De Beers Canada Inc.

OP 030 – PETROLEUM PRODUCT HANDLING AND STORAGE

1. Purpose and Scope

This procedure covers the fueling of all mobile and static equipment, as well as aircraft and bulk storage containers at De Beers Canada Inc. (DBCI) sites.

2. Responsibilities

- Responsible Person

3. Procedure

3.1. General

3.1.1. Petroleum products are all fuels, lubricants and gases produced from petroleum, and include such materials as gasoline, diesel fuel, stove oil, kerosene (paraffin) Jet 'A' and Jet 'B' aviation fuels, "Avgas", hydraulic oils, greases and similar products.

3.1.2. Petroleum products are hazardous. They are highly flammable, and many can explode when exposed to heat. Persons handling petroleum based products shall keep these away from open flames, and shall follow the DBCI Fire Prevention and Protection procedure (OP 002) with respect to precautions to be taken with petroleum products.

3.1.3. No smoking is permitted within 30 metres of any petroleum product storage site, or while handling, storing, using petroleum products or refueling.

3.1.4. All fuel dispensing nozzles used for fuelling mobile equipment, light vehicles, ATVs and snowmobiles must have a splash-back guard (doughnut).

3.1.5. Spills of petroleum products must be handled in accordance with the DBCI Spills Response and Clean-up procedure (OP 031).

3.2. Bulk Fuel Storage Areas

3.2.1. Spill kits are to be kept at all refueling points and petroleum product storage sites. This includes any fuel cache of more than 5 drums, or any cache that is left in the field for more than one month.

3.2.2. Fire suppression equipment shall be kept at all refueling and storage sites.

3.2.3. All bulk storage tanks larger than 5,000 litres capacity must be grounded to “earth” effectively.

3.2.4. Fuel storage tanks must be labelled indicating what petroleum product is stored in each tank in accordance with the appropriate WHMIS regulations and the Hazardous Material Safety procedure (OP 067).

3.2.5. Vehicles are to be kept away from storage areas and tanks by a barrier to reduce the possibility of a collision with a storage tank. Where a solid barrier is not practical, consideration should be given to using old drums filled with rocks and/or cement.

3.2.6. All storage areas are to be a minimum of 50 metres away from any body of water unless regulations state a greater distance. On occasion where depots must be closer than 50 metres the Responsible Person must ensure secondary protective measures are in place (i.e. secondary containment, storing material over impermeable material, etc.).

3.2.7. All bulk storage tanks shall be inspected at least weekly for signs of damage or leaks. Any leaks or damage must be reported to the Responsible Person as soon as possible, and remedial work to rectify the fault shall be undertaken as soon as possible.

3.2.8. The filling of bulk storage tanks must be supervised at all times. Where bulk storage tanks are being filled, care must be taken not to overfill the tank. Sufficient space must be left at the top of tank to allow for expansion of the contents. This is particularly important where fuel deliveries are made in winter, and the fuel is to be used during the summer months when the ambient temperatures may be considerably higher.

3.2.9. All uncontrolled grass and weeds (i.e. all long grass and weeds) are to be trimmed back for a minimum of 6 metres from all fuel storage areas, including fuel tanks and drum caches.

3.3. Transportation and Storage of Petroleum Products

3.3.1. All transportation of petroleum products and used/waste petroleum products is to be undertaken in accordance with the appropriate Transportation of Dangerous Goods legislation, and in accordance with any appropriate petroleum product legislation for the jurisdiction.

3.3.2. Where fuel drums are cached out in the field, details must be kept in the camp for each cache. This information may include:

- Date cache created;
- Number of drums and fuel type;
- Details of additions to and deletions from the cache; and
- Running total of full and empty drums at the cache.

3.4. Fuel Drum Storage and Handling

3.4.1. Full drums are to be kept separate from empty drums.

3.4.2. Where the original supplier's labels on any drum are damaged or destroyed, replacement user labels, formatted in accordance with the appropriate WHMIS regulations and the Hazardous Materials Safety Procedure (OP 067), shall be placed on each drum clearly indicating the contents of the drum.

3.4.3. The bungs on all empty and full drums are to be kept tight at all times. This includes both the "Filler" and the "Breather" caps.

3.4.4. Full drums used for aviation fuel are to be stored on their sides with the bungs at the 9 o'clock and 3 o'clock positions.

