



## **BULK-FUEL MANAGEMENT FACILITY MONITORING: STANDARD OPERATING PROCEDURES (SOPs)**

- Enviro-Tank Fuel Procedure
- Inspection Log Procedure – Designated Fuel Station
  - Drum Crushing within a Berm

PEREGRINE DIAMONDS SAFE WORKING PROCEDURES			
Division:	Fuel Management Station		
Section:			
Subject:	Enviro-Tank Fuel Procedure		
Owner:	<b>Corporate EHS Manager</b>	Effective Date:	<b>January 2012</b>
Revision:		Replaces:	

## 1 OBJECTIVE

- 1.01 To ensure fuel transfer to/from enviro-tanks on the Chidliak Project is carried out in a safe, environmentally-acceptable manner so as to prevent or minimise environmental impact and prevent potential splash-back injuries to workers.

## 2 SCOPE

- 2.01 This procedure applies to all workers, contractors and visitors to the Chidliak Project, but specifically is within the job scope of the Fuel Specialist, his/her Fuel Specialist Assistant, and the two cross-shift personnel who will replace the Specialist and Assistant on rotation.

## 3 INTRODUCTION

- 3.01 This procedure covers the transfer of fuel to/from sleigh-mounted enviro-tanks using one of a variety of pumps, including electric pumps and manual pumps at the Discovery Camp **Designated Fuel Station** (the Fuel Station).  
Fuelling of skidoos, pumps and jerry cans from petrol (gasoline) drums also will occur within a designated berm at each camp in operation for the 2012 bulk-sampling programme. That process will be guided by the principles of this comprehensive procedure.

## 4 RESPONSIBILITY

- 4.01 The **Project Manager** is responsible for:
- Ensuring this procedure is implemented and maintained,
  - Ensuring that written authorisation is given to the Fuel Specialist and Fuel Specialist Assistant and their cross-shift personnel, and
  - Ensuring these authorised personnel receive the appropriate training.
- 4.02 The **Authorised Personnel** dispensing or transferring fuel – the **Fuel Specialist** and **Fuel Specialist Assistant** – are responsible for:
- Understanding and complying with the requirements of this procedure.
- 4.03 The **Environment Manager** is responsible for:
- Monitoring the implementation of this procedure and compliance, and
- 4.04 The Site Health, Safety and Environment (HSE) Co-ordinator is responsible for
- Managing spills and maintaining records.

## 5 DEFINITIONS

- 5.01 **Designated Fuel Station:** Designated area at Discovery Camp for fuel transfer and equipment refuelling (*cf. Drawings 1a, 1b in the Fuel Management Plan*), and under the control of the Fuel Specialist.
- 5.02 **Fuel Specialist:** An experienced and competent worker who has been trained in the proper fuel-handling procedure, has been oriented by the Project Manager or his designate and is the person responsible for operation of the Designated Fuel Station at Discovery Camp and for supervision of the Fuel Specialist Assistant.
- 5.03 **Fuel Sleigh:** Steel sleigh for conveying the fuel enviro-tank to field locations, such as the reverse circulation drill collecting the 2012 bulk sample. The sleigh is pulled by a Challenger tractor. (*See photos at end of procedure*).
- 5.04 **Enviro Tank:** Double-walled steel tank (capacity of 15 000L for 2012 bulk sample programme) used to contain diesel fuel that is transferred to equipment and the reverse-circulation drill; it is carried in the Fuel Sleigh. (*See photo at end of procedure*). Fuel flown to site in 205L drums will be transferred to one of two enviro-tanks at the Designated Fuel Station.
- 5.05 **Reportable Spill:** Peregrine reports **all fuel spills of 50L or more** to regulatory authorities, which exceeds the territorial requirement.

## 6 REFERENCES AND RELATED DOCUMENTS

- 6.01 NWT and NU Mine Health and Safety Act and Regulations: 5.07, 6.01, 6.04, 6.10.
- 6.02 AANDC (formerly INAC) Class A Land-Use Permit #N2008C0005 [Chidliak land-use permit and amendments].
- 6.03 NWB Type B Water Licence #2BE-CHI0813 [Chidliak water licence and amendments].
- 6.04 Chidliak/Qilq/Cumberland Spill Contingency Plan, Version 9, Peregrine Diamonds Ltd.
- 6.05 Indian and Northern Affairs Canada-Nunavut Fuel Storage and Handling Guidelines – Draft (April 2008)
- 6.06 Nunavut Environmental Protection Act
- 6.01 National Research Council of Canada – 2010 – National Fire Code of Canada

## 7 PREPARATION

- **TOOLS:** PPE (Gloves, Goggles. Respiratory protection if required )
- **HAZARDS:** Burns, Slips, Trips, Falls ,Strains/sprains, Spills, Environment Damage, Equipment Damage, Pinch Points, Worker Injury and Illnesses
- **REQUIREMENTS:** Adequate training in this procedure and experience related to fuel handling/transfer will be required. A valid WHMIS (Workplace Hazardous Materials Information System ) certificate will be required for both the Fuel Specialist and the Fuel Specialist Assistant. The Fuel Specialist should hold as a minimum a valid Mine Health & Safety Supervisor Level I certificate.

