maintenance sheets. These sheets will be completed daily for each vehicle and will be kept on file at the Station Fuel Division office.

s. Refueler operators will not back a refueler or defueler on the flight line at any time unless there is a man present to direct the operator.

t. Recirculation of product may not exceed three (3) minutes if the refueler tank is less than one-half (1/2) full and ten (10) minutes if more than one-half (1/2) full.

Note: The recirculation of product is only intended to replace the fuel in the lines and allow the operator to obtain samples down stream of the filter separator for the purpose of filter effectiveness testing.

4. Defueling Procedures

a. Prior to defueling operations, the operator will ensure that approximately 20% of the defueler's tank capacity is filled with product to minimize turbulence in the tank.

b. Request for defuels will be made via telephone and the following procedures will be followed for each defuel operation:

(1) A defuel request form will be initiated by the squadron requesting defuel service and presented to the defueler operator prior to defueling. The request will indicate reason for defuel (maintenance, contamination and an estimation of quantity--(pounds or gallons)).

(2) A sample will be drawn from the aircraft prior to defueling by squadron personnel after the defueler operator has arrived (if possible).

(3) The defueler operator will visually examine the sample prior to defueling the aircraft when possible.



Note: If visual examination reveals a variation in color, the presence of gross amounts of water or sediment, the operator will contact his immediate supervisor for instructions regarding disposition of product.

(4) The aircraft will then be defueled.

(5) Upon completion of the defueling operation, the driver and a squadron representative will confirm the quantity received.

c. When mobile defuelers have been filled to capacity, the tank contents will be examined by laboratory personnel and tested as outlined in enclosure (3).

5. Receiving

a. Refueler vehicles will enter the main storage area through Gate #2, and position the vehicle on the right side of the fillstand, observing the five mile per hour speed limit.

b. Drivers will ensure that vehicles are stopped directly beside the fillstand. All electrical equipment is secured, emergency brake is set, engine off, and the vehicle is properly bonded with fill stand.

c. After bonding vehicles, the driver will open dome covers to vehicles and hook up nozzle from fillstand to bottom load adapter of vehicle.

d. The driver will inform the fillstand operator of the estimated quantity of fuel required, and upon receipt, confirm the amount.

e. Drivers will ensure that procedures are carried out in reverse prior to leaving fillstand area and main storage area.



LABORATORY OPERATION

1. Laboratory Operations. Quality surveillance personnel are responsible for the operation of the laboratory and all phases of product inspection under the supervision of the fuel distribution inspector. Quality surveillance personnel will:

- a. Perform all tests required and ensure that all quality assurance measures are taken as outlined in enclosure (3).
- b. Perform or supervise the taking of samples as required.
- c. Perform or supervise the gauging of tanks for proper accountability required.
- d. Perform or supervise the inspection of all new item receipts.
- e. Maintain outgoing sample log in accordance with enclosure(3).
- f. Maintain filter separator/fuel monitor pressure differential log daily for all fuel servicing equipment.

2. Hours Of Operation

- a. Daily - Monday through Friday - 0600 - 1630.
- b. Weekends and holidays.

(1) Provide one man for Quality Surveillance duty (QS) to perform filter effectiveness tests on all fuel servicing equipment in service that day prior to its use.

3. Maintenance And Calibration

- a. Ensure that all equipment is maintained and serviceable.
- b. Ensure that all equipment requiring calibration is routinely inspected and calibrated.
- c. Ensure that all necessary supply items and equipment are available to support laboratory operations and assurance inspections.

4. Additional Duties

- a. Perform monthly fire extinguisher inspections on all firefighting equipment and maintain a file on such action.
- b. Provide training support and technical instruction on quality matters to requesting units supported.



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c. Perform weekly continuity inspections on all bonding/static cables throughout the Fuel Division. Maintain a file on such inspections. Take corrective action as required.

