Indian and Northern Affairs Canada
Affaires indiennes et du Nord Canada

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Your file - Votre référence

Our file - Notre référence

April 14th, 2010

Water Licence W2009L2-0001

BHP Billiton Canada Inc.
#1102 - 4920 52nd Street
Yellowknife, NT X1A 3T1

Attn: Karl Schubert – Manager Health, Safety, Environment and Community

Re: February 15th & March 23rd, 2010 INAC Water Licence Inspections

Dear Mr. Schubert,

On February 15th and March 23rd, 2010 Inspection of operations at the Ekati Diamond Mine were conducted by Resource Management Officer Jason Brennan. On these site visits the INAC Inspector was accompanied and assisted by BHP Billiton Canada Environmental Compliance Representatives John Bartlett & David Abernethy.

As per the noted water licences or applicable land use permits granted in accordance with the *Mackenzie Valley Resource Management Act*, please be advised that the attached Inspection Report is part of the Public Registry and is intended to keep all interested parties informed of the manner in which licence requirements are being met. This report provides comments based on general observations and highlights any concerns or items that should be addressed by the Licensee / Permittee.
Attached / enclosed is the full Inspection Report along with related site photographs.

The following areas were inspected and the details of the findings are included in the attached report:

- Inspection of the Contaminated Snow Containment Facility. (CSCF)
- Inspection of fuel unloading at the Ekati Main Camp Bulk Fuel Farm.
- Inspection of all surface refuelling stations / bays at the Ekati mine site. (Excluding Misery Camp)
- Inspection of the Process Plant records confirming daily internal LLCF inspections completed.
- Field verification of several NWT Spill Reports for cleanup and recommendation for closure.

If you have any questions or concerns please contact the undersigned at (867) 669-2875.
Thank you for your continued cooperation.

Sincerely,

J Brennan

Jason Brennan
Resource Management Officer III
South Mackenzie District
Indian and Northern Affairs Canada
brennanj@inac.gc.ca

cc: Mr. Mark Cliffe-Philips - Executive Director, Wek'èezhìi Land and Water Board
Mr. Scott Stewart – Acting District Manager, INAC SMD Operations
Mr. Kevin O'Reilly – Manager, Independent Environmental Monitoring Agency

Canada

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INDUSTRIAL WATER USE INSPECTION REPORT

INSPECTION DATES: 2010-02-15 and 2010-03-23

COMPANY REP : John Bartlett & David Abernethy

LICENSEE: BHP Billiton Canada Inc.

LICENCE #: W2009L2-0001 (Water Licence)
Ekati Diamond Mine

WATER SUPPLY

Source: Grizzly Lake (Fresh Water Intake)

Quantity Used: N/I

Meter Rdg: N/I

Indicate: A - Acceptable U - Unacceptable N/A - Not Applicable N/I - Not Inspected

Intake Facilities	N/I	Storage Structures	N/I	Treatment Systems	N/I	Recycling	N/I
Flow Meas. Device	N/I	Conveyance Lines	N/I	Pumping Stations	N/I	Modifications	N/A

WASTE DISPOSAL

Tailings:	Tailings Pond	A	Natural Lake	N/I	Underground	N/I		
Sewage:	Sewage Treat.	N/I	Tailings pond	N/I	Natural Water	N/A		
	Continuous	N/A	Inter. Discharge	N/I				
Solid Waste:	Open Dump	N/I	Landfill	A	Burn & Bury	N/A	Underground	N/I

Indicate: A - Acceptable U - Unacceptable N/A - Not Applicable N/I - Not Inspected

Discharge Quality	N/A	Conveyance Lines	A	Disch. Meas. Dev.	N/I	Freeboard	A
Decant Structures	N/I	Pond Treatment	N/A	Dams, Dykes	N/I	Seepages	N/I
Dyke Inspections	A	Runoff Diversion	N/A	Erosion	N/A	Spills	A

GENERAL CONDITIONS

Indicate: A - Acceptable U - Unacceptable N/A - Not Applicable N/I - Not Inspected

Ore & Waste Rock Stockpiles	N/I	Records & Reporting	A	Surv. Net. Prog.	A
Geotechnical Inspection	N/I	Posting, Signage	A	Contingency Plan	A
Restorations Activities	N/A	New Construction	N/A	Fuel Storage	A
Mine Water Discharge	N/A	Chemical Storage	A	Annual Report	A

Licensee Representative's: Mr. Karl Schubert – Manager of Health, Safety, Environment and Community.

