Fuel Handling Guide

The purpose of this guide is to provide information relating to the handling of aviation fuel with emphasis placed on safety, environmental issues, and fuel quality control. The content is directed toward those individuals who maintain aviation fuel system quality.

THREE IMPORTANT GOALS WHEN HANDLING FUEL:

- Provide clean fuel to all aircraft.
- Prevent fuel spills.
- Accomplish the task safely.

At PHI we ensure quality jet fuel through an established quality control program. This program conducts both internal audits and surveillance that assures procedures are in place that confirm compliance with PHI standards, regulatory requirements, and good industry practice.

Fuel System Components

The components installed on fuel systems are not standardized for all locations. This is primarily due to certain customer requests and customer owned fuel systems. The system descriptions include all components that may be installed. In general, all jet fuel systems operate and filtrate fuel the same, but many incorporate unique differences.
Offshore Bulk Storage Skid

- Fuel Storage Tank
- Filter separator
- Filter separator differential pressure gauge
- Pneumatic fuel pump
- Filter separator sump drain line

Offshore Helideck Fuel Point

- Filter Differential Pressure Gauge
- Shut-Off ball valve
- Final filtration: GO-NO-GO Filter
- Hose reel assembly with nozzle

- Nozzle Screen
- Fuel nozzle
- Nozzle bonding wire and clip
Receiving Bulk Fuel Offshore

PHI predominantly utilizes a metal, 550 gallon Intermediate Bulk Container (IBC), for the transportation of Jet A fuel to and from offshore locations. Many operators utilize this same type/design to not only transport aviation fuel, but other liquids as well. Due to similarities in shape, size, and color, it’s obvious that a certain risk factor is present.

Due to risks associated with this procedure, PHI has implemented the installation of a modified male camloc on each of the fuel transporters. With this camloc modification in place, it will require the use of a unique connection between the transporter and the offshore fuel transfer hose. The modification consists of a raised boss that is welded to each of the male camloc connectors and a special notched female connector installed onto the offshore fuel transfer hose. This connection will make it a unique combination that ultimately increases awareness and decreases risks associated with the transfer of aviation fuels.
PHI currently operates two style transporters. The major difference for these is the outlet valve operation.

**Older Design**
- **Side discharge design.**

**New Design**
- **Center discharge design.**

**SIDE DISCHARGE** transporter valve operates in an unconventional manner. The depiction here shows the valve in the **SHOWN CLOSED** state.

Locking tab engaged when valve is **SHOWN CLOSED**.
SIDE DISCHARGE transporter valve operates in an unconventional manner. The depiction here shows the valve in the SHOWN OPEN.

CENTER DISCHARGE transporter valve operates in a conventional manner. The depiction here shows the valve in the SHOWN CLOSED.

Locking tab engaged when valve is SHOWN CLOSED.
Fill, Vent and Pressure Relief cap: Unscrew this cap prior to emptying the transporter into the storage tank.

Prior to emptying fuel transporters into offshore fuel storage tanks, the storage tank must be gauged and quantity noted to determine that the tank can receive the quantity of fuel to be delivered.

The transporter should be visually inspected for damage and leakage.

CENTER DISCHARGE transporter valve operates in a conventional manner. The depiction here shows the valve in the SHOWN OPEN position.
Man Way Lid: used for inspection and cleaning. The transporter anti-tampering indicators must be intact when received offshore.

The transporter anti-tampering indicators must be intact when received offshore. If the seals are broken the transporter must be rejected. Notify PHI immediately at 337-272-4456.
NOTE: PHI is working to implement and finalize these modified camlocs on all transporters and offshore locations by year end 2012.

Modified male camloc with welded boss and slice cut that is to be attached to all fuel transporters.

Modified female camloc with boss cut out and internal boss that is to be attached to the offshore transfer hose.

The installation of the offshore fuel transfer hose with incorporated camloc connections.

