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DETAILED REPORT: FUEL SPILL-CFS ALERT, 27 AUGUST, 2013

INTRODUCTION

1. This report is intended to detail the discovery and follow-up actions taken in response to the 27 August 2013 spill of DF8 (Domestic Fuel, diesel) at Canadian Forces Station (CFS) Alert – Fuel Pipeline Air Bridge. This pipeline air bridge is located outdoors between the Main Power Plant and Supply Building. This spill was a result of a faulty air relief valve (ARV) that is located at the top of the fuel pipeline air bridge; this component was isolated for inspection and repair. This fuel pipeline is part of the EC# 00002535 fuel tank system.

2. This detailed spill report is submitted as required under the conditions in Part G, Section 4.C of CFS Alert's Nunavut Water Board (NWB) Licence, 3BC-ALT1015 pursuant to the Nunavut Waters and Nunavut Surface Rights Tribunal Act.

3. This spill was reported as required under the Arctic Waters Pollution Prevention Act, Subsection 5(1).

4. This spill was reported as required by the Government of Nunavut's Environmental Protection Act paragraph 5.1(a). The spill was reported to the Northwest Territories/Nunavut (NT/NU) 24-Hour Spill Report Line on 27 August 2013. The spill report reference number is 13-294.

5. This spill was reported and this written report is submitted in reference to Subsection 41(1) of the Storage Tank Systems For Petroleum Products and Allied Petroleum Products Regulations for the purposes of Paragraph 212 (1) (a) of the Canadian Environmental Protection Act, 1999.

DETAILS

1. Time, date, and location of the spill occurrence.

   a. The spill was discovered at 0830 EST on 27 August 2013. The location of the Fuel Pipeline Air Bridge is: Latitude 82°29'51"N; Longitude 62°20'52"W. As shown in Figure 1 (below) and Appendix A (attached separately), this pipeline air bridge is located between the Supply Building (Building #131) and the Main Power Plant (Building #145).

2. Amount and type of spilled product.

   a. 100 Litres of DF8 diesel was spilled.

3. Root cause(s) of the spill.

   a. A faulty ARV was located at the top of the Fuel Pipeline Air Bridge (Appendix A). Upon further inspection, gravel and grit were removed from the ARV; this obstructed the float mechanism from normally functioning.

4. Measures taken to contain and clean up the spill site.

   a. Upon discovery of the spill, the Spill Contingency Plan was implemented by the Station Firefighters and responders. The fuel technicians conducting the fuel transfers immediately ceased operations. As shown in Appendix A, the mechanical valve connecting the pipeline and the ARV was closed to isolate the ARV. Spill absorbing materials were deployed by the HazMat Team. Clean up materials were collected for proper incineration.

   b. By design, the ARV is connected by hose to a containment barrel as shown in Appendix A. Approximately 100 L of DF8 had overflowed from the air relief containment barrel (capacity of 205L) and onto the gravel ground. The spill area was 30 square metres.

   c. 21 cubic metres of fuel contaminated soil was excavated by heavy equipment (Figure 2) and placed into the newly constructed Day Tank Landfarm Facility for remediation treatment. Two soil samples were collected for analytical testing.

   d. As per Part J, Item 7 of the CFS Alert NWB Licence, the concentrations of petroleum hydrocarbons entering the newly constructed Day Tank Landfarm Facility (Water Licence Surveillance Network Program Station ALT-10) is summarized in Table 1 and the Certificate of Analysis is attached separately in Appendix B.

