



File: W2017D0004

December 17th, 2021

Arctic Canadian Diamond Company Ltd.
#900-606 4th Street SW
CALGARY, AB T2P 1T1

**Attention: Mr. Harry O'Keefe
Superintendent, Environment**

**Re: Land Use Permit W2017D0004
Mining and Associated Activities
Misery Underground Project, Northwest Territories**

Mr. O'Keefe,

An inspection of the Misery Underground Project and Misery Camp was conducted by Inspector Joe Heron on December 7th, 2021. The inspection was carried out to ensure operating conditions annexed to the above-noted land use permit are being adhered to during this land use operation. The Inspector was accompanied by Mr. Jeffrey Mantla (Environment Specialist, Environment) and all findings of the inspection were discussed onsite with Mr. Rick Woodward (Superintendent, Exploration).

Overall, the Inspector is pleased with the efforts of the Permittee to adhere to the majority of the operating conditions annexed to land use permit W2017D0004. It is the expectation of the Inspector the Permittee will adequately address the noted hydrocarbon management concerns and ensure the practices are not only maintained, but improved throughout all areas of the Ekati Misery Underground Project.

If you have any questions or concerns, please contact the undersigned at (867) 767-9187 ext. 24192.

Sincerely,

Joseph Heron
Resource Management Officer III (Inspector)
GNWT - Department of Lands, NSRO

cc: *Jamie Steele (GNWT - Lands, NSRO)*
Ms. Rhiana Bams (WLWB)
Mr. Marc Casas (IEMA)
Ms. Jamie Mistry (IEMA)



ENVIRONMENTAL INSPECTION REPORT

Permittee:	Arctic Canadian Diamond Company Ltd.	Inspection Date(s): December 7 th , 2021
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		Permit Expiry Date	Last Previous Inspection
Land Use Permit No.	W2017D0004	July 11 th , 2023	July 29 th , 2021
Quarrying Permit No.	N/A		
Contractor:	Procon Mining	Subcontractor:	N/A

Location(s) Inspected:	The Misery Underground Project (surface) and Misery Camp.
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Current Stage of Operation:	The mining of the underground ore continues and preparations appear to be underway for the commencement of the winter haul road operations.
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Condition of Operation	A- Acceptable	U - Unacceptable	N/A - Not Applicable	
	Operating Condition		Aspect Inspected	
		MUG Project	Misery Camp	Condition
A	Location and Area	A	A	
B	Time	A	A	
C	Type and Size of Equipment	A	A	
D	Methods and Techniques	A	A	
E	Type, Location, Capacity and Operation of All Facilities	A	A	
F	Control or Prevention of Ponding of Water, Flooding, Erosion, Slides and Subsidence of Land	A	A	
G	Use, Storage, Handling and Ultimate Disposal of Any Chemical or Toxic Material	A	A	
H	Wildlife and Fisheries Habitat	A	A	
I	Storage, Handling and Disposal of Refuse or Sewage	A	A	
J	Protection of Historical, Archeological and Burial Sites	A	A	
K	Objects and Places of Recreational, Scenic or Ecological Value	N/A	N/A	
L	Security Deposit	A	A	
M	Fuel Storage	A* A* A*	A A A*	#33 Fuel Containment #36 Spill Response #37 Drip Trays
N	Methods & Techniques for Debris & Brush Disposal	A	A	
O	Restoration of the Lands	A	A	
P	Display of Permits and Permit Numbers	A	A	
Q	Matters Not Inconsistent with the Regulations	A	A	
R	Sections 8 to 16 M.V.L.U.R.	A	A	

A* - The Inspector noted the discrepancies appeared minor in nature, but must be satisfactorily addressed prior to the next scheduled inspection.



ENVIRONMENTAL INSPECTION REPORT Pg. 2

Date: December 7 th , 2021	Permit#: W2017D0004
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Explanatory Remarks

An inspection of the Misery Underground Project and Misery Camp was conducted by Inspector Joe Heron on December 7th, 2021. The inspection was carried out to ensure operating conditions annexed to the above-noted land use permit are being adhered to during this land use operation. The Inspector was accompanied by Mr. Jeffrey Mantla (Environment Specialist, Environment) and all findings of the inspection were discussed onsite with Mr. Rick Woodward (Superintendent, Exploration).

