SPILL RESPONSE PLAN

YELLOWKNIFE (JACKFISH) STANDBY DIESEL GENERATING FACILITY, NT

PLANT #120

NORTHWEST TERRITORIES POWER CORPORATION

Empowering Communities

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1.0 INTRODUCTION

1.1. INTRODUCTION

This Northwest Territories Power Corporation (NTPC) Spill Response Plan (SRP) provides an information base for a response to a hazardous materials spill incident (spill) at the Yellowknife Standby Diesel Generating Facility (the Facility).

This plan documents the Corporation's local and regional spill response capabilities, presenting information on site specifics, resource inventory, health and safety, incident response, and reporting procedures. A copy of this Spill Response Plan (SRP) shall be maintained at each plant within the Facility and is also available on the PowerLine under Divisions> Health, Safety & Environment> Spill Response Plans. Plant Operators receive regular training on the procedures and information contained in this plan.

In addition to this SRP (to ensure compliance with current legislation) NTPC has completed registration of all tanks with Environment Canada and has received Environment Canada identification numbers that are visible on all applicable fuel tanks at NTPC facilities.

1.2. SCOPE

This SRP applies to all casual, permanent, part-time, and full-time employees, as well as contractors that provide services or conduct work at the Facility.

1.3. COMPANY POLICIES AND PROCEDURES

NTPC handles several hazardous substances at its power generation facilities and has a responsibility to protect and conserve the environment. Prevention of spills is important for the protection of the health and safety of employees, the community, and the environment. Therefore operating procedures are regularly updated and personnel trained to ensure safe and environmentally sound operations. Training is provided on the following NTPC policies, procedures, and information sources which are available at operating sites and/or on the PowerLine:

- Spill Response Plan;
- Hazardous Waste Management Plan;
- Fuel Transfer SWP;
- Berm Dewatering SWP; and
- Safety Handbook.

1.4. SPILL REPORTING

Detailed information regarding the legal and regulatory requirements of spill reporting in the Northwest Territories is contained within the NTPC Hazardous Waste Management Plan. The Corporation regularly trains personnel on the Hazardous Waste Management Plan and maintains up-to-date copies at operating sites and/or on the PowerLine.

NTPC's Environmental Protection Policy requires the reporting of all spills of hazardous materials to water or over five (5) litres to the NWT 24-Hour Spill Line, unless the minimum quantity specified in regulations is more stringent (i.e. less than 5 litres). Additional information regarding spill-reporting procedures is contained in Section 4.0 of this SRP. Spill Report forms can be found in Appendix A of this document and on the PowerLine. Report spills immediately.

1.5. ROLES AND RESPONSIBILITIES

1.5.1. Onsite Personnel

Onsite personnel shall follow all NTPC policies and procedures while onsite, and shall have the appropriate training to respond to any spill under the supervision of the Plant Operator.

1.5.2. Plant Operator

The Plant Operator has knowledge of the specific procedures that must be followed to work with and/or near hazardous materials in a safe and secure manner. The Plant Operator has the responsibility and authority to initiate the SRP. They are responsible for site safety, notification of management, and supervision of contractors. Once local contractors arrive on site, the Plant Operator will supervise and direct any cleanup activity until completion or until authority is passed to other onsite personnel.

1.5.3. Manager, Plant Operations

The Plant Operator notifies the Manager, Plant Operations of any spill incidents. The Manager, Plant Operations is responsible for ensuring that the spill response is immediate, effective, and sustained.

1.5.4. The Director, Health, Safety & Environment (HSE)

The Plant Operator and/or Manager, Plant Operations notifies the Director, (HSE) of any spill incidents. The Director, HSE works with the Manager, Operations and/or the Plant Operator and the appropriate environmental regulatory body to ensure that the spill response is managed in accordance with existing environmental laws and regulations.

1.6. PLAN MAINTENANCE AND CONTROL

The Director, HSE is responsible for the distribution, maintenance and updating of the SRP. This SRP will be reviewed annually and updated:

i. As required, taking into account changes in the law, environmental factors, NTPC policies, and site-specific characteristics; and/or

ii. Following a spill incident.

Changes in phone numbers, names of individuals, etc. that do not affect the intent of the plan are to be made on a regular basis. Plan updates will be issued as per the SRP distribution list. The SRP holder is responsible for adding new and/or removing obsolete pages upon receipt of updates.

