

AIRCRAFT FUELING AND DEFUELING

1. Version, Date. 1, 21 March 08 (EMS)
2. Purpose. This Environmental Standard Operating Procedure (ESOP) summarizes the procedures utilized for aircraft fueling and defueling. These procedures are implemented to minimize the potential for impact to the environment and reduce risk to personnel responsible for transferring fuel to and from aircraft.
3. Applicability
 - a. Audience. This ESOP is for all personnel involved in the transfer of fuel at the Marine Corps Air Facility (MCAF).
 - b. Scope. Fuel transfer procedures encompass those implemented during the transfer of fuels from MCAF refueling trucks to aircraft (e.g., HMX-1) and aircraft to MCAF refueling trucks. Procedures for transporting and storing fuel, as well as fuel transfer, are provided as separate ESOPs for other facilities at MCB Quantico.
4. Definitions. The following definitions are provided to support this procedure:
 - a. Jet fuel - (i.e., JP-8) Jet fuel is similar to kerosene and is used in turbine engines and is also used in a few aircraft with diesel engines.
 - b. Deadman control - A control where movement can only occur while the control is held by a person and which causes all movement of the mechanical parts of the machine or plant to stop when it is released. The controls must not be overridden by any other mechanism.
 - c. Spill Prevention, Control and Countermeasure (SPCC) Plan - Plan covering the release of hazardous substances and Petroleum Oil Lubricants (POL) as defined in the Clean Water Act. At MCB Quantico, this is referred to as the Integrated Spill Management Plan.
5. Responsible Parties. The following parties are responsible for aircraft fueling and defueling processes at MCB, Quantico:
 - a. G-4, Fuel Item Manager
 - b. G-5, Natural Resources and Environmental Affairs (NREA)
Environmental Compliance Section
 - c. HMX-1 and visiting aviation personnel, Aircraft personnel
 - d. MCAF, Duty Refueler

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e. MCAF, Aircraft Rescue and Firefighting (ARFF) Section

f. MCAF, Fuel distribution operator (aka, fuel truck driver), and assistants

6. Procedures (Instructions for Operational Control) for MCAF Fuel Transfer to and from Aircraft.

The following procedures are based on Air Facility Order (AFO) 10340.2C and shall be modified to reflect revisions to AFO 10340.2C. Each refueler truck is assumed to operate with two (2) fuel distribution operator personnel, one designated as the fuel truck driver and the other as the nozzle (assistant) operator. In the event that there is only one available, the fuel truck driver shall perform the duties of fuel operator and the aircraft personnel shall perform the duties assigned to the nozzle operator. Note that the use of aircraft personnel does not relieve them of their duties assigned as aircraft personnel.

a. Transferring Fuel to Aircraft

(1) Two-way radios will be turned off within 75 feet of the aircraft to be refueled.

(2) The refueler truck will park as far as possible (as permitted by hose length) from the aircraft being refueled.

(a) The refueler truck will be positioned parallel to or headed away from the aircraft, with the driver's side toward the aircraft.

(b) There must be no obstructions in front of the refueler truck that would prevent it from being driven away in the event of an emergency.

(3) After parking the refueler, the fuel operator will set the truck's airbrake, ensuring that it is fully applied and place the vehicle in neutral, turn off vehicle lights, and any other non-essential electronic equipment. The vehicle WILL NOT be chocked.

(4) The fuel operator will check with the aircraft personnel to ensure that no ignition sources are within a 100 feet of the aircraft and that the refueler truck is at least 100 feet from any operating airborne radar equipment and 300 feet from operating ground radar equipment.

(5) The fuel operator will sample the fuel and, if requested, will present the sample to the aircraft pilot or crew chief.

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(6) Before refueling, the fuel operator shall check with the crew chief to ensure that all aircraft electronic equipment is turned off and that no repair work is being done on the aircraft.

(7) The nozzle and fuel operators will check the aircraft and the refueling truck to ensure that BOTH are GROUNDED by connecting the refueler static cable to the aircraft.

(8) After laying out the fuel hose (in evacuated condition), the nozzle operator will ensure that the hose nozzle is brought in contact with some metal part of the aircraft, remote from the fuel tanks. This ensures that no difference in static energy exists.