Contact the PHI Fuel Management Department for modification information (337) 272-4456.
NOTE: If more than 15 gallons of fuel is drained and contaminants are still present, consider the fuel as contaminated. Call PHI at (337) 235-2452.

CAUTION: Ensure that the vent (fill) cap is removed and clear. The pump can cause a vacuum and damage the transporter significantly.
KEY POINTS TO FOLLOW

- Ensure that fuel transporters are properly labeled and are not damaged upon receipt.
- Each transporter shall have a seal on the outlet valve assembly and the top fill lid.
- Sump each transporter on a daily basis and prior to discharge to eliminate and discourage contamination.
- Visually inspect the sumped fuel to ensure that it is good – clean fuel.
- The fuel transfer hose shall be utilized exclusively for the transfer of helicopter fuel.
- Label the transfer hose properly, (Helicopter Fuel Only).
- Vent the tank prior to discharge.

After fuel has been transferred from the transporter to the storage tank, allow the fuel in the storage tank to stand unused to permit further settling out of debris and water. The recommendation is to allow the fuel to settle 1 hour for every foot of fuel in the storage tank.

Example: 3 feet of fuel in the storage tank before dumping the transporter, dumping the transporter adds 2 feet of fuel for a total of 5 feet of fuel in the storage tank. The storage tank should settle for 5 hours. The settling time can be reduced, due to operational requirements, with the approval of the PHI Director of Operations.

Fuel Quality (Sumping)

The importance of utilizing clean, dry fuel for aviation use is paramount. The single most important function for control of quality is the daily sump. All fuel vessels – aircraft tanks, bulk storage tanks, fuel truck tanks, fuel trailers, transporters, filter vessels, etc… shall be sumped daily for evaluation and inspection. When performed properly, this flushes contaminants from the system and discourages bacteria growth.

Sump Quantities and Recommended Sample Retentions:

- Transporters – Daily sump a minimum of (1) gallon, retain a clean (1) quart sample*
- Bulk Tank – Daily sump a minimum of (1) gallon, retain a clean (1) quart sample*
- Fuel Filters (under pump pressure) – Daily sump a minimum of (1) quart, retain a clean quart sample
- Fuel Nozzle – Daily sump a minimum of (1) quart, retain a clean quart sample

*Retain for 24 hours or until the next fuel sample taken. Discard the sample in a suitable waste container. *

NOTE: If more than 15 gallons of fuel is drained and contaminants are still present, consider the fuel as contaminated. Call PHI at (337) 235-2452.
Taking the Sump

To ensure that fuel quality is satisfactorily maintained, flush at full flow a quantity in excess of the line content from the sump point to the sample container. Inspect the fuel for clarity and water. If this check indicates unsatisfactory results, flush a further quantity into the sample container and repeat until a clean and dry sample is obtained. If a satisfactory sump sample cannot be obtained after flushing three times and/or large quantities of water are present, contact the PHI Area/Base Manager or PHI Fuel Management Department at (337) 272-4242. Discontinue operations with this particular fuel system. Always open sump valve fully to create a vortex which will aid in the removal of contamination.

*3.25 gallon stainless steel buckets are recommended for this procedure.*

Always open sump valve fully to create a vortex which will aid in the removal of contamination.

Sump taken under pressure at all filter points.

It is standard practice to have the sump drain diameter line/piping equal the size of the vessel opening. A line smaller then the tank opening does not allow for an adequate sump.

Bulk tanks = 1” or ¾”
**Visual Inspections**

Visual inspections of your samples provide a quick method for detecting free water, solids, and other traces of possible contamination. The photo on the left depicts a clear and bright sample (see the penny). The photo on the right is fuel that is contaminated with water and solids.

When fuel is not clear and bright, please contact PHI Fuel Management (337) 272-4242.