## 8 PROCEDURE

### 8.01 General

This procedure will be broken out by specific tasks being done on site. They will be broken out by:

- Transfer of fuel from 205L drums to an enviro-tank in the Designated Fuel Station.
- Transfer of fuel from a sleigh-mounted enviro-tank to equipment, drills and other machines that require fuel.

- Fuel dispensed from dispensers/containers (e.g., jerry cans) to equipment, drills, snowmobiles, ATVs, pumps..
- Transfer of fuel within the Designated Fuel Station containment berm using the stationary enviro-tank and battery-operated pump.

**Note:** As stated in **Sec. 3.01** above, all petrol (gasoline) equipment will be fuelled by hand pump within the confines of a designated fuel berm. Such fuelling does not constitute bulk fuelling, as minimal gas-powered equipment will be operated at the Chidliak Project and only small numbers of petrol drums will be in any one camp at any one time.

**In all cases, the process below shall be followed at all times, as a minimum.**

- Ensure spill kits and extra absorbents are on hand for immediate use. Fuel Specialist and Fuel Specialist Assistant dispensing fuel are to be aware of the proper use of all response materials and are to have received proper training on their use, as well as site communications protocol in the event of a reportable spill or release.
- All drums will be secured in portable berms whilst the filling of machinery, equipment, pumps, *etc.*, is in progress. Spill protection shall be on hand at all times.
- All fuel-dispensing nozzles are to be equipped with a splash-back guard.
- No smoking or open flame is allowed within 20 metres of any fuelling operations.

#### 8.02 *Fuel Transfer from Drums to Enviro-Tanks using an Electric or Battery-Operated Pump*

- Ground all metal drums to a solid grounding post to ensure no electrical charge can be generated. Ensure that a valid fire extinguisher is in place and in good operating condition.
- Check fuel levels visually before transferring fuel, wherever possible.
- Ensure full drums on pallets are moved with due care to avoid spills and injury.
- Move the sealed drum to within 3 metres of the fuel tank to be filled and ensure it is within a berm to prevent drips/leaks to ground and away from areas where it may be knocked over. Ensure the drum cannot tip over or be punctured. Take extra care to avoid placing hands or fingers in potential pinch points when moving drums by hand. Ensure full and empty drums are stored with due care in designated areas to avoid spills and injury. Ensure the drum is placed on/in a catch berm/containment at all times whilst filling or when offloading of product is under way.
- Using a bailer tool, verify that the drum contains the correct fuel. Ensure drums are properly labelled (Workplace Hazardous Materials Information System (WHMIS) and Transport of Dangerous Goods (TDG) decals/stamps.)
- Extend the pump head and place it in the drum and ensure it is screwed on properly and secured in place.
- Ensure the pump is OFF. External plugs ensure that there will be no direct contact with battery or power source. Insert the nozzle into the tank being filled, whilst standing to the side of the nozzle to avoid splash-backs.
- Connect battery (**black wire** first) then the **red** wire. Turn pump ON. Commence pumping fuel.
- Ensure that the fuel is going into the tank and that the tank is not overflowing. Fill tanks to **90%** of capacity to allow for expansion and to 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.
- Do **not** leave the pump un-attended whilst fuelling equipment at any time.
- When the drum is empty, release the nozzle handle, turning the nozzle upwards to prevent dripping.

- The nozzle contains a hook to store it against the lip of the drum in an upright position.
- Turn OFF pump by un-plugging pump from power source and disconnect the battery (**red wire first**) then the **black** wire.
- Ensure the nozzle is pointing up when not in use. Wipe down the nozzle to ensure no product leaks or drips.
- When storing the pump away from the Designated Fuel Station, ensure that it is properly placed in the Discovery Camp Equipment Shed on absorbent pads, and within a berm/containment to catch any fuel that may drip from the unit.
- Pump may be left standing in an empty containment whilst secured within the Designated Fuel Station fuel-transfer berm.