ENCLOSURE (8)



MAINTENANCE

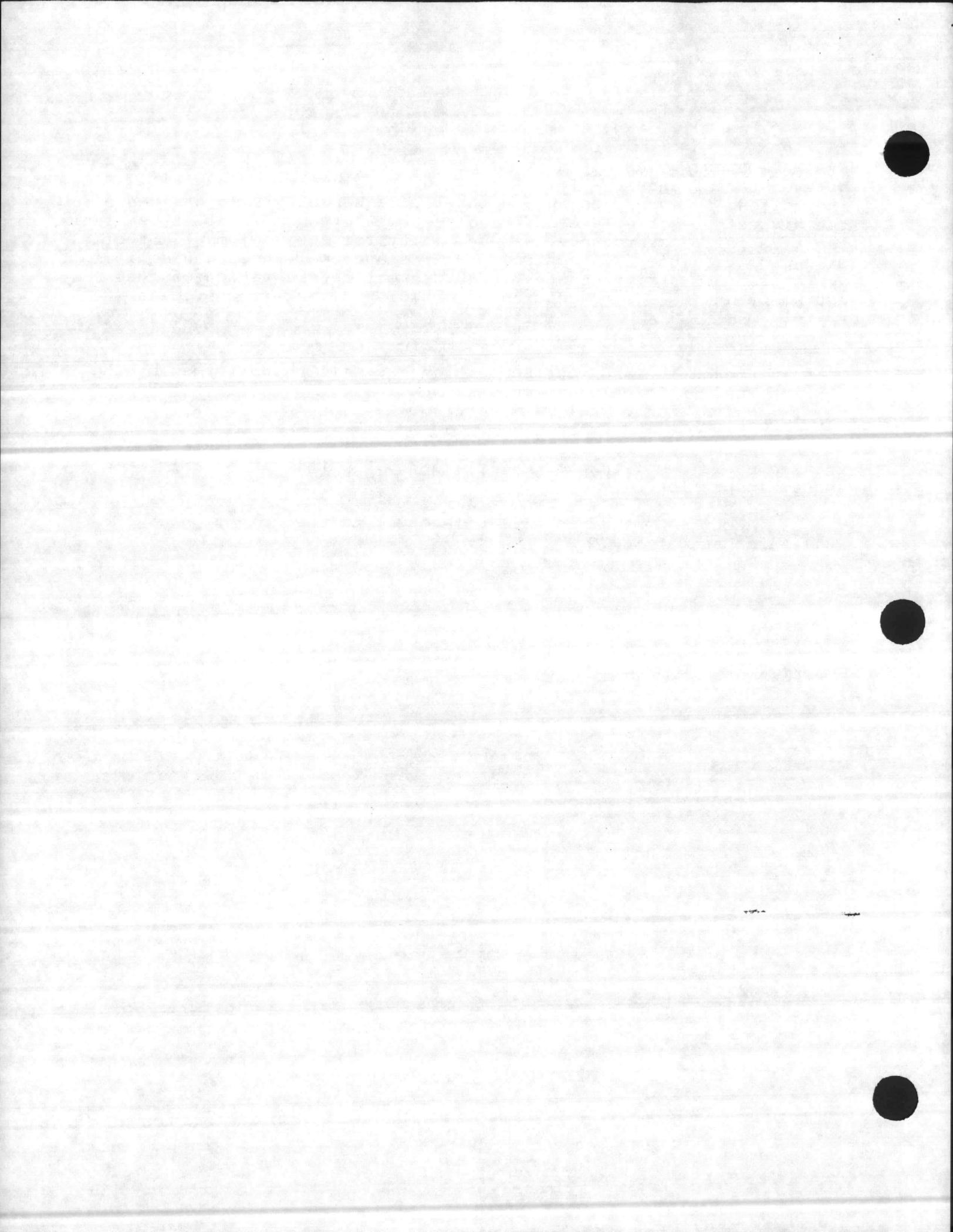
1. Maintenance. As cited in reference (c), maintenance responsibilities are found in all levels of supervision and phases of inspections necessary to ensure that all equipment is maintained at the highest possible level of readiness. Every member of the section has a definite maintenance responsibility for the equipment directly or indirectly under his control. Maintenance personnel and equipment operators must strive constantly to prevent deterioration of fuel equipment and to ensure continuous efficiency and effectiveness.