Licensee Representative's: Inspection issues also discussed with BHP Billiton Environmental Compliance Staff.

Inspector's Name: Jason Brennan

Inspector's Signature: J Brennan

Dated: 2010-04-14

Comments Section on Specific Aspects Inspected:

Inspection of the Contaminated Snow Containment Facility. (CSCF)

Inspection of the Contaminated Snow and Ice Containment Facility (CSCF) for storage of hydrocarbon impacted snow and ice was conducted on February 15th, 2010. Inspection revealed that sufficient free holding capacity in excess of an estimated 70% of reserve remains available at the CSCF for storage and containment of contaminated snow and ice. (See Photos 1 & 2) The holding capacity of the lined sump is said to be 1090 cubic meters or just over one million litres. The facility is being utilized for its intended purpose. No concerns or issues identified.

Inspection of fuel unloading at the Ekati Main Camp Bulk Fuel Farm.

On February 15th, 2010 the INAC Land & Water observed diesel fuel being unloaded at the Ekati Main Camp Bulk Fuel Farm. (See Photo 3) The fuel had been transported to site via the 2010 winter haul road to help replenish fuel reserves at the mine site. Drip bins were in use while unloading fuel as a precautionary measure, ensuring that any spillage or fuel drips would be contained. (See Photo 4) It is important to note that the fuel unloading bay at the Main Camp Bulk Fuel Farm contains a sump designed into the fuel unloading pad that is capable of capturing excess fuel if a large volume spill was to occur at this particular location. On February 15th and on March 23rd the fuel unloading area was observed in clean and spill free condition. Considering the large volume of fuel unloaded from tanker trucks at this location, BHP Billiton Canada is commended on keeping this area clean and well maintained. No concerns or issues identified.

Inspection of all surface refuelling stations at the Ekati mine site. (Excluding Misery Camp)

On March 23rd, 2010 an Inspection was conducted of all surface refuelling stations at the Ekati mine site. Refuelling sites inspected included the Main Camp Light Vehicle Refuelling Bay, the Surface Refuelling Bay that is used by underground vehicles and equipment, the refuelling station for the Koala Fresh Air Raise #1 Diesel Fuel Storage Tanks, the refuelling station for the Koala Fresh Air Raise #2 Diesel Fuel Storage Tanks, the Panda Fresh Air Raise#1 Diesel Fuel / Used Oil Storage Refuelling Station, the Panda Fresh Air Raise#2 Diesel Fuel Storage Refuelling Station, as well as, the Koala Heavy Haul Refuelling Bay and the Fox Heavy Haul Refuelling Bay. Spill kits and spill pads were observed on hand or nearby all refuelling stations inspected, as well as, individual labelled drums for disposal of oily rags and contaminated snow. All of the refuelling bays or stations examined were noted in acceptable condition. No signs of spilled fuel were detected and all refuelling areas were in clean order. (See Photos 5-14) BHP Billiton Hydrocarbon Services and staff are commended on keeping up maintenance and care of refuelling areas. No concerns or issues identified.

Inspection of the Process Plant records confirming daily internal LLCF inspections completed.

On February 15th, 2010 the INAC Land & Water Inspector requested to view the Ekati Process Plant internal records in order to verify that daily inspections were being completed for monitoring of the Long Lake Containment Facility. (Regular monitoring of the LLCF is a specified condition of the Water Licence)
BHP Billiton Canada arranged for the INAC Inspector to examine records maintained for daily tailings circuit runs previously conducted. (See Photo 15) Tailings circuit runs involve a physical in-field inspection of the LLCF to examine the tailings lines, discharge spigots, functioning of equipment, etc. whereby a daily checklist form is completed after tailings runs are conducted. (See attached form) No concerns identified as inspections of the Long Lake Containment Facility were confirmed as occurring twice per shift on a regular basis.