3.4.5. Only factory-sealed drums shall be accepted for delivery of aviation fuels to site.

3.4.6. Once a drum of aviation fuel has been opened and only partially used, care must be taken to ensure that the bungs are replaced and securely tightened, and that the drum is stored with a sufficient inclination to allow any precipitation to run off.

3.4.7. Drums for the transport and storage of diesel, gasoline and/or stove oil may be refilled.

3.4.8. Drums of aviation fuel (Avgas, Jet 'A' and Jet 'B' or similar) may only be refilled if suitably marked.

3.4.9. Where drums for gasoline or diesel are to be refilled, such drums must be grounded to "earth" before filling commences.

3.4.10. Where drums with the above petroleum products are refilled, a sufficient stock of spare "O-rings" (washers) should be available to allow any damaged O-rings to be replaced.

3.4.11. Both the filler (larger) bung and the breather (smaller) bung are to be checked to ensure that they are tight before any refilled drum is moved from the filling point, or accepted for loading.

3.4.12. Refilled drums must be stored in an inclined position with the bungs aligned as per above, in order to allow any precipitation to run off the top of the drum and reduce the likelihood of water entering into the fuel.

3.4.13. Refilled drums must be correctly labelled with their current content.

3.4.14. Only proper bung wrenches are to be used.

3.5. Storage and Handling of Other Petroleum Storage Containers

3.5.1. Jerry cans, metal containers and other temporary storage canisters for petroleum products must be clearly labelled indicating what the content of each container is in accordance with the appropriate WHMIS regulations and the Hazardous Materials Safety procedure.

3.5.2. Where the (re)placement of labels is not practical, i.e. it is acknowledged that most labels will not adhere satisfactorily in sub-zero weather, and in these instances, it is acceptable to paint the descriptor for the fuel container on the outside. It is strongly recommended that camps should have a set of stencils available for "P-50 diesel", "Jet B", "Avgas" and "gasoline" fuels together with "Waste fuels and oils" and "FULL" so that

legible, neatly painted labels are made. Once weather conditions improve, standard printed labels should be placed on drums and containers.

3.6. **Fuelling Mobile Equipment (see also instructions for other types of fuel transfer, appended at the end of this document)**

3.6.1. When fueling/refueling, operators must go through the following steps:

i. Safety Equipment required: Safety Glasses, Rubber Gloves, Spill kit

ii. Drums are not to be filled with petroleum products

iii. Observe where nearest spill kit is located.

iv. Observe where the nearest fire extinguisher is located.

v. Check the label of the fuel storage tank from which fuel is to be taken. Is this the correct fuel for the motor or equipment? If yes, continue; if no; find the correct fuel storage container.

vi. Inspect fuel pump and hoses to see that they are in proper working order and that all parts are present.

vii. When installing a pump into a drum, take care to ensure that no fuel leaks onto the ground.

viii. Where applicable, tighten nut onto the drum to secure the pump.

ix. Remove any protective cover or tarpaulin from the drum to be filled.

x. When putting a hose into the empty drum or tank to be filled make sure it is in far enough to prevent any spillage while refueling and that the hose cannot fall out.

xi. Ensure that any breather bung is loose enough that air can enter the tank or drum.

xii. Commence pumping.

xiii. Watch when fuel is getting close to the top, and slow down the rate of fuel delivery by pumping more slowly, or easing up on the nozzle trigger; do not let the tank or drum overflow.

xiv. Ensure that sufficient space is left at the top of the storage tank for expansion. Do not overfill the tank.

xv. If the fuel storage tank is larger than 2,500-litre capacity, the fuel level in the tank must be physically checked before any delivery of fuel is accepted to ensure that the tank has not been overfilled.

xvi. If a tank has been overfilled, the excess fuel is to be immediately pumped into another suitable tank or container until the level in the bulk tank is below the maximum permitted level. Once this has been completed, a delivery slip for the fuel may be signed

xvii. Where applicable, when finished filling the tank or drum, lift hose so any fuel remaining in the pipe drains back into the drum where the pump installed.

xviii. If any fuel drained into the drip pan, clean it up and put in new absorbent padding. Dispose of the absorbent padding in accordance with the DBCI procedure for Waste Disposal (OP 022).

xix. Follow same procedure for each empty tank or drum that requires filling.
xx. Replace cap on the end of the discharge nozzle where fitted.