2. Assignments Of Maintenance Functions

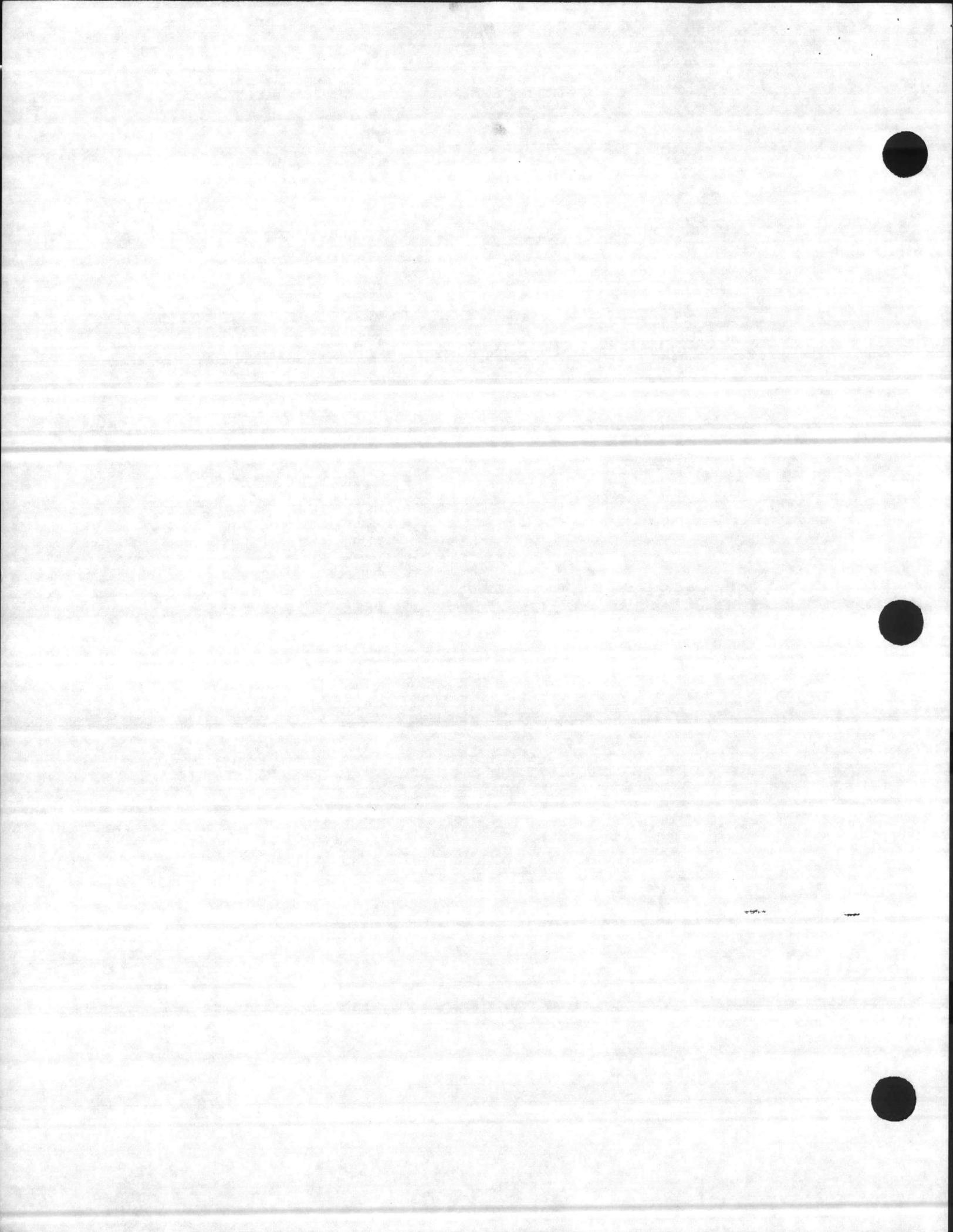
a. Preventive and routine maintenance will be performed by the station Fuel Division's assigned industrial equipment repairers under the direction of the Fuel Farm Foreman.

b. Preventive maintenance inspections will be conducted on a routine basis consisting of daily, weekly, monthly, quarterly, and annual inspection.

c. All problems areas will be brought to the attention of the Fuel Farm Manager/NCOIC.