**Retaining Sump Samples**

Inspect the sump for clarity and ensure that the contents are clear and bright. Retaining a sample is always recommended and a good practice. Transfer clean, clear, and bright fuel into an appropriately labeled jar. Samples should be retained in glass jars only.
Performing Shell Water Detector Test

The Shell Water Detector is an effective GO-N0-GO field test designed to check for free water. This kit is designed for determining the presence in jet fuels of finely dispersed undissolved water in concentrations lower than 15 ppm. Visual detection of water is verified by a color change of the center portion of the water sensitive capsule.

Check expiration date of water detectors.
Take a capsule from the tube. Check that paper is yellow within center of capsule.
Fit capsule to syringe with plunger in closed position.
Immerse capsule into the fuel sample and use plunger to pull 5 ml of fuel into syringe.
Withdraw syringe from fuel, examine capsule immediately.

Good – clean capsule after test.
Capsule is yellow.

Concentrations of water are present with greenish-yellow increasing to blue/green and finally blue/black.
Physical Inspections

Fuel facilities and fuel handling equipment shall be kept clean, tidy, free of leaks, and well maintained. Ladders, walkways and handrails are to be kept free of rust. Tank bund areas should be kept free of vegetation, and bund drain valves shall be kept closed and locked when not in use.

If installed, check the cable recoil system of the bonding cable reel. Insure that reel is firmly connected to fuel system. Once a week perform bonding cable continuity check by pulling the cable out fully, inspecting cable for corrosion and wear, and probing clamp and reel housing/attaching hardware for resistance reading. Insure that readings are less then 10 ohms. All discrepancies with the bonding system shall be corrected immediately.
There are many sources of ignition of fuel vapors such as open flames, engines, ground / airborne radar signals, etc…To minimize the hazard of static electricity, it is necessary to equalize the electrical charges before they build-up to a high enough potential to create a static spark. Prior to making any fueling connection to the aircraft, the fueling equipment shall be bonded to the aircraft by use of a cable.

Inspect the hose for weathering, blistering and leaks at the fittings. Pay particular attention to the last two feet before the nozzle and where it attaches to the filter reel. This area receives the highest stress. Hoses shall be installed within two years of the date of manufacture, and have a maximum service life of ten years. The month and year of manufacture will be stamped onto the hose for ease of inspection.
PPE

- Protective Eyewear
  - Goggles, safety glasses, face shields, full lens prescription glasses, or full lens sun protection glasses.

- Protective Gloves
  - Nitrile (preferred) or Neoprene gloves.

Daily Inspections

Annual inspections are typically completed by the aircraft/helicopter operator. However, help is needed to insure quality fuel through daily inspections. The following daily guide can provide details and guidance in maintaining a quality product at you offshore location.

PREVENTION IS ALWAYS BETTER THAN CURE. KEEP THE WATER OUT AND THE BUGS WON’T SPROUT..!!
Daily Fuel Checklist

Note: Initial each column upon inspection. Note discrepancies and actions. Instructions included on page 2.

| Storage Tank | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 | 31 |
|--------------|---|---|---|---|---|---|---|---|---|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|
| A. Tank Info |   |   |   |   |   |   |   |   |   |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |
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| B. Oil Level |   |   |   |   |   |   |   |   |   |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |
| C. Fuel Age  |   |   |   |   |   |   |   |   |   |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |
| D. Grounding |   |   |   |   |   |   |   |   |   |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |
| E. Tank Cond. |   |   |   |   |   |   |   |   |   |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |
| F. Drum Cloud |   |   |   |   |   |   |   |   |   |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |
| G. Hose on board |   |   |   |   |   |   |   |   |   |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |
| Total Platform Gallons |   |   |   |   |   |   |   |   |   |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |

| Helideck | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 | 31 |
|----------|---|---|---|---|---|---|---|---|---|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|
| H. Filter |   |   |   |   |   |   |   |   |   |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |
| I. Hose, Nozzle |   |   |   |   |   |   |   |   |   |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |
| J. Water Detection Check |   |   |   |   |   |   |   |   |   |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |
| K. Ground-|   |   |   |   |   |   |   |   |   |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |
| L. Continuity Check |   |   |   |   |   |   |   |   |   |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |
| M. Valve Closed |   |   |   |   |   |   |   |   |   |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |

| Differential | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 | 31 |
|--------------|---|---|---|---|---|---|---|---|---|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|
|              |   |   |   |   |   |   |   |   |   |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |

Discrepancies with the fuel system must be corrected as soon as possible or taken out of service and tagged properly.