Special instructions where fuel has to be mixed for small gasoline motors (e.g. for outboard motors):

i. Ensure that the correct motor oil is available before mixing the fuel.

ii. Place the required volume of oil in the gas tank before adding gasoline.

iii. Add the required amount of gasoline.

iv. Replace the cap firmly on to the gas tank.

v. Shake the tank to mix the gasoline and oil.

3.6.2. Static lines are to be used for the fueling of vehicles and aircraft.

3.6.3. No “Hot Fueling” is permitted. All aircraft, engines, machines and vehicles must be switched off prior to refueling. In extreme cold weather, or in emergency situations, hot fuelling is permitted if the pilot feels it is required.

3.6.4. No refueling activities are permitted unless an Operator is present at all times closely supervising the activities.

3.6.5. Care is to be taken when opening drums to prevent loss of petroleum products through spillage.

3.6.6. All pump lifter pipes are to be cleaned before placing them into any container of petroleum products.

3.6.7. All fuel nozzles are to be cleaned before petroleum products are discharged, and where fitted, caps are to be kept in place over the discharge ends of such delivery nozzles when not in use.

3.6.8. Dead man levers/switches shall not be wedged into the “open/on” position.

3.7. Waste Petroleum Products

3.7.1. Where it is necessary to pump/discharge a small amount of petroleum product prior to fueling aircraft to ensure that the pipe and nozzle are clean and clear of debris, such liquid must be discharged into an approved metal container (metal pail). This container is to be emptied into a drum, which is subsequently sealed with a leak-proof bung. This storage drum shall be labelled “Waste fuels and oils”, and handled in accordance with the DBCI procedure for Waste Disposal (OP 022).

3.7.2. When draining condensation from fuel tanks on vehicles, aircraft or storage tanks, from fuel filters or other components on machinery, the condensate/water mixture is to be collected in a metal container. This container is to be emptied as soon as possible into an approved metal drum, which can be sealed with a leak-proof bung. The container shall be

labelled “Waste fuels and oils”, and handled in accordance with the DBCI procedure for Waste Disposal (OP 022).

3.8. Maintenance Activities – Petroleum Product Handling

3.8.1. Care must be taken when lubricating grease nipples to collect any surplus grease and dispose of this in a labelled container for “Waste lubricants” and handled in accordance with the DBCI procedure for Waste Disposal (OP 022).

3.8.2. Waste oil from engines, motors, transmissions, gearboxes and hydraulic systems must be collected in drain trays and placed in metal drums labelled “Waste fuels and oils” which are securely sealed with a bung when not in use, and handled in accordance with the DBCI procedure for Waste Disposal (OP 022).

3.8.3. Once removed, all oil and fuel filters are to have their inner chamber punctured and be placed upside down on a small rack above the base of a drain tray for 24 hours to drain. Waste oil from filters is to be placed in the “Waste fuels and oils” container and handled in accordance with the DBCI procedure for Waste Disposal (OP 022).

3.8.4. Used and drained fuel and oil filters are to be crushed where practical prior to disposal via a sealed metal drum to an approved facility for petroleum products/hazardous wastes and handled in accordance with the DBCI procedure for Waste Disposal (OP 022).

3.9. Training Requirements

3.9.1. All personnel handling petroleum products and waste petroleum products must have successfully attended “Transportation of Dangerous Goods” and WHMIS training (Note: The title of the regulation covering the transport of dangerous goods varies from jurisdiction to jurisdiction).

FUEL TRANSFER FROM BARRELS USING AN ELECTRIC PUMP

a. Check fuel levels visually before transferring fuel, where possible.

b. Ensure full drums on pallets are moved according to OP 086 Materials Handling.

c. Move the sealed fuel drum to within 3 m (10 ft) of the fuel tank on level ground and away from areas where it may be knocked over, if possible. Ensure the drum is moved so it does not tip over or puncture. Take extra care to avoid placing hands or fingers in potential pinch points when moving barrels by hand. Ensure full and empty drums are stored according to OP 102 Storage and Handling of Hazardous Materials.

d. Remove the seal and air hole bung from drum.