### 8.03 *Fuel Transfer using Sleigh-Mounted Pump (Mobile Fuel Station)*

- Ensure spill kits and extra absorbents are on hand for immediate use. Ensure supplies are adequate in the event of a spill or leak, including valid fire extinguishers.
- It is important to note that the sleigh-mounted fuel tank (the enviro-tank) is enclosed in its own containment made of the same materials as the tank. This will serve to catch leaks or drips off the tank pump itself.
- Ensure any wheels are chocked so no movement can take place. Ensure engines of the equipment are turned OFF before any fuelling takes place
- Pull mobile fuelling sleigh and tank up to the equipment, vehicle or additional tank that requires filling, remaining at least 3 metres away. Ensure you place the mobile fill station on the opposite side of any rock faces or high walls.
- Open the fuel cap on the mounted tank and check the fuel level prior to fuelling any equipment.
- Unwind the hose from the vehicle and insert the nozzle securely into the filling inlet, ensuring that no fuel drips onto the ground or on the equipment. (A drip pan or absorbents are to be placed underneath equipment to prevent spillage.)
- Set the vehicle/sleigh pump in the ON position. Stand to the side. Squeeze the nozzle handle to begin dispensing fuel into the equipment. In extreme cold temperatures, set the nozzle to the ON position and insert it securely into the tank inlet and remain by the vehicle pump, ensuring 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 vehicle pump to the OFF position.
- The nozzle shall NOT be placed in the ON position unless the Fuel Specialist or Fuel Specialist Assistant is holding it.
- PPE shall be worn at all times and due care exercised at all times to prevent frostbite during winter fuelling.
- The Fuel Specialist is to ensure that an additional trained assistant is always available, in case extra help is required during a fuelling or fuel transfer event.
- 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.
- Periodically check the level of filling to prevent overfilling. Wait several seconds after stopping before looking into the tank inlet to avoid surging fuel that can cause splash-backs. Only fill tanks to **90%** of capacity to allow for expansion and avoid splash-backs.
- When returning the nozzle after use, avoid drips and spills. Reseal the tank and secure the lid to the secondary containment, if applicable.

#### 8.04 *Field Fuel Transfer from Dispensers ( e.g., Jerry Cans ) to Vehicles/Equipment/Pumps*

- Ensure spill kits and extra absorbents are on hand for immediate use. Ensure supplies are adequate in the event of a spill or leak, including valid fire extinguishers
- Park the vehicle on the travelway in front of the fuel dispenser, lowering the bucket or blades (if any). Shut the engine OFF.
- When vehicles are on level ground, two wheel chocks must be placed, one on each side of wheels. When vehicles are on an incline, both chocks must be placed on the downhill side of two wheels.
- Open vehicle fuel cap. Insert dispenser nozzle securely into tank inlet whilst raising the jerry can evenly and slowly, allowing gravity to take over filling the vehicle/equipment. Stand to the side when adding fuel. Fill tanks to **90%** of capacity to allow expansion and avoid splash-backs. Ensure that the fuel dispenser is cleaned and wiped down to ensure no leakage or spills; remember that fuelling is to occur within the Designated Fuel Station or at a designated area at the other camps and only when a berm to contain the jerry can and a drip pan or padding is available for the vehicle to drive onto. For refilling, return the fuel dispenser/jerry can to the Designated Fuel Station or designated area at other camps.

#### 8.05 *Fuel Dispensing at Designated Fuel Station – Discovery Camp*

- The Fuel Station will be built upon a flat surface with a protective layer of spill/leak/seepage proof matting inside a berm in order to protect the ground/soil from any contamination caused by filling of vehicles and equipment. The ground within the Fuel Station travel area will be protected from spills and leakage as well.
- Good housekeeping in and around the Fuel Station must be undertaken at all times.
- Vigilance as to traffic management on the travel path to, from and through the Fuel Station must be exercised at all times.
- Signage and lighting must be in good condition at all times.
- Ensure spill kits and extra absorbents are on hand for immediate use at all times at the Fuel Station. The Fuel Specialist and/or Fuel Specialist Assistant will check and verify the inventory and condition of all spill management materials, including fire extinguishers, according to the once-per shift or daily schedule identified in the *Inspection Log Procedure*. They also will be inspecting and verifying the safety and integrity of the transfer berm and underlay matting once per shift. (*See separate Inspection Log Procedure.*)
- Vehicles/equipment will pull inside the transfer berm, shutting down the vehicle whilst the operator conducts the filling process. The Fuel Station will be operated by a 110-volt pump. The power source will be from a light tower: a light tower is required due to dark winter conditions. The Fuel Specialist or Fuel Specialist Assistant will turn ON the pump whilst the other is holding the fill nozzle in the air to avoid any accidental charging or engagement of the pump. Holding the nozzle in the air will prevent any unintentional fuel releases.
- Operators are to keep in mind at all times that fuelling/fuel transfer at the Fuel Station is a 2-person job: One person must remain at the enviro-tank and the other person must remain at the vehicle or equipment to be filled.
- The filling nozzle will be inserted into the equipment's receiving inlet. The Fuel Specialist or Fuel Specialist Assistant will fill to **90 %** capacity only, to allow for settling of fuel to avoid splash-back and allow room for expansion. Once filling is complete, the Fuel Specialist or Fuel Specialist Assistant will repeat the same steps until the filling nozzle is secured back into its holder on the enviro-tank. The fuel specialist team will ensure any leaks or spills inside the drive-in berm are wiped up and used absorbents properly disposed of. The filled vehicle will then be allowed to start and drive away.