AIRCRAFT DIRECT REFUELING OPERATION

1. Aircraft Direct Fueling System. The ADFS is located on the north and south sides of Delta taxiway. It consists of eight (8) high speed hydrant systems which are serviced by four (4) 20,000 gallon ready issue tanks. The ADFS NCOIC is responsible for the overall supervision of personnel, receipt, storage, issue, and quality control of the ADFS.

2. ADFS Daily Operation

a. Perform opening/closing tank gauges on all tanks prior to and at the conclusion of operation, to include all receipts.

b. Visually inspect all equipment and insure all valves are properly set prior to starting pumps.

c. Complete inspection checklist.

d. Report all maintenance problems to the Fuel Farm Foreman/Maintenance Branch.

e. Perform radio checks on all FM radios and headsets.

f. Insure all emergency showers/eye water washes are properly functioning.

g. Maintain Daily Fuel Tally sheets for each refueling point.

h. Perform crash phone check.

i. Drain separators of all accumulated water.

j. Complete Daily Inventory/Meter Verification Reports.

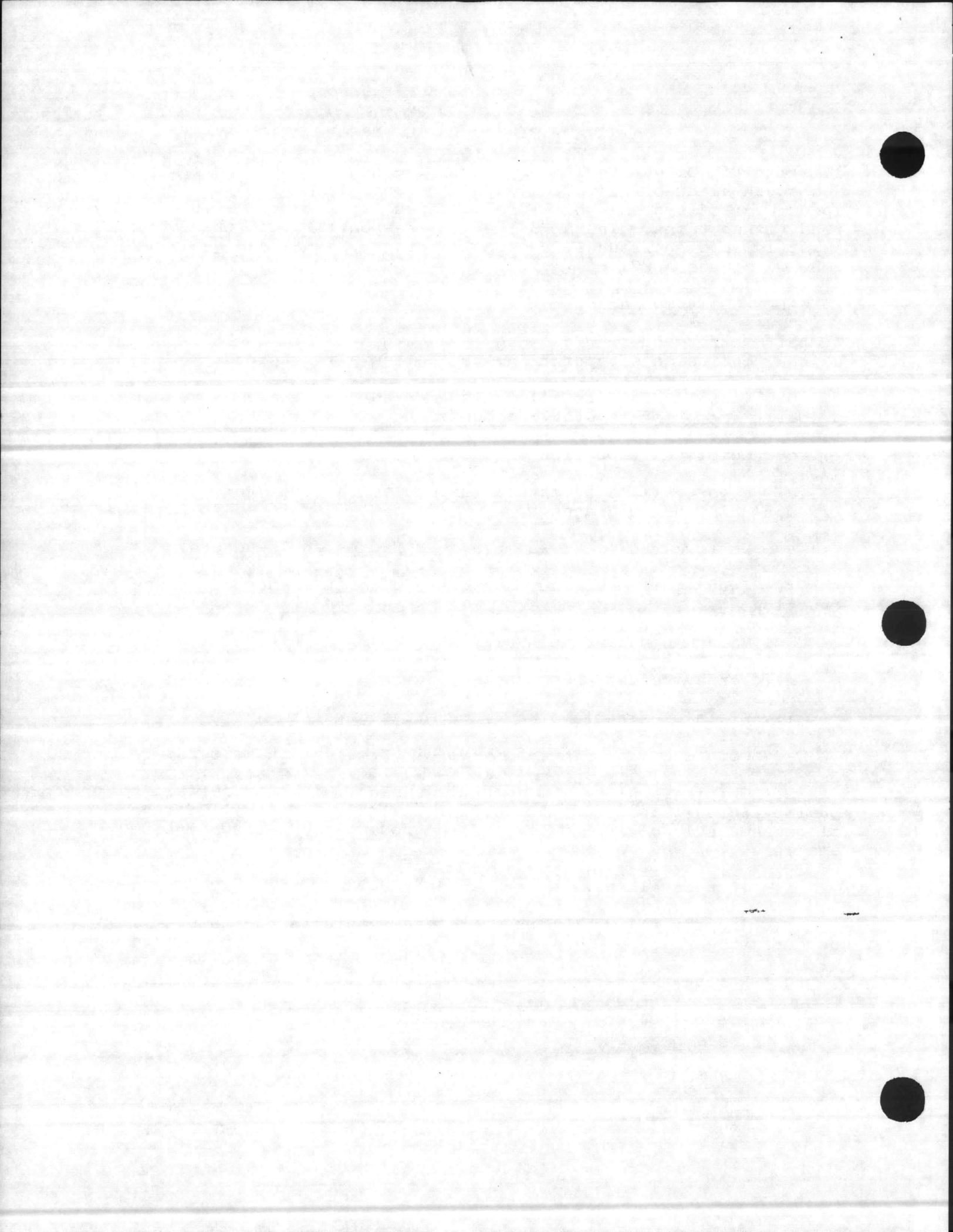
k. Obtain samples from each dispensing point and forward to the Quality Surveillance (QS) Branch for analysis. No fuel will be dispensed until clearance is obtained from the QS Branch after analysis.