Misery Underground Project

As seen in Photos #1 & #2, there is a Fresh Air Raise (FAR) located on the Misery Pit 440 Bench that provides heated air to the underground operations of the Misery Underground (MUG) Project. There is also an electrical sub-station that is used to supply electrical power to the underground and other related equipment staged on the bench (ie: back-up generator, stench gas station, fuel tank, etc. – Photos #3-#5). There was a fuel truck on the 440 Bench that was refueling the FAR station tank with transfer operations taking place within the containment berm (Photo #6). Though the 440 Bench appeared to be free of major hydrocarbon staining and spills, an inspection of the area will be conducted in snow-free conditions to ensure any hydrocarbon impacted soils are cleaned up, disposed of at an approved facility and properly documented (Conditions #18 & #38).

Immediately east of and adjacent to the Misery Waste Rock Storage Area (WRSA), there is a laydown that is used to stage the ore that is mined from the MUG Project. An excavator that is used to sort the ore into windrows prior to loading and transport to the Ekati Process Plant was parked at the ore pile. As seen in Photos #7-#9, there was no secondary containment in place under the parked excavator and there were hydrocarbons dripping onto the ground. As per Condition #37 of LUP W2017D0004, secondary containment must be utilized under all equipment that may be parked for two hours or more.

The Inspector also noted there was no secondary containment placed under the light plants in the laydown (two of the three light plants were operating – Photos #10-#12). To help mitigate potential hydrocarbon spills at the light plants, secondary containment must be used during fuel transfers at the plants (Condition #32) and there must be secondary containment trays placed under the light plants to prevent hydrocarbons from impacting the area (Condition #33). The Permittee must ensure all spills are properly documented, cleaned up and disposed of at an approved facility (Conditions #18 & #38). The Permittee must also ensure there are adequate and readily available spill response materials in areas where hydrocarbon spills may occur (Condition #36).

In addition to the Misery Pit 440 Bench and the ore staging area, the inspection also included the MUG Project winter road laydowns. The laydowns are used to stage materials as they arrive during the Winter Road haul season prior to the materials being sorted and sent to various projects located throughout the Ekati minesite. As seen, there was a weigh scale in place at the laydown and the site was ready to receive winter haul freight (Photos #13 & #14). No further concerns were noted by the Inspector regarding the surface operations of the MUG Project.

Misery Camp

At the Misery Camp (Photos #15 & #16), the bulk fuel offload station ramp was cleared of snow, there were no obvious hydrocarbon stains in the area and there were readily available and adequate spill response materials (Photos #17 & #18). At the Misery fueling station, there was also adequate spill response materials available and secondary containment was also in use (Photos #19 & #20). At both the bulk fuel offload station and fueling station, it appeared there was no hydrocarbon impacted snow being tracked off the fueling pads. However, the Inspector did note some spilled hydrocarbons on the ground at the light vehicle fueling pad. Once the spilled fuel was noticed by an employee, it was immediately scraped up and put in the contaminated snow bin located at the station (Photos #21 & #22).

The Permittee must ensure the sumps at the fuel stations are kept free and clear of snow to ensure they are working as designed: to catch fuel and direct it towards the bulk fuel tank berm in the event of spills (Condition #33 – Photo #23). Keeping the sumps clear is important as it will help divert the hydrocarbons away from the surrounding lands, particularly during the winter road bulk fuel hauls. No further concerns were noted by the Inspector at the Misery fuel transfer facilities.



ENVIRONMENTAL INSPECTION REPORT Pg. 3

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Explanatory Remarks

The Inspector noted secondary containment was not being used under some of the parked and staged equipment (Condition #37 – Photos #24-#30). It is imperative that when equipment is parked for more than two hours, secondary containment is placed under the equipment to mitigate hydrocarbon leaks and spills. Additionally, the secondary containment structures must be diligently monitored to ensure they are being properly maintained (ie: deteriorated drip boards, containment filled with snow/ice, etc.) to remain effective in preventing hydrocarbons from spilling onto the ground and impacting the surrounding lands and waters (Condition #33). All spills must be properly recorded, cleaned up and disposed of at an approved facility as per the Ekati *Spill Contingency Plan*.