(9) ALL OF THE STEPS MENTIONED IN PARAGRAPH 6.a.(1) through 6.a.(8) shall be completed prior to opening the aircraft fuel tanks.

(10) The nozzle operator shall bond the nozzle bonding wire to the aircraft, and open the fuel cap, of only one aircraft fuel tank. The cap will be reattached and secured on the tank, immediately after the tank is filled and before removing the cap from any other tank. An exception to this rule may be made for dual fueling equipment with necessary trained personnel only.

(11) An aircraft crewmember with a Halon fire extinguisher will stand by at the refueling point while static clamps are attached and while fueling is occurring.

(a) If the automatic water drain valve on the truck should open and eject water, the refueling operation shall cease. The refueling truck will be taken immediately to the parking area for a complete investigation.

(b) If during the refueling operation, a leak is observed, the refueling operation will cease in order to remedy the condition (See paragraph 10).

(12) The nozzle operator shall finish filling the tank, keeping the fuel nozzle in contact with the metal part of the aircraft at all times, to minimize the effects of static energy. The nozzle operator shall avoid filling the tank completely, leaving the prescribed outage (unfilled portion) in each tank.

(a) The deadman control must always be controlled by hand so that the flow of the fuel may be instantly stopped when the hand pressure is released.

(b) The deadman control on the nozzle shall never be blocked open

(13) When the refueling operation is complete, all of the refueler equipment shall be secured and properly stored in the reverse order of the above steps, with the grounding wire being removed last.

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b. Procedures for Defueling Aircraft. On occasion refueling personnel must remove fuel from aircraft (i.e. contaminated fuel was used and requires removal, or the aircraft may require major maintenance). These procedures are similar to those used to fuel aircraft; however, defueling equipment has the capability of removing fuel faster than the aircraft can release it. Therefore, extreme caution is required to avoid damaging aircraft fuel tanks. The hazards in defueling are equal to those of refueling and require extreme caution to avoid serious injury or property damage. These procedures will be strictly enforced.

(1) Requests for Defueling Aircraft. Before responding to a request for defueling from HMX-1 Maintenance Control, the MCAF Duty Refueler will complete the Aircraft Defueling Certificate (Attachment 10-1) with the following information obtained from the defueling requestor.

- (a) Aircraft Bureau Number?
- (b) Reason for the Defueling?
- (c) From a fuel standpoint, can the aircraft be released for flight?
- (d) Does the fuel onboard contain dye?
- (e) What is the estimated number of gallons to be removed from the aircraft?
- (f) Authorizing official?

(2) The fuel distribution operator will obtain the signature of the authorizing person at the scene of the aircraft prior to commencing defueling operations.

(3) As with refueling, it is assumed that there will be two (2) fuel distribution operators for each defueling truck. One will be designated as the fuel operator and the other as the nozzle assistant. If there is only one fuel distribution operator, one of the aircraft personnel will perform the duties of the assistant. Note that the assistance from the aircraft personnel does not relieve the aircraft crew of their duties as aircraft personnel per this ESOP.

(4) Aircraft personnel, equipped with a Halon fire extinguisher will stand by during the entire defueling operation, with a second fire extinguisher readily available.

(5) The designated defueler truck will never be used to refuel aircraft. After the defueler truck is full, the fuel is transferred to a refueler truck and tested for reissue.

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(6) ARFF will be notified prior to defueling any aircraft.

(7) Prior to defueling, a fuel sample will be obtained from the aircraft and tested for water and/or sediment contamination. For clean fuel, which is suitable for reissue, the defueler kit attached to the 5,000 gallon refueler trucks will be used. Contaminated fuel, dyed fuel, AVGAS, and all unknown product defuelings will be accomplished with the DESIGNATED DEFUELER TRUCK ONLY.

(8) Defueling of all aircraft will occur on the southwest portions of the aircraft parking ramp, west of Taxiway 3 on the Compass Rose. The same regulations as required for refueling aircraft will be implemented during defueling activities. If this location is unusable due to construction or policy change, defueling must occur in accordance with NAVAIR 00-80T-109.