Table 1- Analytical Results of Soil Samples taken at the Fuel Pipeline Air Bridge (Supply & Main Power Plant) and placed into the new Day Tank Landfarm Facility (ALT-10)

Parameter	Unit	CCME PHC Criteria (Industrial)	RDL	Sample #1	Sample #2
Benzene	ug/g	-	0.02	<0.02	<0.02
Toluene	ug/g	-	0.08	<0.08	<0.08
Ethylbenzene	ug/g	-	0.05	<0.05	<0.05
Xylene Mixture (Total)	ug/g	-	0.05	<0.05	<0.05
C6-C10 (F1)	ug/g	Coarse-grained: 320 Fine-grained: 320	5	22	56
C6-C10 (F1 minus BTEX)	ug/g	-	5	22	56
C>10-C16 (F2)	ug/g	Coarse-grained: 260 Fine-grained: 260	10	2300*	2400*
C>16-C34 (F3)	ug/g	Coarse-grained: 1700 Fine-grained: 2500	50	480	400
C>34-C50 (F4)	ug/g	Coarse-grained: 3300 Fine-grained: 6600	50	<50	<50

*exceeds CCME 2008 Guidelines for Petroleum Hydrocarbons in Soils.

e. The 205 L of DF8 collected in the containment barrel was recovered for future use. The excavated open trench was fertilized with Monoammonium Phosphate (MAP) fertilizer to promote *in-situ* bioremediation of any residual hydrocarbon; the trench was then backfilled with clean gravel material.

5. Recurrence prevention.

a. This spill occurrence is considered to be an isolated event, limited to the one ARV component at one fuel pipeline air bridge. The gravel and grit obstruction within the ARV was possibly the result from outdoor storage of this component prior to the construction assembly.

b. For prevention, all ARVs at all other fuel pipeline air bridges on the system were inspected. All mechanical valves connecting the pipeline and the ARVs were closed.

c. Additional secondary containments (spill trays) are now placed beneath the containment drums when required for operating the ARV components.

d. As this pipeline was newly constructed in August 2013, the Standard Operating Procedures is being reviewed by technical staff to ensure proper operation of this system.

6. Summary.

a. A spill of 100 Litres of Domestic Fuel (DF8) was discovered on 27 August 2013 at Fuel Pipeline Air Bridge located between the Main Power Plant and Supply Building. Actions were taken to contain and clean up the spill site. Contaminated soils were recovered for remediation treatment and analytical results are provided.

b. The spill was reported to the NT-NU 24-Hour Spill Report Line on 27 August 2013 (Spill# 13-294) by 8 Wing Environmental Management.

c. This isolated spill occurrence was a result of a faulty ARV component. Proactive actions have been taken to inspect all other ARVs and to enhance secondary containment at the containment barrels.

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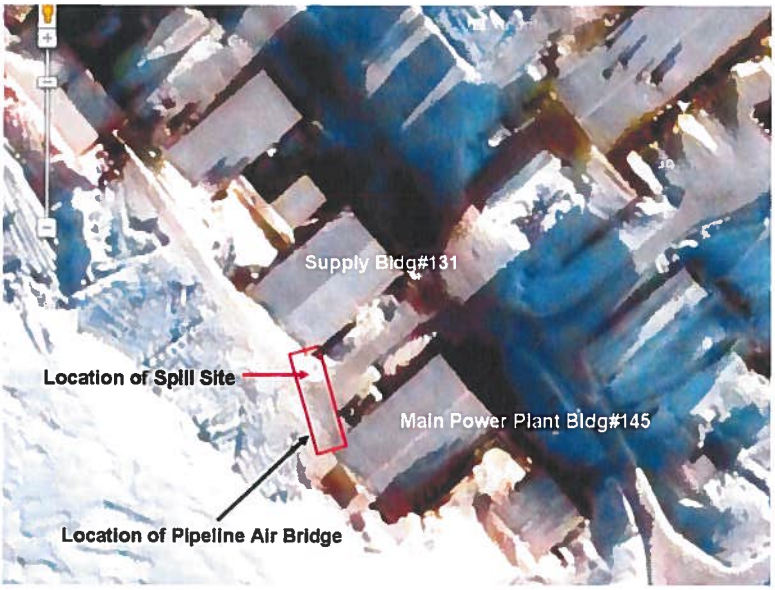

Figure 1 - Map showing spill site location between the Supply (B#131) and Main Power Plant (B#145) Buildings at CFS Alert, Nunavut.

Figure 2 – Excavation of fuel contaminated soils at CFS Alert.

Note: Appendix A & B are provided separately.