- Inspection of the equipment, hoses, pumps, batteries, spill-management supplies, signage and lighting will occur periodically each day during each shift to ensure safe and environmentally-acceptable process at all times, and that any leaks are detected and dealt with immediately.
- **Note:** If a fuel spill should occur, despite best efforts, the Fuel Specialist and Fuel Specialist Assistant, and any additional help from the camp Spill-Response Team shall ensure the spill is cleaned up right away with absorbent material. All cleanup materials are to be safely disposed of as hazardous waste and separated in their own containment berms/containers. In the event of a spill, the Fuel Specialist will notify the Supervisor so an incident/spill report can be filled out. All focus and attention must be made to the spill and proper spill response, as per the Chidliak Spill Plan. The area in front of the Fuel Station drive-in berm will be lined to protect the underlying ground. Peregrine reports all fuel spills of 50L or more to the NU-NWT Spill Line and proper authorities.

9 **ATTACHMENTS**



**Fuel enviro-tank with spill containment**



**Fuel sleigh that enviro-tank will be secured to**



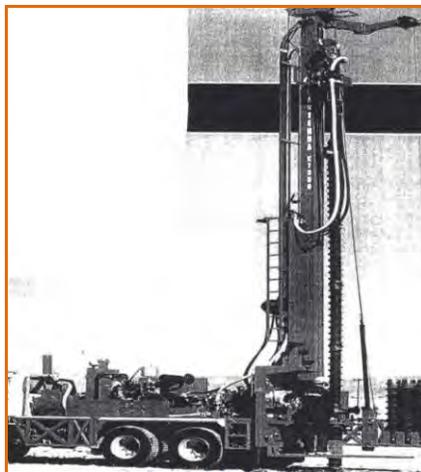
**Manual pump without hose and nozzle (Optional to electrical (battery) pump)**



**Electrical pump for filling tank from enviro-tank**



**CAT Challenger to pull sleighs**



**Canterra (Foremost) CT350 RC drill**

10 **APPROVED RECORD**

<b>NAME</b>	<b>POSITION</b>	<b>DATE</b>	<b>REV #</b>	<b>NOTES</b>

PEREGRINE DIAMONDS SAFE WORKING PROCEDURES			
Division:	Fuel Management Station		
Section:			
Subject:	Inspection Log Procedure – Designated Fuel Station		
Owner:	<b>Corporate EHS Manager</b>	Effective Date:	<b>January 2012</b>
Revision:		Replaces:	

## 1 OBJECTIVE

- 1.01 To maintain and inspect all fuel products, the Fuel Station transfer berm itself and any hazardous waste products within the confines of the transfer berm or the environs of the Designated Fuel Station at Discovery Camp on behalf of the Registered Waste Generator (*cf. Definition 5.09 below*), whilst providing a system of identification of products that allows the safe and environmentally-acceptable tracking of fuels and fuel-handling and the maintenance of the drum storage berms.

## 2 SCOPE

- 2.01 This procedure applies to all workers, contractors and visitors to the Chidliak Project, but specifically is within the job scope of the Fuel Specialist, his/her Fuel Specialist Assistant, and the two cross-shift personnel who will replace the Specialist and Assistant on rotation.

## 3 INTRODUCTION

- 3.01 The **Inspection Log** is an existing Peregrine commitment which will now apply to the **Designated Fuel Station** which in turn allows consolidation and efficiency of fuel management at Discovery Camp, the logistical base of the 2012 bulk-sampling programme.
- 3.02 The **Inspection Log** is in addition to, not a replacement for, the routine **Daily Inventory Log** which is kept in each Chidliak Project camp: The Inventory Log simply records number of fuel containers by type in camp on each day that the camp is in operation.

## 4 RESPONSIBILITY

- 4.01 The **Project Manager** is responsible for:

- Ensuring this procedure is implemented and maintained,

- 4.01 The **Fuel Specialist** is responsible for:

- The inspection each day, at least once per shift, of the Designated Fuel Station and the **fuel transfer berm**, seeking out any failures of the berm, underlay matting, fuel containers and all drums within the confines of the berm.
- Related inspection each day, at least once per shift, of the associated **fuel-storage berms** where diesel, aviation fuel and petrol (gasoline) are kept.
- Related inspection at least once per day of **waste-storage areas** (inside the **fuel transfer berm** and in any separate, dedicated berm(s) at the Station).
- Related inspection at least once per day, or as per the crushing schedule, of the empty-drums stockpile and DD-30 **Drum Crusher operations** in the Designated Fuel Station. (*See separate drum-crushing procedure.*)
- Report immediately to the Project Supervisor any spills or failures at the transfer berm, a fuel-storage berm, the crusher station or other aspects of the Designated Fuel Station.