(9) If it is absolutely necessary, an aircraft may be defueled within a hangar; however, defueler personnel MUST obtain permission from the Commanding Officer, MCAF. After obtaining permission, the main hangar doors will be opened and all shop doors leading to the hangar will be closed. The defueler operator shall be certain that the aircraft is located away from all possible ignition sources; if not, defueling must be delayed until the aircraft is moved or the ignition source is eliminated.

(10) The following procedures will be completed prior to opening any aircraft or defueler tanks. Extreme caution shall be taken to ensure that the nozzle tube does not damage the aircraft tank bottoms.

(a) The fuel distribution operator shall park the defueler as far from the aircraft as possible and parallel to or oriented away from the aircraft. It should be in a position for evacuation of the area should a fire occur and there must be no obstructions in front of the vehicle that may prevent it from being driven away in an emergency. Additionally, when parked, the wheels must be oriented away from the direction of any other aircraft.

(b) After parking, the fuel distribution operator will set the air brake, ensuring that it is fully applied, set the transmission to the neutral gear, and then turn off all electrical equipment such as the lights. THE VEHICLE WILL NOT BE CHOCKED, as this would prevent or hamper rapid evacuation if the conditions warranted such action.

(c) The fuel distribution operator will check with the aircraft personnel to ensure that all aircraft electronic equipment is turned off and that no repair work is being performed on the aircraft.

(d) The fuel distribution operator will recheck the area to ensure that no ignition sources are within 100 feet of the aircraft. Provided there are no sources, the defueler truck will then be prepared for operation.

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(e) The assistant fuel distribution operator (or aircraft personnel) will ensure that the aircraft and defueler truck have been grounded by connecting the bonding cable attachment on the defueler truck to a bare metallic part of the aircraft landing gear.

(f) To be certain that no static differential exists, the Assistant (or aircraft personnel) shall bring the suction hose nozzle in contact with some metal part of the aircraft. The nozzle bonding wire shall also be connected to the aircraft.

(11) After the above steps are complete, the assistant operator (or aircraft personnel) will remove the fill cap of the first aircraft fuel tank compartment. This cap will be replaced immediately after the fuel has been removed and before removing the cap of any other tank.

(12) The defueling operation will begin on the signal to the fuel distribution operator from the Assistant (or aircraft personnel), who will remain near the aircraft tank during the entire operation.

(13) The Assistant (or aircraft personnel) will watch the unloading operation at all times and will signal the fuel distribution operator to stop the operation when the tank is empty.

(14) Final draining of liquid remaining in the aircraft fuel tanks shall be accomplished with a hose connected from the tank drain into grounded and vented containers. It is imperative that all tank fill caps be replaced before any of the grounding or bonding wires are removed. After all of the aircraft fuel tanks have been emptied, the Assistant (or aircraft personnel) shall disconnect the nozzle bonding wire from the aircraft, then disconnect the banding cable attachment of the defueler truck from the landing gear of the aircraft and the ground.

(15) When the operation is complete, the operator and assistant operator will replace all equipment and secure the operation.

c. Responsibility of aircraft personnel. Aircraft personnel will be concerned primarily with the operations associated directly with the aircraft. They shall ensure that no repairs are conducted during fueling and defueling operations, that aircraft electrical equipment and radar are powered down, and that the aircraft is grounded and bonded. More specifically, they are responsible for:

(1) The safety and performance of all operations which require entrance into the aircraft or operation of aircraft equipment

(2) Standing by during the entire fueling or defueling operations with a portable Halon fire extinguisher, as well as having a backup extinguisher nearby for use in the event of an emergency.

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(3) Performance as the assistant fuel distribution operator if the refueling or defueling crew consists of only one (1) Fuel Distribution Operator.