l. Inspect all nozzle screens as required.

m. Inspect all sump tanks for total contents and sump as necessary.

n. Remove all tank water bottoms promptly upon detection.

o. Issue fuel on a first come, first serve basis.



3. Fuel Receiving Procedures. JP-5 is received into the ADFS by underground fuel line from the storage tanks at the Fuel Farm. Procedures for receiving fuel for the ADFS are as follows:

a. Prior to receiving fuel, Rapid Jet will perform the following:

(1) Gauge receiving tank.

(2) If receiving into A&B, visually inspect C&D to ensure receiving valves are closed and vice versa.

(3) Ensure valves to receiving tank are open.

(4) Establish radio contact with Fuel Farm.

(5) Inform Fuel Farm operator of quantity required.

(6) Establish start time.

(7) Make appropriate log entries.

b. During receiving operations, the following will be performed.

(1) Maintain radio contact (radio checks will be made by Fuel Farm personnel every 500 gallons).

(2) Any break in radio communications, shut down (slowly close main transfer line valve to prevent line surge).

(3) Visually monitor tank being filled.

(4) Monitor receiving PSI. If PSI's drop from normal, stop pumping operations immediately.

(5) Make appropriate log entries.

c. After receiving operations, the following will be performed.

(1) Close all valves to receiving tank.

(2) Gauge tank.

(3) Make appropriate log entries.

Note: A sudden drop in PSI's may indicate a break in the transfer line, it may also indicate that a receiving valve to another tank is open.



HOT REFUELING ROTARY WING AIRCRAFT

1. Hot Refueling Rotary Wing Aircraft. Hot refueling aircraft presents safety hazards which are normally not encountered in other refueling operations. Consequently, the personnel who conduct these operations must have a thorough knowledge of all equipment they operate, observe all safety procedures, and follow the specified procedures as set forth in reference (f) for each operation.

2. Personnel Requirements For Hot Refueling Fixed And Rotary Wing Aircraft. The following are minimum personnel requirements for servicing each aircraft.

a. ADFS Personnel Requirements:

(1) One Refueling Coordinator positioned at the servicing tank control panel.

(2) One Fuel Operator positioned at the hydrant.

b. Aircraft Crew Requirements:

(1) One Aircraft Pilot.

(2) One nozzle Operator (Crew Chief or Plane Captain).