4.02 The **Project Supervisor** is responsible for:

- Designating the Fuel Specialist and ensuring management of the Designated Fuel Station.
- Labelling, or directing labelling, of drums according to WHMIS, TDG and MSDS requirements.

4.03 The **Environment Manager** is responsible for:

- Monitoring the implementation of this procedure and compliance, and

4.04 The Site Health, Safety and Environment (HSE) Co-ordinator is responsible for

- Managing spills and maintaining records.

## 5 DEFINITIONS

5.01 **Designated Fuel Station:** Designated area at Discovery Camp for fuel transfer and equipment refuelling (*cf. Drawings 1a, 1b in the Fuel Management Plan*), and under the control of the Fuel Specialist.

5.02 **Fuel Specialist:** An experienced and competent worker who has been trained in the proper fuel-handling procedure, has been oriented by the Project Manager or his designate and is the person responsible for operation of the Designated Fuel Station at Discovery Camp and for supervision of the Fuel Specialist Assistant.

5.03 **Fuel Transfer Berm:** The lined berm in which fuel will be transferred from barrels to one of two 15 000L fuel enviro-tanks attached to the bulk-sampling programme. Equipment and vehicles also will be refuelled in this drive-in berm.

5.04 **Fuel-Storage Berm:** A manufactured berm for storage of drum fuel.

5.05 **Drum Crusher:** A generator-run compaction device which flattens empty drums for ease of storage (flattened drums conserve space) and ease of outshipment.

5.06 **Inventory Log:** A routine log, updated on a daily basis in large camps, which tracks number of containers of fuels in a camp by type, *e.g.*, diesel, aviation fuel, petrol (gasoline), propane. This is not the same as the Inspection Log, which is a controlled instrument to meet safety and environmental obligations.

5.07 **Waste-Storage Areas:** Areas designated within the Fuel Storage Berm and outside of it in one or more manufactured berms set up to label, complete documentation for and house waste products such as waste oil and fuel-contaminated water until their outshipment.

5.08 **Government of Nunavut Waste Movement Manifest Form:** A numbered form for tracking of chain of custody of waste, on which the Nunavut Government Pollution Control Division requires listing of type and quantity of waste products out-shipped by a Registered Waste Generator.

5.09 **Registered Waste Generator:** Peregrine Diamonds Ltd. in the case of the Chidliak Project.

## 6 REFERENCES AND RELATED DOCUMENTS

6.01 NWT and NU Mine Health and Safety Act and Regulations: 5.07, 6.01, 6.04, 6.10.

6.02 AANDC (formerly INAC) Class A Land-Use Permit #N2008C0005 [Chidliak land-use permit and amendments].

6.03 NWB Type B Water Licence #2BE-CHI0813 [Chidliak water licence and amendments].

6.04 Chidliak/Qilaq/Cumberland Spill Contingency Plan, Version 9, Peregrine Diamonds Ltd.

6.05 Environmental Guideline for the General Management of Hazardous Waste – Nunavut Government Department of Environment (April 2010)

6.06 Indian and Northern Affairs Canada-Nunavut Fuel Storage and Handling Guidelines – Draft (April 2008)

6.07 Nunavut Environmental Protection Act

## 7 PREPARATION

- **TOOLS:** Gloves, Goggles (for use whilst moving, counting items). Labels. Government of Nunavut Waste Movement Manifest Form. Record book for Inspection Log.
- **HAZARDS:** Loss of containment ( berm failures ), leaks, spills, matting/underlay damage.
- **REQUIREMENTS:** Ensure that the Project Supervisor, Fuel Specialist and Fuel Specialist Assistant are aware of and knowledgeable in this procedure, and trained in the handling and storage of hazardous goods associated with mineral exploration programmes.

## 8 PROCEDURE

### 8.01 General

- To inspect and manage the Designated Fuel Station where the fuel is going to be stored, handled and transferred, and where fuelling of equipment and the mobile fuel sleighs and enviro tanks will occur.
- All waste for storage in crates or drums must be stored so as to ensure safety and environmental control. A WHMIS workplace label and TDG labelling (*e.g.*, Class 9 sticker, UN number) must be affixed to all containers that contain controlled products or hazardous materials.
- Full or partially-full drums must be moved so as to ensure safety and environmental control. The Fuel Specialist and Fuel Specialist Assistant moving the drums within this location, or directing such movement by an Equipment Operator, are responsible to advise EHS personnel that the crate/barrel has been moved there.
- Those requiring any drums for waste storage must consult the Project Supervisor or his designate.
- All hazardous waste must have a WHMIS label and TDG labels, as well as a Government of Nunavut Waste Movement Manifest Form for outshipment of waste.
- The **Inspection Log** records the following information:
  - Which site was inspected;
  - Confirmation of daily inspection;
  - Actions taken or required;
  - Comments about the inspection event.