<table>
<thead>
<tr>
<th>Discrepancies</th>
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<th>Action Plan</th>
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INSTRUCTIONS

ROW A: Sump each tank by opening the sump valve fully. A minimum of one (1) gallon shall be taken and inspected. This will create a vortex, which will aid in the removal of water and sediment. Inspect the sample for water and sediment, continue to sump until clean.

ROW B: Sump one (1) quart from the coalescer/separator and each final fuel filter's under pump pressure into a clean stainless steel bucket. Open sump valves fully.

ROW C: Check the pump seal for leaks, excessive corrosion, noise, and the condition of the electrical conduit. If installed, check the meter for operation.

ROW E: Check the entire fuel system for leaks at all piping valves, joints, pump seals, separator fittings, gauges, split lines, and bulk tank weld lines. Inspect fuel system piping to include leaks, droplets, discoloration, corrosion, bowing, and localized dead vegetation. Inspect above ground pipe sections to ensure that they are not leaking and that they are structurally sound.

ROW I: Inspect the tank structure and supports to ensure integrity and grounding. Check for cracks, discoloration, and corrosion. Ensure that the tank containment berm drain is closed.

ROW L: Check the nozzle for general condition, the valve stem for leaks and the handle for freedom of movement. Check the nozzle screen for presence and tightness.

ROW J: Check the hose reel for general condition, freedom of the spool and leaks. Completely extend the hose once a week and check for weathering, blistering, fuel saturation, and leaks at the fittings.

ROW K: Pay particular attention to the last two feet before the nozzle and where it attaches to the filter or reel.

ROW L: Shell Water Detection Kit used to test fuel samples for water.

ROW M: Check the condition of the ground/bonding system for fraying, tightness, corrosion. Check cable recoil system, if installed, for operation.

(Weekly) Using a Volt/Ohm Meter, set on the lowest resistance scale, check the bonding cable continuity from the bonding clamp on to the fuel system piping. The continuity shouldn't be higher than 25 ohms depending on the cable length. Optimal is 10 ohms or less. NOTE: Discrepancies with the grounding system should be corrected immediately.

ROW N: Inspect fuel system valves and ensure that they are closed and no leaks are present around the noon hour of each day.
Instructions on how to perform the continuity check. (ROW L on the daily form).

If a bonding reel is installed at the fuel location, this check will only need to be performed on the bonding reel end.

Using a Volt/Ohm meter check the continuity From the bonding clamp of the bonding reel Cable to the fuel system piping.

If a bonding reel is not installed at the fuel location, this check will need to be performed on nozzle bonding cable end.

Using a Volt/Ohm meter check the continuity From the bonding clamp/pin of the nozzle bonding cable to the fuel system piping.
Refueling Activities

Aircraft identification is imperative before fueling begins. The aircraft type will determine required additives (if any), bonding locations, fuel cap location and operation. This chapter provides specific guidance on fueling procedures for all model type aircraft operated by PHI. If you are unfamiliar with the aircraft requiring fuel, it is mandatory that instruction and assistance is received from a knowledgeable fuel handler, HLO or aircraft crew member.

Helicopter operations inherent many dangers and safety hazards. Remember to always follow the pilot’s instructions. Keep clear of the helipad until the helicopter has landed. Keep all light weight articles (caps, books, raincoats, etc…) secured while the helicopter is operating. Crouch and keep your arms/hands below shoulder height when approaching or departing the helicopter. Never, under any circumstances walk near or under the tail rotor.