3. Equipment Requirements For Hot Refueling Fixed And Rotary Wing Aircraft. The following is required for hot refueling at each hot refueling spot.

a. One service unit fueling hydrant, TAFDS, HERS, hose cart, or other type of fueling unit.

b. Hose or pantograph fueling arm.

c. One nozzle assembly.

d. One bonding cable. Both bonding and grounding (earthing) cables are required (can be one of the same at aircraft direct refueling stations).

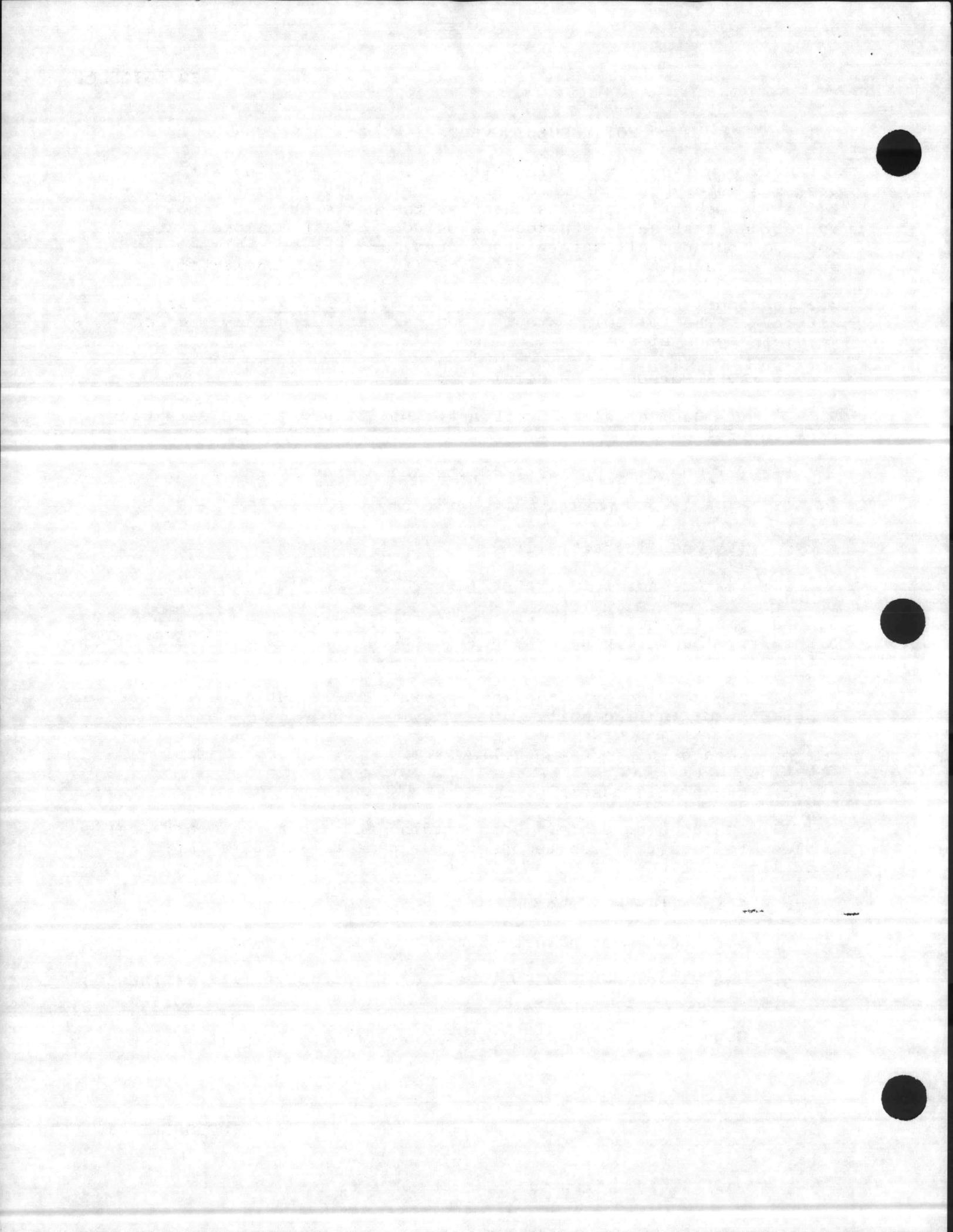
e. Aircraft wheel chocks.

f. Sound attenuating ear protectors for each man.

g. One TAU or two 150 lb. wheeled PKP or halon fire extinguisher per lane.

h. Goggles for each man (rotary wing aircraft only).