Likewise, on a related note, it appears that BHP Billiton Canada is ensuring that sufficient snow clearing occurs on the East side of the Cell B access road. (As this area is prone to heavy snow drifting during winter and frequent effort is required to keep this section of access road open) Frequent snow clearing will ensure that the LLCF Cell B Ring Road is accessible at all times, allowing for complete monitoring of the tailings containment facility. (See Photo 16)

Field verification of several NWT Spill Reports for cleanup and recommendation for closure.

The follow spills reported to have occurred at the Ekati mine site were examined for proper cleanup and remediation. The following NWT Spill Reports were examined and have been recommended for closure:

NWT Spill #09-542	**NWT Spill #10-010**	**NWT Spill #10-012**	**NWT Spill #10-017**
NWT Spill #10-018	**NWT Spill #10-019**	**NWT Spill #10-047**	**NWT Spill #10-053**

Concerns Identified stemming from Spill Reports/ Recommendations

Two concerns were identified stemming from a review of recent NWT spill reports submitted by BHP Billiton Canada. The first concern is related to NWT Spill #10-019 that was submitted to the spill line on January 26th, 2010. This particular spill involved a hydraulic line failure on the Wirtgen Surface Miner operating at the bottom of Fox Open Pit reported to be spilling 300 litres of hydraulic fluid per day. The spill report stated that:

"A weeping hydraulic line on the Wirtgen Surface Miner resulted in a continuous trail of oil behind machine. Condition being monitored by Maintenance ***while awaiting parts. The contaminated ore is to be put through the Process Plant Primary Sizer.***"

After reviewing this particular spill report the INAC Land & Water Inspector does not believe that the action taken by BHP Billiton Canada, after first discovering the leaking hydraulic line was appropriate to prevent further hydrocarbon contamination from occurring. Although this particular spill occurred within Fox Pit on kimberlite ore to be later processed, BHP Billiton Canada should have immediately shut down the Surface Miner while awaiting new replacement parts. It would be considered best practise for BHP Billiton Canada to suspend operation of any piece of equipment at the mine site found to be spilling hydrocarbons until the malfunctioning machinery is fully repaired prior to resuming operation.

Furthermore, the INAC Land & Water Inspector questions the manner in which contaminated kimberlite ore is managed after being sent to the Process Plant. Numerous spill reports that describe hydrocarbon spills as having occurred on kimberlite ore frequently state that after the initial spill cleanup, the remaining hydrocarbon contaminated ore is sent to the primary sizer to be ran through the Process Plant. It is the view of the INAC Land & Water Inspector that this practise should not be considered as treatment of contaminated kimberlite. Washing of hydrocarbon contaminated ore at the Process Plant likely just dilutes any remaining hydrocarbons contained within the kimberlite. These remnant hydrocarbons are then likely transferred into LLCF with process water.

The most recent revision of the Hydrocarbon-Contaminated Materials Management Plan approved by the Wek'eezhii Land & Water Board in 2007 provides no description of how contaminated kimberlite ore is managed at the Ekati mine site. Although the Long Lake Containment Facility is an approved and licenced containment facility for waste, in light of recent findings that describe trace hydrocarbons showing up in fish downstream of the LLCF at Leslie & Moose Lake, every avenue should be explored as to how trace hydrocarbons might be appearing in the receiving environment. (And thus eliminated if in fact found to be a mine related effect on downstream water quality) To date this question has not been answered to the satisfaction of the INAC Land & Water Inspector.

In the interest of preserving water quality in the Long Lake Containment Facility and downstream of the mine site, it is therefore the recommendation of the INAC Land & Water Inspector that BHP Billiton Canada examine alternate methods for managing contaminated kimberlite ore. It is possible that there may be ways to reduce the generation / volume of hydrocarbon contaminated ore regularly being sent to the Process Plant or new methods and technology available to treat and dispose of hydrocarbon contaminated ore. (i.e. Installation of an oil and water separator in the Process Plant for pre-treating contaminated kimberlite, or temporarily land farming contaminated ore prior to processing)

February 15th & March 23rd, 2010 Water Licence Inspection Photos:

Photo 1

Inspection of the Contaminated Snow and Ice Containment Facility (CSCF) for storage of hydrocarbon impacted snow and ice was conducted on February 15th, 2010. The facility is being used regularly for its intended purpose.