During the fueling operations you shall be alert and monitor the area for leaks and spills and observe the filter differential pressure. No Smoking, open flames or ignition sources shall be permitted within a 50 ft. radius of fuel/de-fuel operation. All other work on the aircraft shall cease until the operation is complete. Before fueling and de-fueling, the aircraft and all equipment shall be properly bonded. Hearing protection shall be worn while the engine or engines are operating. You shall only service the aircraft for which type you have been trained.

a. Refueling

These general fueling procedures relate to all aircraft.

- Proper PPE (goggles or glasses and Nitrile gloves) shall be worn at all times during all fueling processes.
- Properly identify the aircraft requiring fuel.
- No person may fuel from a drum or other unusual fuel system without specific authorization instructions from a PHI Manager with operational control.
- During the fueling operations, all aircraft electronics and electrical switches not required for normal operations shall be secured.
- Weather radar shall not be used.
- There shall be no smoking, open flames, spark or flame producing items, or radio transmissions items within 50 feet of a cold refueling operation.
- Shut down all operating equipment within 50ft. that is not required for refueling and do not start up the equipment again until fuel vapors have dissipated. There shall be no oxygen servicing during cold refueling operations.
• If required, only metal funnels are allowed.
• Battery charges shall not be connected, operated, or disconnected.
• Proper fire extinguishers shall be readily available.
• Attach bonding cable between the aircraft and the refueling station or refueler.
• Pull out the hose and place in proper position for refueling.
• Inspect the face of the nozzle to ensure it is clean.
• Bond the nozzle and the fuel cap by touching them together prior to opening fuel cap.
• Remove the fuel cap from aircraft.
• Begin fueling and monitor all aspects of fueling operation for leaks, spills and differential pressure across final filter assembly.
• Fuel the aircraft per the Pilot or Base Manager’s instructions.
• Reinstall fuel cap, check for security
• Stow the aircraft hose and bonding cables.
• Do not board or discharge passengers during the fueling operation
• Never run or pass the refuel hose under the aircraft to reach opposite side.
• Ensure the area is clear and secured once completed.

b. Hot Refueling (Rapid Refueling)

Hot refueling is a hazardous operation and should never be regarded lightly. The following procedures shall be adhered to:

Note: The General Operations Manual may have exceptions to this requirement due to aircraft and weather considerations.

• Only aircraft fueled with Jet A shall be hot refueled.
• A PHI qualified pilot for that particular aircraft shall be at the controls.
• Aircraft power shall be reduced to idle.
• Hearing protection shall be worn at all times
• Do not board or discharge passengers.
• Keep all lightweight articles (caps, books, raincoats, etc…) secured.
• Keep your arms/hands below shoulder height.
• Never walk near or under aircraft tail rotor.
• Passengers should be discharged prior to the fueling operations. If it is necessary for the passengers to remain onboard, a company representative shall be present other than the person conducting the fueling. The PHI pilot can fulfill this function.
• Additionally, the door (s) opposite the fueling point shall be open to facilitate emergency egress.
• All doors, windows, and access points to the interior of the aircraft that are located adjacent to the fuel point shall be kept closed.
• Pay attention to the pilot’s instructions at all times.
• Rapid refueling from trucks must be approved by the Director of Operations or Chief Pilot, and is not considered a routine operation.

**General Helicopter Fueling Procedures**

Helicopter operations inherent many dangers and safety hazards. Remember to always follow the pilot’s instructions. Keep clear of the helipad until the helicopter has landed. Keep all light weight articles (caps, books, raincoats, etc…) secured while the helicopter is operating. Crouch and keep your arms/hands below shoulder height when approaching or departing the helicopter. Never, under any circumstances walk near or under the tail rotor.
**Bonding**

Jet fuel is a relatively low conductivity liquid and hence a static accumulator, therefore any potential electrical differences must be equalized. The aircraft, and the fuel passing through the hose, separately, may generate static electricity. The fueling operator shall take the following steps to minimize the dangers of static electricity discharge.