ENCLOSURE (11)



4. Procedures For Hot Refueling Fixed And Rotary Wing Aircraft.

a. Helicopters will taxi to the fuel pit area as directed by MCAS, New River Ground Control on the appropriate UHF frequency (as available). Requests for position/point availability prior to entering pit area can be made direct to fuel pits via FM radio frequency 40.55, call sign "Rapid Jet".

b. Prior to aircraft entering the hot refueling area the following shall be accomplished:

(1) Secure all unnecessary electrical and electronic equipment.

(2) No ordnance shall be permitted.

(3) All skid-mounted aircraft will be directed by a qualified crew member ground support personnel from the appropriate squadron.

c. Hot refueling procedures shall be performed in the following sequence:

(1) Taxi speed into the fueling area shall be no faster than a man can walk. The Aircraft Pilot will maintain communications with Ground Control, or as directed.

(2) Position aircraft on the designated spot (nozzle operator).

(3) Passengers and crew members other than the pilot and the co-pilot will be required to debark prior to refueling.

(4) Chock aircraft wheels (nozzle operator).

(5) Connect bonding/grounding cable (nozzle operator).

(6) Attach refueling nozzle (nozzle operator).

(7) Determine that aircraft is ready to receive fuel (nozzle operator).

(8) Check meter and reset if required (fuel operator).

(9) Open fuel delivery valve (fuel operator).

(10) Open nozzle valve (nozzle operator).

(11) Individual aircraft fuel system safety check will be accomplished in accordance with aircraft NATOPS manual. Fueling will be stopped if any fuel leak is noted around the aircraft. Should a leak occur, the following will be complied with:

ENCLOSURE (11)



(a) Hot refueling will be immediately discontinued (nozzle operator/fuel operator).

(b) The aircraft will be removed from the refueling area if operationally feasible depending on the nature of the leak.

(12) Check flow rate meter reading and watch for signal to terminate refueling (fuel operator).

(13) Close fuel delivery valve (fuel operator).

(14) Close nozzle valve (nozzle operator).

(15) Disconnect nozzle (nozzle operator).

(16) Disconnect bonding cable (nozzle operator).

(17) Stow pantograph hose and nozzle (nozzle operator).

(18) Signal for brakes to be held (nozzle operator).

(19) Remove and stow wheel chocks (nozzle operator).

(20) Ensure area is clear of equipment and personnel (fuel operator).

(21) Signal for taxi out (fuel operator).

Note: Nozzle operator and fuel operator will work together.

5. Aircraft Crew Responsibilities

a. Specific refueling procedures as outlined in NATOPS manual for each type of aircraft will be followed.

b. Co-pilots will monitor internal tanks during refueling if only one Crew Chief is aboard.

c. If either primary or secondary shut-off valve test discloses a failure, hot refueling shall be immediately stopped.

d. Pilots will observe all signals between personnel involved in refueling operations and be aware of refueling progress.