## 9 ATTACHMENT

### 9.01 Inspection Log



**10 APPROVED RECORD**

<b>NAME</b>	<b>POSITION</b>	<b>DATE</b>	<b>REV #</b>	<b>NOTES</b>

# PEREGRINE DIAMONDS SAFE WORKING PROCEDURES

Division:	Fuel Management Station		
Section:			
Subject:	Drum Crushing within a Berm		
Owner:	<b>Corporate EHS Manager</b>	Effective Date:	<b>January 2012</b>
Revision:		Replaces:	



**DD-30  
Drum Crusher -Largest Model - Chicago-  
Compactors.com**

With 19.6 tons (17.8 tonnes) of crushing force, the **DD-30 Drum Crusher** allows you to profit from recycling or helps reduce disposal costs. Its 6-to-1 compaction ratio saves valuable storage space. Crushed drums are easier to handle, ship off-site.

(ABOVE: Peregrine Drum Crusher, Model DD-30, at Discovery Camp, Chidliak Project)

## 1. PURPOSE AND SCOPE:

- To maintain the control of all fuel waste products prior to and after barrels have been crushed.
- To ensure that all barrels are crushed in a manner that is safe for workers, the site and the environment.

### **Specific Hazards Include:**

- Explosion/fire of waste fuel
- Contact injuries from hydrocarbons, such as inhalation of fumes, skin and eye irritation and possible burns.
- Cuts, lacerations and crushing injuries.
- Slips, trips and falls.
- Waste fuel spillage.
- Pinch points.
- Strains/sprains while lifting, rolling or carrying empty barrels.

These hazards require that specific controls be implemented to reduce the risk of personnel being injured or the possibility of potential environmental problems. This Standard Operating Procedure details the controls that are to be followed when crushing empty 205L barrels.

## ***2. RESPONSIBILITIES:***

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### **Operations Manager or designate is responsible for:**

- Ensuring a procedure is established for Drum Crushing in a manner that is safe for workers, the site and the environment.

### **Site Manager is responsible for:**

- Ensuring the implementation of this procedure.

### **Supervisors are responsible for:**

- Implementing this procedure
- Ensuring that workers are trained and understand this procedure.
- Ensuring the regular maintenance and repair of generator and crusher is done.
- Ensuring that spill kits, fire extinguishers and signage are provided.
- Ensuring the Environment Manager and the workers' direct Supervisor are notified in the event of a spill.

### **Fuel Specialist on site or his/her designate is responsible for:**

- Recording all reported spills and area inspections

Ensuring spill kits are available at crusher station at all times whilst in operation.

### **Safety and Health Co-ordinator is responsible for:**

- Monitoring the implementation of this Procedure
- Ensure procedure is being followed and that all spills are identified.

### **Worker is responsible for:**

- Understanding and following this procedure.
- Reporting all spills to his/her immediate Supervisor.
- Wearing and adhering to the PPE to be worn specific to this procedure.

## ***3. PROCEDURE***

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### **Personal Protective Equipment (PPE)**

In addition to the site PPE requirements of Safety Glasses, Hard Hat, Safety Boots, retro-reflective vests/ clothing, workers at the crusher station require the following:

- Rubber gloves
- Rain pants
- Hand-held radio for communication purposes.

## Pre-Operational Check list

- Generator:
  - Check oil level, belts, fuel level, filters and hoses. *(see Figure #1)*
  - Check for any leaks to the Generator Fuel System.
- Crusher unit:
  - Ensure inside of machine is clean.
  - Check hydraulic filter on top, ensure no hydraulic leaks.
  - Ensure key is in place for generator and crusher. Key is needed to operate machines.
  - Test proper operation of door lockout. Open door, hit start button, then emergency stop button, see if crush cycle starts. MACHINE SHOULD NOT START WITH DOOR OPEN.
- Emergency Equipment:
  - Check fire extinguisher, spill kit and eyewash station are present and operable.
  - Open-ended 205L drum for waste product should be in proper containment. All crushing is to occur in a lined berm with steel underlay. *(see Figure #2)*

## 4. OPERATIONS

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### Barrel Handlers:

- Remove bung from barrel using barrel opener.
- Empty contents into open-ended 205L barrel. *(see Figure #3)*
- When barrel is empty, place on ramp and slowly roll to crusher operator. *(see Figure #4)* OR lift with CAT Skidsteer loader.
- When open-ended drum is full, use designated transfer pump to transfer contents to sealable drum.