Prior to making any fueling connection to an aircraft, the fueling equipment shall be bonded to the aircraft, with a metal cable, providing a conductive path to equalize potential between the fueling equipment and the aircraft. The bond shall be maintained until fueling connections have been removed. This allows separated charges that could have been generated during the fueling operation to be reunited. Bonding and fueling equipment shall be disconnected in the reverse order of connection.

**Grounding during aircraft fueling shall not be permitted.**

Grounding during aircraft fueling is no longer required per NFPA 407. Grounding does not prevent sparking at the fuel surface (per NFPA 77). In the event of an electrical fault, the static wire may not be able to conduct the current, constituting an ignition source if the wire fuses. Static electrical grounding points can have high resistance and, therefore, are unsuitable for grounding. The following definitions relate the differences between bonding and grounding.

**Bonding** – system connects various pieces of conductive equipment together to keep them at the same potential. Static sparking cannot take place between objects that are the same potential.

**Grounding** – a method of removing electrostatic charge building on a conductive object by connecting the conductive object to an earth ground point

*All fueling systems shall be equipped with a means to bond the aircraft and the fueling system framework.*

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**Use the following steps when bonding the aircraft to the fuel system**

*If you have a system equipped with a bonding reel begin on step 1.*
*If the system is not equipped with a bonding reel skip step 1 and begin on step 2.*
Step 1

Pull the bonding cable from the bonding reel Out to the Aircraft and make the bonding Connection.

If bonding connection is not a bonding lug make the bond from the bonding reel to the landing gear of the aircraft.

Step 2

Pull the hose out to the aircraft
Step 3

Make the bond to the aircraft from the Bonding cable connected to the hose and nozzle.

Step 4

Insert the nozzle barrel into the fueling Port and begin fueling.

Once refueling is complete use the steps in reverse to stow the nozzle.
Sikorsky S-92

The S-92 consists of two fuel tanks located in the left and right side sponsons. Each tank will hold 380 gallons of Jet Fuel for a total of 760 gallons when utilizing pressure fueling and 355 gallons of jet fuel for a total of 710 gallons when utilizing over wing fueling. The left side contains the pressure fueling point, high level precheck switch, over wing fueling point and the bonding location. Pressure fueling is accomplished from the left side and will fill both tanks simultaneously. The right side contains the over wing fueling point and bonding point. Each tank (right and left) must be filled independent of each other.

At a minimum, a three person crew will pressure fuel the S-92. This procedure shall be performed with one person at the dead-man control, one in the cockpit verifying the fuel gauge reading, and one at the nozzle. Personnel conducting this procedure shall be trained, current, and familiar with the process.

CAUTION: The S-92 aircraft is not to be pressure refueled offshore.
The bonding points are located in the same locations on the right and left sponsons. The receptacle is designed for the bonding pin.

The over wing fill point is accessed by opening the access door. A standard push type latch is utilized to secure and un-secure the door.
The over wing fill cap is a standard type. The latch is lifted, turned counter clockwise and the cap is removed from the opening. The cap is attached to the aircraft by a plastic lanyard. This procedure is reversed for installation.

It is imperative to check the indicator prior to removing the cap. A black indicator signifies that the fuel level is above the cap opening.

The pressure fueling cap is equipped with a combination vent and latch. The latch is pressed in at the wide portion and held in this position while the cap is turned counter clockwise and removed. When the cap is replaced and turned clockwise the latch will snap back into the closed position.

It is important to ensure that the latch is flush with the top of the cap prior to closing the access door.

WARNING: On the S-92 aircraft it is possible to spill fuel if the tanks are filled above the gravity point fill cap. It is imperative to check the sight glass indicator prior to removing the cap. A black indicator signifies that the fuel level is above the cap opening.
The pressure fill opening has lugs that mate with the pressure fuel nozzle.