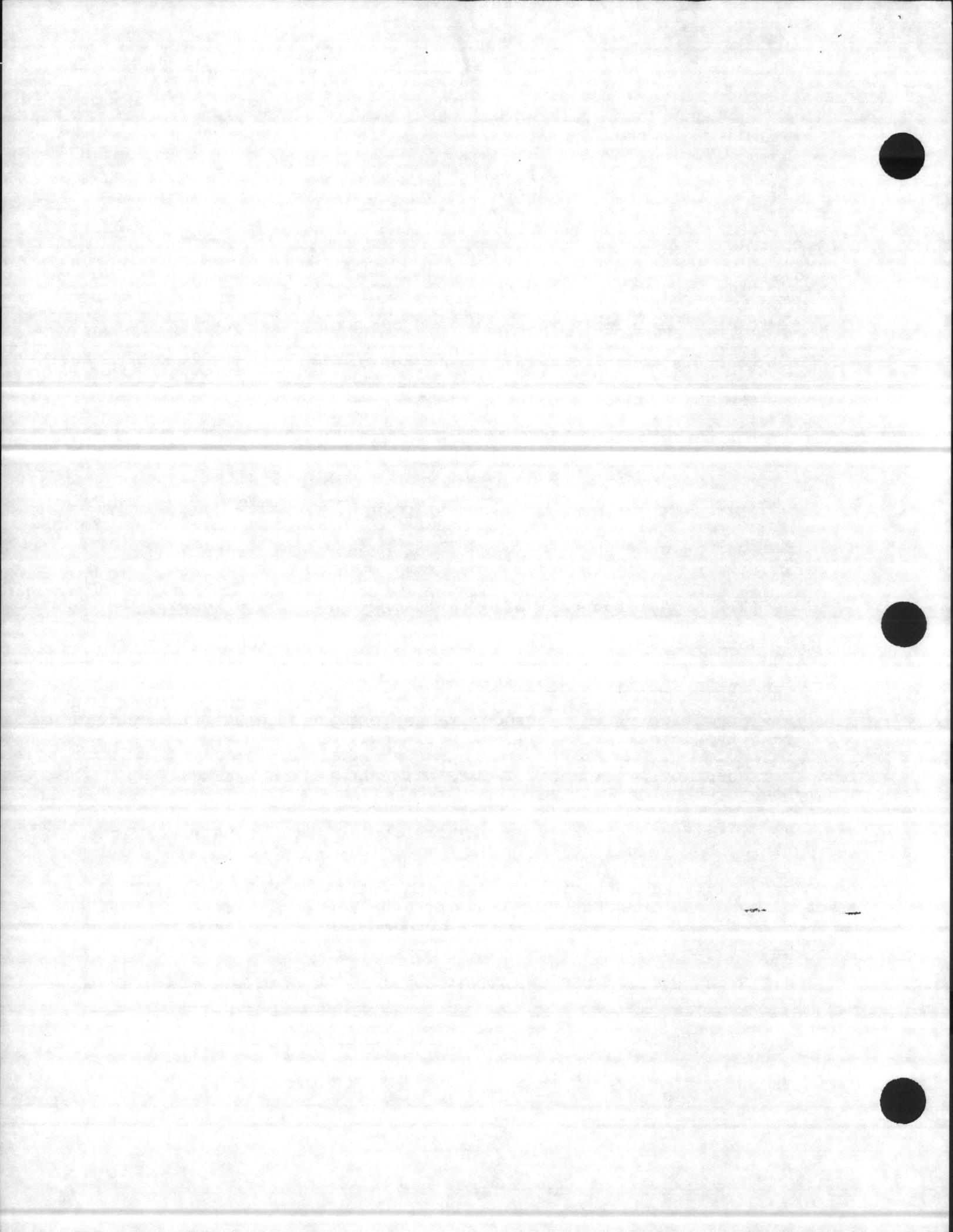
6. Hand Signals

a. Signals from ADFS personnel to aircraft crew members are as follows:

(1) Standard thumbs up or flashlight up signals.

(a) Clear to taxi into refueling pits.

ENCLOSURE (11)



- (2) Thumbs down or flashlight down.
 - (a) Refueling area not clear. Do not taxi into pits.
 - (b) Not pumping or receiving fuel. (This signal may be given by either the ADFS personnel or aircraft crew members, as appropriate.)
- b. Signals from aircraft crew members to ADFS personnel.
 - (1) Thumbs up or flashlight up.
 - (a) Apply fuel pressure to fueling hose.
 - (2) Hand or flashlight across throat in cutting motion.
 - (a) Shut off fuel flow.
- c. Signal for engine fire.
 - (1) Signal with one hand or wand a large figure eight and point to fire.

ENCLOSURE (11)