1.7. PLAN DISTRIBUTION

This SRP will be distributed to the following:

i. Health, Safety & Environment Department (control copy)
ii. Manager, Plant Operations, North Slave Region
iii. Yellowknife Standby Diesel Generating Facility
iv. Department of Environment and Natural Resources (ENR)
v. Mackenzie Valley Land and Water Board
vi. NTPC Intranet PowerLine

2.0 SITE SPECIFICS

2.1. PERSON IN CHARGE

Robert Sunderland is the NTPC Manager, Plant Operations for the North Slave region. He is in charge of the Yellowknife Standby Diesel Generating Facility (the Facility) and of activating this spill response plan (SRP). He can be contacted through the NTPC Central Control Room 24-hours a day, 365 days a year, as follows:

Robert Sunderland
Manager, Plant Operations
Box 2250, Yellowknife, NT, X1A 2P7
867-669-3380 (w)
867-444-0985 (c)

2.2. COMMUNITY INFORMATION

Yellowknife (62^0 30'N and 114^0 29'W) is located on the west shore of Yellowknife Bay on the North Arm of Great Slave Lake. The community has a population of 19,569 (2016 Census).

Yellowknife is accessible by air year round from Edmonton and Calgary and has daily air service to many northern communities. The community is also accessible by road year round with the exception of break-up and freeze-up of the Mackenzie River near Fort Providence.

2.3. FACILITY SITE SPECIFICS

Facility Layout

The Facility is located on the north end of Yellowknife on the north shore of Jackfish Lake (real name Stock Lake) and is surrounded with a chain-link fence. Access to the Facility is through a double gate located on the north side of the property near the Ruston Plant, a man gate and a double gate on the south side of the property, and a man gate and an automatic vehicle gate in the southeast corner of the property (primary access) (see Figure 1).

The arrangement of buildings from east to west along the south side of the property is as follows: the office building, the Cat Plant, the EMD Plant, the K-Plant (the three plants are joined by covered walkways), the warehouse, and the line shop. There is a water pump house located south of the K-Plant, a fuel pump house north of the K-Plant, and a storage shed northeast of the line shop. On the north side of the property from east to west sits three modular genset units (G20, 22 and 23), a 90,000 L horizontal fuel tank, the substation, the Ruston Plant, a drum storage berm, the tank farm, and the line yard. Pole storage is located outside the fence north of the Ruston Plant.

Figure 1: NTPC Plant Site Area – Yellowknife

Sensitive Environmental Receptors

Jackfish Lake sits 5 m south of the Facility fence. The primary objective of the spill response is to stop spilled product from reaching the lake.

Spill Control

A large spill at the Facility (see Figure 1) will flow south towards Jackfish Lake. Sorbent materials and trenching techniques should be used to intercept flowing product (see Section 4.0). Figures 1 and 2 show the 1,700,000L tank, tank farm berm and drum storage berm.

Figure 2: 1,700,000L Fuel Tank in New Berm

Onsite Hazardous Product Storage:

Next to fuel, lube oil and glycol are the two most abundant hazardous goods stored at the Facility (see Figure 2 and 3). New lube oil is stored as follows:

- 2 horizontal 2,273 L tanks, inside Cat Plant
- 1 horizontal 2,273 L tank, inside EMD Plant
- 1 horizontal 5,000 L tank, inside K Plant
- 1 horizontal 75,000L lube oil tank north of the EMD Plant (see Figure 2)
- 1 horizontal 43,300L lube oil tank in the berm, north of the K Plant (see figure 2)

Waste oil is stored as follows:

- 1 horizontal 41,000 L steel-bermed AST, north of Cat Plant

New propylene glycol is stored in drums in the plants while new ethylene glycol and waste glycol are stored in drums on pallets in the drum storage berm west of the Ruston Plant. Most other fluids stored onsite are kept in small quantities and contained in 205 L drums, 23 L pails, or on pallets, and include paint, solvents, and grease.

Transformers

Transformers are stored on a platform in the line yard north of the line shop.

2.4. BULK PETROLEUM PRODUCT STORAGE

The Yellowknife Facility handles bulk volumes of diesel fuel for generation. Depending on load requirements at the standby facility NTPC receives an average 1,000,000 L to 1,500,000 L of diesel fuel trucked annually to the Facility from Edmonton and Hay River.

Facility fuel storage capacity is 1,812,600 L, as follows (see Figure 4):

- 1 vertical 1,700,000 L earthen-bermed AST, diesel fuel, northwest corner of lot
- 1 horizontal 90,000 L double-walled AST, diesel fuel, north of the Ruston Plant (G20, G22 and G23 units)
- 1 horizontal 4,000 L double-walled AST, diesel fuel (heavy equipment), west of Warehouse
- 1 horizontal 2,273 L double-walled AST, diesel fuel (heating), south of Warehouse
- 1 horizontal 1,137 L steel-bermed AST, diesel fuel (heating), south of Cat Plant
- 1 horizontal 1,137 L steel-bermed AST, diesel fuel (heating), west of office building

- 1 horizontal 2,273 L day tank, diesel fuel, inside Cat Plant
- 4 horizontal 1,137 L day tanks, diesel fuel, beneath gensets in EMD Plant
- 1 horizontal 5,000 L day tank, diesel fuel, inside K-Plant
- 1 horizontal 1,137 L day tank, inside line shop

Figure 3: Facility Fuel & Lube Oil Storage (showing old 43,000L fuel tank that has been removed)

2.5. PRODUCT KNOWLEDGE

The Workplace Hazardous Materials Information System (WHMIS) is Canada's hazardous materials communication standard. The key elements of the system are the cautionary labelling of containers of WHMIS Controlled Products, the provision of Safety Data Sheets (SDS), and worker education programs.