e. Using a bailer, verify the drum contains fuel. Ensure drums are labelled properly according to the OP 067 Hazardous Materials Safety

f. Extend the pump and place it in the drum, then screw it into place.

g. Ensure the pump is turned off (silver lever points to the ground).

h. Connect the pump to a battery (black wire first).

i. Holding the hose nozzle up, turn on the pump.

j. Insert the nozzle into the tank. Stand to the side of the nozzle to avoid fuel splash-backs. Start pumping fuel.

k. Ensure fuel is going into the tank, and that the tank is not overfilling. Fill tanks to 90% of capacity to allow for expansion and avoid splash-backs. To look into the tank, stop pumping fuel, remove the nozzle carefully, turning it upwards to avoid drips. Wait several seconds before looking to avoid surging fuel that can cause splash-backs.

l. Do not leave the pump unattended.

m. When the drum is empty, release the nozzle handle. Turn the nozzle upwards to prevent any drips from falling on the ground. The nozzle contains a hook to store it against the lip of the drum in an upright position.

n. Turn off the pump and disconnect the battery (red wire first).

o. Keep the nozzle pointing up when not in use.

p. When storing the pump place it in such away as to prevent fuel dripping from the unit onto the floor or ground. *(the equipment shed on absorbent pads, and within a bucket to catch any fuel that may be on the unit.)*

FUEL TRANSFER USING A TRUCK-MOUNTED PUMP

a. Open the fuel cap on the tank and check the fuel level.

b. Unwind the pump hose from the truck and insert the nozzle securely into the tank inlet.

c. Set the truck pump to the ON position.

d. Stand to the side and squeeze the nozzle handle to begin dispensing fuel.

e. In extreme cold temperatures, set the nozzle to the ON position, insert it securely into the tank inlet and remain by the truck pump to ensure the nozzle remains securely in place for the duration of the fuel transfer. This is permitted to prevent frostbite from handling cold nozzles. If the nozzle slips out, immediately set the truck pump to the OFF position.

f. For larger refuelling loads during extreme cold temperatures, set the nozzle to the ON position and place it securely into the tank inlet. Remain outside the vehicle and watch the fuel nozzle closely to ensure it remains securely in place for the duration of the fuel transfer.

g. Periodically check the level in the tank to prevent overfilling. Wait several seconds after stopping pumping before looking to avoid surging fuel that can cause splash-backs.

h. Fill tanks to 90% of capacity to allow for expansion and avoid splash-backs.

i. When returning the nozzle after use, avoid drips and spills.

j. Reseal the tank and close the lid to the secondary containment, if applicable.

FUEL TRANSFER FROM DISPENSERS (GASBOYS) TO VEHICLES

a. Park the vehicle on the roadway in front of the fuel dispensers, lower the bucket or blade and shut off the engine.

b. Open the fuel cap on the vehicle.

a. Insert the nozzle securely into the tank inlet.

b. Turn the pump handle to ON and begin to dispense fuel. Stand to the side when pumping fuel. Fill tanks to 90% of capacity to allow for expansion and avoid splash-backs. The auto shut-off nozzle prevents spills, splash-backs and overflows due to fuel expansion.

c. During extreme cold temperatures, set the nozzle to the ON position, place it securely in the tank inlet and stand by the pump handle to ensure the nozzle remains securely in place for the duration of the fuel transfer. This is permitted to prevent frostbite from handling cold nozzles. If the nozzle slips out, immediately set the truck pump to the OFF position.

d. When returning the nozzle after use, avoid drips and spills.

4. Monitoring and Measurement

4.1. Incidents, Accidents and Spills are monitored through the procedure for Non-conformance, Corrective and Preventive action.

4.2. Petroleum handling will be monitored in accordance with site inspection procedures and checklists.

5. Records

5.1. Site inspection checklists and maintained on by the Responsible Person

5.2. Non-conformance, Corrective and Preventive Actions records are maintained in the ISOsoft system or by the Responsible Person.

5.3. Training records are kept in the ISOsoft system**.**

6. References

6.1. WHMIS regulations (jurisdictional)

6.2. Fire Prevention and Protection procedure (OP 002)

6.3. Waste Disposal procedure (OP 022)

6.4. Spills Response and Clean-up procedure (OP 031)

6.5. Hazardous Materials Safety – WHMIS (OP 067)

6.6. Materials Handling (OP 086)