### Crusher Operator:

- Turn on the Generator and allow time to warm up. *(see Figure # 1)*
- Turn key on control panel to “Crush”. *(see Figure # 5)*
- Remove empty barrel from ramp or equipment bucket and place upright into crusher. *(see Figure # 6)*
- Close and lock door with safety latch. *( see Figure # 7)*
- Press “Cycle Start” button. *(see Figure # 8)*
- When the cycle is complete, the barrel crusher will automatically shut off.
- Remove the crushed barrel and hand to outside worker. *(see Figure # 9)*
- When the crushing operation is complete, turn the crusher key to the “Off” position, and turn off the generator. *(see Figure # 10)*

### Packaging full waste oil barrels:

- Place full waste-oil barrels on pallet using a barrel lifter. Maximum of four barrels per pallet.
- Mark on pallet or top as “Waste Fuel”, mark “UN3082” and strap with wood on top.
- Place pallets in designated area for storage until out-shipment.

**Packaging crushed barrels:**

- Crushed barrels are to be placed on pallets in stacks of no more than 20 crushed barrels per pallet.
- Place wooden side walls and corners on all four sides and top of stack, then strap pallet.
- Cut off excess strapping and put into trash can.
- Store pallets of crushed barrels in assigned storage area until shipped from site for proper disposal.

**FIGURES**

Process steps to follow at all times. (NOTE: DD-30 crusher at Discovery Camp is new: Photos below, from Nuna Logistics, are for illustration purposes).