7. Inspection and Corrective Action

a. The fuel distribution operators (or Aircraft personnel) are required to inspect the transfer of fuel during the ENTIRE operation. If a spark, leak, spill or fire occurs, they will follow the emergency procedures discussed in paragraph 10.

b. MCAF personnel perform daily inspections of their refueling trucks in addition to monthly maintenance check-ups.

c. The MCB Quantico Fire Protection/Prevention Branch performs monthly inspections of MCAF refueling/defueling trucks to assure that they are not leaking and are grounded

8. Internal Communication

a. MCAF notifies the Bulk Fuel Farm of times when refueling trucks will arrive. Refer to paragraph 6 for additional information concerning MCAF and Internal communication.

b. Under normal conditions, each fuel commodity will be delivered on a predesignated delivery schedule. If additional fuel is required, it will be ordered by the MCB Quantico Bulk Fuel Facility through the Materials Readiness Branch, Supply Technician (G-5).

9. Training/Awareness - Due to the environmental and personal safety risks associated with fuel transfer operations, there are multiple training requirements that vary per responsible party, as specified below:

a. Fuel Distribution Operators and assistants, are required to maintain the following training:

(1) Hazardous Communication Standard (HAZCOM)

(2) Basic SPCC

(3) First Responder Awareness Level

(4) First Responder Operations Level

(5) Equipment Deployment Exercise

(6) Drivers of age 26 and under must have attended the Drivers Improvement Course (DIC) and possess evidence of their successful completion of the DIC.

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(7) Drivers must possess a valid state driver's license

(8) U.S. Government Motor Vehicle Operator Permit, OF-346; or a student operator permit, SF-346 if accompanied by a driver with an OF-346 permit.

(9) Explosive Material Qualified.

b. The ARFF and the MCB Quantico Fire Dept are National Board on Fire Service Professional Qualifications accredited firefighters (ProBoard). They are trained and certified through their own programs via DoD Instructions 6055.6 and 29 Code of Federal Regulations 1910.134 (respiratory protection program). This includes HAZMAT Incident Command, Technician and Operations training, as well as National Incident Management System (NIMS) training.

c. The NREA EMS section facilitates environmentally related training on this ESOP as well as environmental awareness to the target audience mentioned in paragraph 3.a.

d. All other training occurs on the job.

10. Emergency Preparedness and Response

a. If a spill occurs while issuing or receiving fuel

(1) Cease all operations, turn off the power supply, and close appropriate valves on line to stop the flow of fuel.

(2) Get fire extinguishers ready for use

(3) Do NOT start the truck engine or introduce any other potential ignition sources until the spill has been completely cleaned up.

(4) Call the ARFF Section.

(5) Evacuate the area of unnecessary personnel.

(6) Notify supervisor

(7) If safe to do so, contain the spill by using absorbent materials such as absorbent socks and mats to keep it from migrating. Use drain mats as needed.

(8) The fire department will determine what actions are required, perform the initial response action, and will inform the NREA Environmental Compliance Section.

(9) Fill out a Spill Report (see Attachment 10-2) and provide it to the section Supervisor.

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(10) The NREA Environmental Compliance Section will determine if it is a reportable spill.

b. If the refueler truck is leaking uncontrollably, implement the following procedures:

(1) Shut off the truck and evacuate the area.

(2) If hose or nozzle leaks, shut off line valve next to hose reel. Put hose back into truck.

(3) If leak is from the tank on the truck, put a bucket under the leak to contain the spill until help arrives. If safe to do so, contain any overflow by using absorbent materials such as absorbent socks and mats to keep it from migrating.

(4) Get fire extinguishers ready for use.

(5) Call the fire department, ARFF (911)

(6) Call the fuel farm (x5372).

(7) The fire department will contact the NREA Environmental Compliance Section and a Section Supervisor.

(8) If the tank or truck is leaking, another fuel truck will be dispatched and the fuel will be transferred to the other truck under the guidance of the fire department.

(9) Follow steps in paragraph 10.a.(8) through (10).

c. If a refueler driver overfills a tank on a truck:

(1) Shut off the nozzle and the truck.

(2) Evacuate the area of any potential bystanders and remove any potential ignition sources.

(3) If safe to do so, contain the spill by using absorbent materials such as absorbent socks and mats to keep it from migrating.

(4) Get fire extinguishers ready for use.

(5) Call the fuel farm, who will contact the fire department, NREA Environmental Compliance Section and MRC Supervisor.

(6) Follow steps in paragraph 10.a.(8) through (10).

(7) The truck must remain turned off until clean-up is complete.