Photo 2

Inspection revealed that sufficient free holding capacity in excess of an estimated 70% of reserve remains available at the CSCF for storage and containment of contaminated snow and ice. The holding capacity of the lined sump is said to be 1090 cubic meters or just over one million litres.

Photo 3

Diesel fuel being unloaded at the Ekati Main Camp Bulk Fuel Farm. The fuel was transported to site via the 2010 winter road to help replenish fuel reserves at the mine site.

Photo 4

Drip bins are used while unloading fuel as a precaution to ensure that any spillage or fuel drips are contained. The fuel unloading area was observed as clean and spill free.

Photo 5

The Main Camp Light Vehicle Refuelling Bay was found clean and free of spills on March 23rd, 2010.

Photo 6

The Surface Refuelling Bay that is used by underground vehicles and equipment. This refuelling bay was also found to be clean and free of spills.

Photo 7

The refuelling station for the Koala Fresh Air Raise #1 Diesel Fuel Storage Tanks. Area observed as clean and free of spills. A spill kit and disposal drum for oily rags on hand.

Photo 8

The refuelling station for the Koala Fresh Air Raise #2 Diesel Fuel Storage Tanks. The area was clean and free of spills with a spill kit & disposal drum for oily rags on hand.

Photo 9

Panda Fresh Air Raise#1 Diesel Fuel / Used Oil Storage Refuelling Station. Area observed as clean and free of spills.

Photo 10

Panda Fresh Air Raise#2 Diesel Fuel Storage Refuelling Station. Area observed as clean and free of spills.

Photo 11

Koala Heavy Haul Refuelling Bay. The area was observed as clean and free of spills.

Photo 12

A Mobile Tanker Truck refuelling at the Koala Heavy Haul Bay.

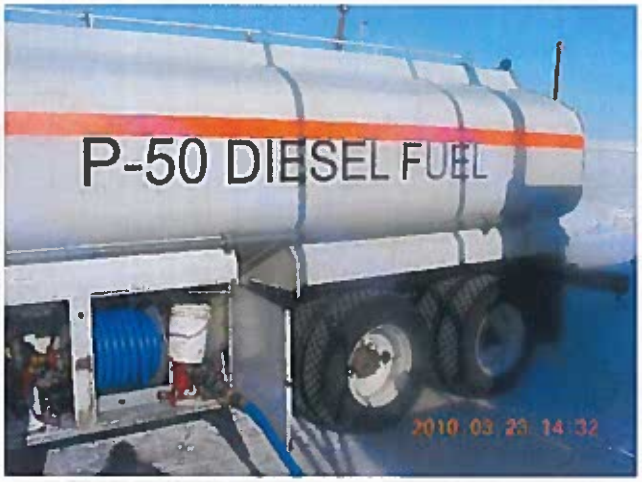

Photo 13

Fox Heavy Haul Refuelling Bay. Area observed as clean and free of spills. Drums on hand for disposal of contaminated snow and oily rags.

Photo 14

Second photo of the Fox Heavy Haul Refuelling Bay. This refuelling bay has been kept well maintained during the winter of 2010 with good snow clearing and care taken to avoid fuel spills. (Great improvement since previous winter)

Photo 15

On February 15th, 2010 the INAC Inspector requested to view BHP Billiton Canada's internal Process Plant records to verify that daily inspections were being completed for monitoring of the Long Lake Containment Facility. No concerns identified as inspections were confirmed as occurring twice per shift on a regular basis.

Photo 16

Snow clearing on the East side of the Cell B access road. (This area is prone to heavy snow drifting during winter and frequent effort is required to keep this section of road open)

Photo 17

BHP Billiton Canada have stepped up snow clearing efforts along this troublesome section of Cell B access road. This will ensure that the LLCF Cell B Ring Road is accessible at all times, allowing for complete monitoring of the tailings containment facility.

Photo 18

NWT Spill#10-018. On January 21st, 2010 a 5300 litre spill of Glycol / Water mixture occurred under the main accommodations H-Wing building due to a check valve failure on the sprinkler system.