The high level precheck switch checks the operation of the high level fuel level shut off circuit and is utilized each time the aircraft is pressure fueled.

The switch is spring loaded in the normal position.

Note: This is a three position switch:

UP = PRIMARY CHECK POSITION.
CENTER = NORMAL OPERATION.
DOWN = SECONDARY CHECK POSITION.
The main fuel cell cap is located on the right hand side of the aircraft, just aft of the rear window. The Bonding Point is located just below the cap and to the left.

TO OPEN: The latch is lifted, turned to the left and the cap removed.
TO CLOSE: The cap is replaced in the opening; latch is rotated to the right and pressed down.
Sikorsky S-76

The S-76 has two fuel caps, one on the left and one on the right side located behind the rear passenger door.

TO OPEN: The latch is lifted, turned to the left and the cap removed.

TO CLOSE: The cap is replaced in the opening, latch rotated to the right and pressed down.
Eurocopter EC-135

The EC-135 has one fuel servicing point and bonding point located on the left side of the aircraft.

**FUEL ACCESS DOOR**
Pressing the latch and swinging the door outward will provide access to the fuel cap.

**BONDING POINT**
The Bonding Point provides electrical continuity between the bonding cable and fuel system. A socket is provided for a bonding pin and a tab is provided to attach a bonding clamp.
Bell 412

The fuel cap on the 412 is located on the right side behind the sliding passenger door.

TO OPEN: The latch is lifted, turned to the left and the cap removed.
TO CLOSE: The cap is replaced in the opening, latch rotated to the right and pressed down.
The fuel cap is located on the right side behind the aft passenger door.

TO OPEN: The latch is lifted, turned to the left and the cap removed.
TO CLOSE: The cap is replaced in the opening, latch rotated to the right and pressed down.
Bell 206L-3, 206L-4

The fuel cap is located on the right side of the helicopter. The 206L-3 and 206L-4 look the same.

TO OPEN: The latch is lifted, turned to the left and the cap removed.
TO CLOSE: The cap is replaced in the opening, latch rotated to the right and pressed down.
Importance of Differential Pressure Gauges

During Refueling of Aircraft

- It is important to note the differential pressure across the filter assembly.
- Dp readings of 15+ indicate contamination and fueling shall be discontinued.
- When noticing a decrease in fuel flow along with high dp readings, discontinue fueling. Be suspect of this fuel that has just entered the aircraft. Sump the fuel system filter and nozzle for evaluation and allow the aircraft to settle for a few minutes. Once settled, perform a sump of the aircraft to ensure airworthiness. Inform management of fuel system problems.
Fuel Spills

Fuel spills are a fire hazard and cause environmental damage. In the event of a fuel spill or fire hazard, fueling operations must cease and every effort is to be made to stop the source of the spill if it is determined that immediate danger is not immanent to personnel. Keep people and equipment away from the area. Report the spill, no matter its size, to your local manager immediately.

First – Aid

The Material Safety Data Sheet shall be referenced when working with Jet fuel in the event of an exposure. In the event that skin becomes exposed to Jet Fuel, wash thoroughly with soap and water. Waterless hand cleaner, (Go-Jo) is very effective for removing Jet Fuel. Clothing that has been soaked with Jet Fuel should be removed immediately and laundered before further use. Remember that soaked clothing is also a fire hazard.

For eye contact, the eyes should be flushed for 15 minutes with fresh water. If irritation persists, seek medical attention as soon as possible.

If Jet Fuel is Ingested;
Do Not Induce Vomiting – Seek Medical Attention Immediately.

PHI Contacts

<table>
<thead>
<tr>
<th>Name</th>
<th>Title/Location</th>
<th>Phone</th>
<th>Email</th>
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<tbody>
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<tr>
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<td>337-235-2452</td>
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</table>