NTPC employees receive WHMIS training to ensure that they understand the properties of products being handled at the Facility. NTPC also ensures that SDS for all products handled at the Facility are maintained onsite and up-to-date. For additional information regarding NTPC's SDS, refer to Section 3.4 of this SRP or to the NTPC Hazardous Waste Management Plan.

2.6. SPILL KITS AND EQUIPMENT

There are five spill kits at the site:

- 1 large spill kit located in the CAT plant
- 1 large spill kit located in the EMD Plant
- 1 large spill kit located in the K Plant
- 1 large spill kit located outside next to the tank farm
- 1 large water spill kit locker located outside south of the EMD Plant
- Additional sorbent material is located in the Warehouse

NTPC employs two types of sorbent for spill response.

- **Universal Sorbents**: These sorbents pick up most liquids including fuel, oil, glycol, and water. They are used for general spill cleanup on dry land and will

sink if placed on water, as they adsorb the water (hydrophilic). For this reason universal sorbents are not to be used on hydrocarbon spills into water.

- **Oil Only Sorbents**: These sorbents only pick up hydrocarbons, such as fuel or lube oil. These sorbents float, as they do not pick up water (hydrophobic), and are to be used for any hydrocarbon spill into water.

Higher quality sorbents will wick up, contain, and retain spilled product much faster and more effectively than low quality sorbent, due to a finer weave of material. Low quality sorbent pads are used around the Facility to clean up drips while higher quality sorbents, found in the spill kits, are used for larger spills.

All plants are equipped with universal sorbent pads for day to day use and the cleanup of spills. For any large or significant spills, spill kits are available for containment and cleanup. Spill kits can be stored both indoors and outdoors and are generally contained in one of the following (see Figure 4):

- **Overpack Drum**: A yellow plastic drum designed to contain a leaking drum or used/unused spill material.
- **Steel Salvage Drum**: A 205 L steel drum with removable top used to contain used/unused spill material, impacted soil or snow, etc.
- **Spill Kit Locker**: A plastic bin used for spill kit material storage.

Figure 4: Typical Spill Kits

Spill kits generally contain the following spill response materials:

- **Sorbent Booms**: When a spill occurs into water, floating booms are placed around the spill perimeter to provide containment. Typically a 5 or 8 inch diameter plastic net tube filled with sorbent material, booms prevent the spill

from spreading and/or moving downstream to contaminate other areas (see Figure 5).

Figure 5: Sorbent Booms

Booms can be clipped together for extra length. The ends should be clipped together so that they overlap, leaving no space at the joint. This ensures that no spilled product leaks out past the boom, and the boom effectively contains and adsorbs the spilled product (see Figure 6).

- **Sorbent Socks**: Socks are identical to booms in construction; however, they do not clip together. They are generally used for small scale, localized spills.
- **Sorbent Pads**: Individual pads used on drips or leaks.
- **Sorbent Rolls**: A continuous roll of sorbent pads.
- **Printed Disposal Bags**: Soiled absorbent material is put into printed disposal bags which are then tied off for disposal.
- **Instruction Book**: The spill kit instruction book provides information regarding spill kit equipment.
- **Personal Protective Equipment**: Used to augment Facility equipment and supplies. Includes rubber gloves, safety goggles, and protective coveralls.

Additional spill response equipment is also in storage at the Facility:

- Front end loader
- Sorbent pads
- Hand tools (shovels and rakes)
- Pumps and hoses (berm dewatering kit, 50 m of hose)
- Portable fuel storage (five plastic 500 L tanks, empty drums)
- Acetylene torch
- Night operating equipment (cords and lights)
- Winter cleanup equipment (ice auger, tiger torch, chain saw)
- Small generators
- Personal protective equipment

Figure 6: Boom Deployment

2.7. HEAVY EQUIPMENT

Heavy equipment is available within the community for emergency spill cleanup. Contact information and equipment available is as follows:

Heavy Equipment Owners	Phone Number
City of Yellowknife	920-5600
Camco Construction Ltd.	873-8522
RTL Robinson Enterprises Ltd.	873-6271

Heavy Equipment Available	Location
Front End Loader	Camco / RTL
Dump Truck	Camco / RTL
Backhoe	Camco / RTL
Bull Dozer	Camco / RTL
Grader	Camco / RTL
Snow Plow	Camco / RTL
Vacuum Truck	Camco / RTL
Digger truck with Auger	Camco / RTL
Fire Truck	City of Yellowknife