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(8) Remain at the spill site until it is cleaned up; contaminated soil must be removed using a non-sparking shovel, and waste is put in appropriate containers.

d. If a fire occurs near a fuel truck:

(1) Shut off all valves to the truck and if possible, remove the fuel truck from the area if possible without endangering personnel.

(2) Evacuate the area and:

(a) Call 911 and inform them of the fuel, location and amount of product.

(b) Shut down all pumps by pushing the emergency shut-off buttons on the loading apron.

(c) Close all tanks gate valves without endangering the safety of personnel.

(d) Ensure all dike drains are closed.

(e) Evacuate the area and STOP incoming traffic.

(f) Notify the section supervisor.

(g) Use proper fire extinguishers.

11. References and Related Documents. The following references are relevant to this procedure:

- a. Air Facility Order 10340.2C
- b. MCB Quantico Integrated Spill Management Plan
- c. MCB Quantico Bulk Fuel Storage ESOP
- d. MCB Quantico Fuel Transport ESOP
- e. MCB Quantico Fuel Transfer ESOP
- f. NAVAIR 00-80T-109
- g. Attachment 10-1 Aircraft Defueling Certificate
- h. Attachment 10-2 HM/HW/POL Spill Report

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12. Document Revision History. The following provides a history of revisions of this ESOP:

Revision Number	Date	Revision Made By	Section	Page	Summary of Change and Reason	Signature

13. Document Owner. This document has been reviewed and approved by the document owner. Any revisions or future updates to the procedure will be completed by the document owner as needed.

- a. Document Owner. Motor Transportation Chief, MCAF
- b. Document Approval. Chair, EMS Core Team

AIRCRAFT DEFUELING CERTIFICATE

AIRCRAFT DEFUELING CERTIFICATE

PART I [To be completed by person authorizing the defuel operation
(persons name shall be on file with (S-4) MCAF]

I CERTIFY THAT THE AVGAS/TURBINE FUEL (cross out one) TO BE
DEFUELED FROM AIRCRAFT NUMBER _____

- WOULD NOT PREVENT THE RELEASING OF THIS
AIRCRAFT FOR FLIGHT.
- IS SUSPECT WITH CONTAMINATION WITH _____

- CONTAINS DYE BUT WOULD NOT PREVENT THE RELEASING OF
THIS AIRCRAFT FOR FLIGHT. REISSUE DYED FUELS TO
AIRCRAFT NUMBERS _____ AND _____

THE ESTIMATED GALLONS TO BE REFUELED ARE: _____

THE REASON FOR DEFULEING IS: _____

Signature Title Date

PART II [To be completed by operator after completion of defueling
operation]

METER READING: _____

VOLUME OF FUEL REMOVED FROM AIRCRAFT: _____

Signature Title Date



UNITED STATES MARINE CORPS
MARINE CORPS BASE
QUANTICO, VIRGINIA 22134-5000

IN REPLY REFER TO:

Date

From: _____
Command, Subcommand

To: Natural Resources and Environmental Affairs (NREA) Branch, Facilities Division

Via: _____
Unit Environmental Coordinator

**Subj: HAZARDOUS MATERIAL/HAZARDOUS WASTE/PETROLEUM, OIL,
LUBRICANT SPILL REPORT**

Ref: MCBO 6280.1B

1. The following report of a hazardous substance spill is made, in compliance with the reference:

a. Spill date: _____ Time of spill : _____

b. Person reporting spill: Name: _____

Contact Number: _____ Grade/Position: _____

c. Location of spill: _____

d. Hazardous substance spilled: _____

e. Quantity spilled (gallons): _____

2. Immediate containment actions taken: _____

3. Fire Department Response: Supervisor: _____

4. Notification:

a. Fire Department Dispatcher: YES _____ NO _____

b. NREA Environmental Compliance Section: (703) 784-4030 (working hours only)

c. Bulk Fuel Farm Supervisor(if fuel): (703) 432-0044 (working hours only)

5. Follow on actions required: _____

6. Additional Comments (cause of spill and description of environmental impact/physical damages): _____

7. Submitted by: _____

* This form may be faxed to NREA, Environmental Compliance Section at (703) 784 4953.*