Photo 19

As NWT Spill#10-018 occurred under the enclosed and screened in crawl space of the H-Wing accommodations building, wildlife could not access the impacted spill area.

Photo 20

After the removing most of the frozen mixture of ice and glycol by chopping out as much of the frozen solids as possible, Herman Nelson Portable Heaters were then utilized to melt the remaining frozen water and glycol mixture so that absorbent spill pads could be utilized.

THICKENING AND TAILS CIRCUIT

METALLURGY & QUALITY CONTROL
TAILINGS OPERATOR CHECKLIST
PROC-FO-CHE-09

Daily checklist to be completed for each shift
Please return to the Team Lead at the end of night shift.
Consult the Team Lead if you have any questions.

bhpbilliton

Owner: Team Leader
Revision Date: 24-June-2009
Issue # 13

Date: Feb-14-2010 Day ☐ Night ☑ Operator: [redacted]

Items to Check	Check Off	Completed
Tails Train Pumps	Glands, Casing, Drive Belts, Drive, Guards, Barrel, Leaks in Lines	☑
Tails Tank	Agitator Drive Noisey / Hot, Shaft Wobble, Sewage Odor	☑
Water Pumps	Leaks, Noices ,Hot, Gland, Power Draw	☑
Thickener Underflow Pumps	Glands, Casing, Drive Belts ,Drive, Guards, Barrel, Leaks in Lines	☑
Floc Pumps	Pumps, Grease Gland, Leaks, Valve Routing, House Keeping	☑
Floc Dry And Mix System	Leaks, Level Probe, Heater, Wet Head, Agitator, House Keeping	☑
Coag Mix System	Leaks, Level Probes, House Keeping	☑
Thickeners	Feed System, Overflows, Trash Screens	☑
Sump Pumps	Belts, Guards, Screens, Bearings	☑
Tails Line,Shacks,Barge	Leaks, Barge Pumps, Power Lines, Spigot Ends	☑
Fire Pump Check	Pressure (130-150 psi), Heat & Power, Panel in Auto, Leaks	☑
Doors	Snow and Garbage Cleared: Man Doors, Overhead Doors, Air Curtains, Emergency Exits	☑
Housekeeping		
Floor	Floor hosed & cleaned, hoses wrapped up	☑
Area Conditions	Garbage thrown out, tripping hazards removed, tools & working areas cleaned up	☑

Tailings Line and Gland Water Pressures

	Train A		Train B		Train C	
Time:			18:36	5:25		
PP851:			83%	83%	PP661	
PP852:			83%	83%	PP662:	
Pressure:			1393	1407	Pressure:	
Density:			1.47	1.45	Density:	
Flow-rate:			529	546	Flow-rate:	

Comments (Report unusual observations)

Tails Management

Tailings Run Time: 10:00 2:00

Is the Reclaim Barge Road Fully Accessible? ☑Yes ☐No

Is Cell A North Road Fully Accessible? ☑Yes ☐No

Is Cell B Ring Road Fully Accessible? ☑Yes ☐No

REMOVAL, REPORT VERBALLY TO THE TEAM LEADER*

A Line Deposits To: A-12 B Line Deposits To: A-5

Rupture Discs OK: A1 - ☑Yes ☐No / B1 - ☑Yes ☐No A-3 ☑Yes A11 - ☐Yes ☐No

Distance between pipe end and tails surface? A: 1-m B: 4-m

Any build up or coning of tails at the discharge point? A: Yes B: Yes

In-field Inspection Completed at Spigot A8 Marker: Tuesday ☐Yes ☐No Friday ☐Yes ☐No

Description of leading edge of tailings - Spigot A8 and Cell B East Road (Contact Team Leader if concerned/unsure)?

A8: Cell B East Road:

Are there any holes in the pipeline? If yes, where?	☐Yes ☑No
Do you see anything in the Tailings Deposition Area that requires attention?	☐Yes ☑No

Reagent/Additive Records

Number of Bags Added:	Salt: 0	
Number of Bags Added:	Floc 156: 0	Coag 368: 0
Any bags thrown away? Portion of a bag not used?	0	