Figure # 1



Figure # 2



Figure # 3



Figure # 4



Figure # 5



Figure # 6



Figure # 7



Figure # 8



Figure # 9

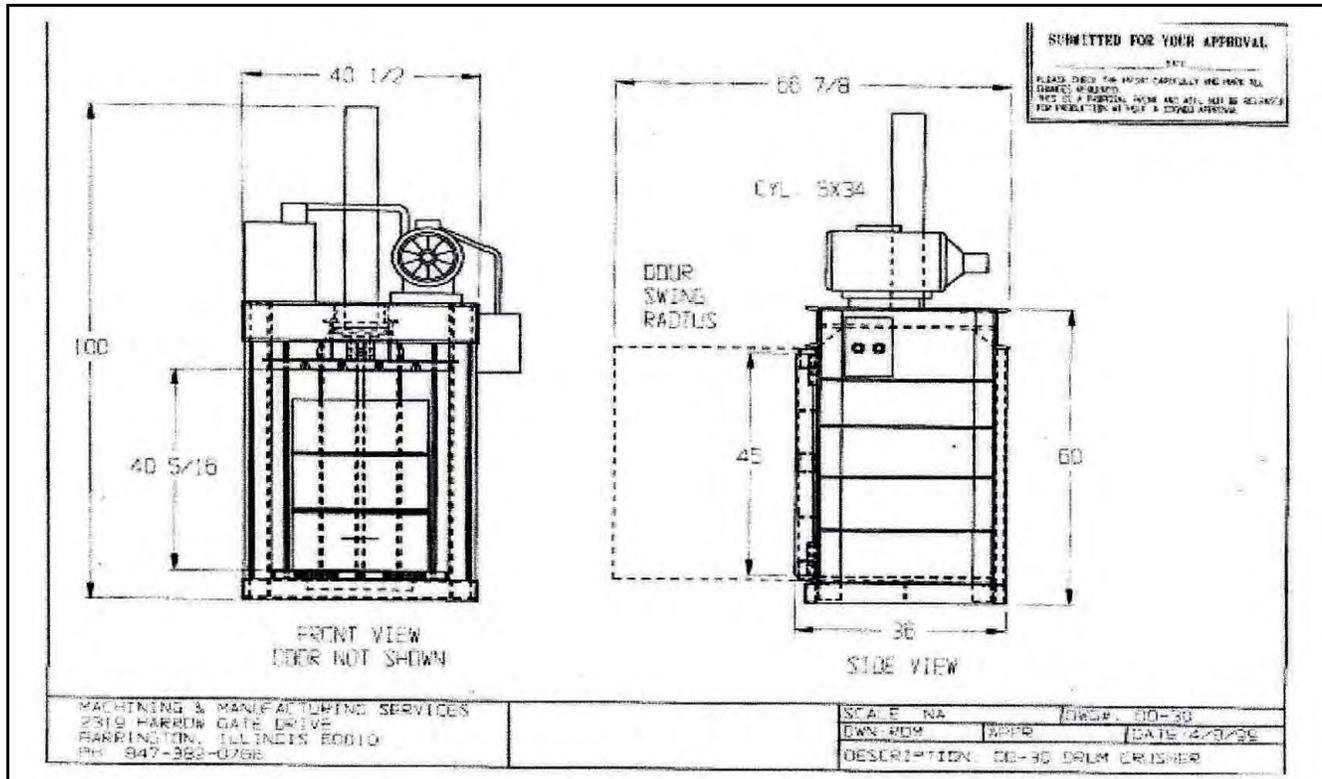


Figure # 10

10 APPROVED RECORD

NAME	POSITION	DATE	REV #	NOTES

## MECHANICAL DRAWING AND SPECIFICATIONS – DD-30



### DD 30 SPECIFICATIONS

#### GENERAL EQUIPMENT SPECIFICATIONS

<b>Dimensions:</b>	Depth 36", width 40.5", Height 100"
<b>Compaction Force :</b>	39,300 lbs.
<b>Ram face dimension:</b>	29"W * 29"D.
<b>Ram face pressure :</b>	46.7 psi
<b>Cycle time :</b>	28 sec
Baler meets or exceeds ANSI Z245.5 safety standards.	
Baler uses readily available, nationally and internationally distributed components.	
Baler is assembled from atleast 95% American made components.	
<b>Machine weight :</b>	1800 lbs

#### RESULTS

6 to 1 compaction ratio

#### CONSTRUCTION SPECIFICATION

<b>Floor :</b>	1/4" steel plate , 4" channel
<b>Sides :</b>	1/4" steel plate, (4) 3/8" x 3" side stiffeners per side
<b>Back :</b>	6" channel, 6" tube
<b>Door :</b>	3/16" plate , 4" * 3" * 3/16" tubing
<b>Cylinder mounting :</b>	4" heavy channel, 1" steel plate
<b>Presshead :</b>	1/4 steel plate

**HYDRAULIC SYSTEM SPECIFICATION**

<b>Pump (type) :</b>	Rotatory vane positive displacement
<b>(capacity) :</b>	10.5 gpm
<b>System Pressure (normal) :</b>	2000 psi
<b>(max) :</b>	2400 psi
<b>System Design Pressure :</b>	2500 psi
<b>Cylinder (bore) :</b>	5"
<b>(stroke) :</b>	34"
<b>(rod) :</b>	3"
<b>Reservoir capacity:</b>	22 gal

The system is completely self-contained within the baler. The power unit has the following feature: 20 micron filtering System, soft shift directional valve and oil heater port.

**ELECTRICAL SYSTEM SPECIFICATION**

<b>motor (hp) :</b>	1750
<b>(rpm) :</b>	1750
<b>(voltage) :</b>	208/230/480 VAC 60Hz Three phase
<b>(voltage) :</b>	230 VAC 60hz single phase (optional)
<b>Electric Panel (main) :</b>	Hoffman NCMA 4
<b>(junction) :</b>	Hoffman NEMA 3R
<b>Looms (motor) :</b>	3/4" satellite with 8 TFFN wire (note all looms are grounded)
<b>(main) :</b>	Multi - conductor cord (color coded)
<b>(power unit) :</b>	Multi - conductor cord (color coded)
<b>Motor starter :</b>	IEC size 2
<b>Controls :</b>	Relay Logic
<b>Operators (type) :</b>	Allen Bradley 800E series (20mm)
<b>(Used) :</b>	Keyed start switch
	Red mushroom stop push button
<b>Interlock switches</b>	Mag Switch

**PAINT SPECIFICATION**

<b>Primer :</b>	Rush inhibiting ballom coat, 2mil thickness.
<b>Paint :</b>	Industrial enamel, high solids, 4mil thickness.

Dhole-ID	Kimberlite	Easting (NAD83)	Northing (NAD83)
CH6-A	CH-6	619403.28	7135215.17
CH6-B	CH-6	619426.19	7135213.78
CH6-C	CH-6	619444.75	7135221.59
CH6-D	CH-6	619398.63	7135194.35
CH6-E	CH-6	619422.84	7135191.17
CH6-F	CH-6	619395.00	7135175.00
CH6-G	CH-6	619423.86	7135173.92
CH6-H	CH-6	619426.00	7135151.00
CH7-A	CH-7	628233.18	7127604.88
CH7-B	CH-7	628244.35	7127608.75
CH7-C	CH-7	628186.35	7127576.95
CH7-D	CH-7	628170.88	7127561.06
CH7-E	CH-7	628193.65	7127551.17
CH7-F	CH-7	628171.00	7127538.00
CH31-A	CH-31	630572.15	7124599.71
CH31-B	CH-31	630549.83	7124564.75
CH31-C	CH-31	630595.00	7124566.24
CH31-D	CH-31	630550.00	7124525.00
CH31-E	CH-31	630592.24	7124525.00
CH31-F	CH-31	630560.25	7124459.10
CH31-G	CH-31	630549.83	7124419.66
CH44-A	CH-44	629177.06	7124900.00
CH44-B	CH-44	629199.26	7124899.22
CH44-C	CH-44	629179.27	7124880.05
CH44-D	CH-44	629200.00	7124877.00
CH45-A	CH-45	628355.27	7126709.06
CH45-B	CH-45	628373.81	7126709.45
CH45-C	CH-45	628353.30	7126690.12
CH45-D	CH-45	628375.00	7126688.15