It appeared the remainder of the hydrocarbons at the camp were being satisfactorily managed. Hydrocarbons in containers were being staged within a lined containment berm and were properly labeled (Photo #31). There were no major hydrocarbon spills and no spilling was noted within or outside of the fuel tank containment berms around the camp. It appeared smaller fuel containers were being properly managed and there were adequate spills response materials staged throughout the camp (Photos #32 & #33).

Waste Management

As seen in Photos #34-#36, waste at Misery Camp continues to be segregated into its different waste streams prior to disposal at the main camp incinerators/burn bin, at the landfill or is containerized for shipment and disposal offsite at approved facilities. Sewage produced at the camp reports to a holding tank before it is pumped out with a vacuum truck and transported to the Ekati sewage treatment plant (Photos #37 & #38). There, it is treated and separated into sewage effluent and bagged solid waste. The treated effluent reports to the Ekati process plant where it is further processed prior to disposal into the mine Long Lake Containment Facility and the bagged solids are disposed of at Zone S. All sewage and waste at the Ekati mine is managed in accordance with the Ekati *Waste Management Plan*.

Conclusion

Overall, the Inspector is pleased with the efforts of the Permittee to adhere to the majority of the operating conditions annexed to land use permit W2017D0004. The Inspector reminds the Permittee of the need to improve hydrocarbon management practices to help mitigate spills and potential spills that may adversely affect the surrounding lands and watercourses. It is the expectation of the Inspector that hydrocarbon management activities will improve throughout all areas of the Ekati Misery Underground Project.

Completed off Site
Representative's Signature

Joseph Heron
Inspector



Inspector's Signature



Photo 1: Looking north at the FAR station and related underground infrastructure staged at the Misery Pit 440 Bench.



Photo 2: The FAR station pumps heated air into the underground. The electrical also runs through the borehole to the underground operations.



Photo 3: Looking at the electrical sub-station on the Misery Pit 440 Bench.



Photo 4: Generators staged on the Misery Pit 440 Bench.



Photo 5: This 50,000 L diesel tank is used to supply the FAR station.



Photo 6: This fuel truck was transferring fuel to the fuel tank in Photo #5. Note the onboard spill kit.



Photo 7: Ore from the Misery Underground is staged east of the Misery WRSA where it is sorted and loaded prior to transport to the Ekati Process Plant.



Photo 8: This excavator is used to sort and pile the ore at the laydown in Photo #7.



Photo 9: As seen, there was no secondary containment placed under the parked equipment and hydrocarbons were dripping onto the ground.



Photo 10: The light plants at the ore laydown also required secondary containment.



Photo 11: A second operational light plant at the ore laydown that requires secondary containment.



Photo 12: A third light plant at the ore laydown that was not in use during the inspection.



Photo 13: The weigh scale at the Misery Pit laydown.



Photo 14: The Misery Pit laydown appeared ready to receive freight brought to the mine on the winter haul road.



Photo 15: An overview of the Misery Camp in this photo taken from the ore laydown.



Photo 16: The Misery Pit bulk fuel tank, bulk fuel offload station (right) and the vehicle fueling area (left).



Photo 17: As seen, the snow was cleared from the bulk fuel offload ramp and there were readily available spill response materials staged on the ramp.



Photo 18: The spill pads bin was well stocked and ready for spill response.



Photo 19: Looking south along the light vehicle offload ramp. The cone indicates the location of the ramp sump.



Photo 20: There was secondary containment for the fuel nozzles on the ramp and readily available spill response materials.



Photo 21: A mine employee was scraping up hydrocarbon impacted snow at the light vehicle fueling area.



Photo 22: Hydrocarbon impacted waste is being placed in designated waste containers at the fueling ramp.



Photo 23: The sumps on the fueling ramps must be diligently monitored and cleared of snow & ice throughout the winter season.



Photo 24: The equipment down line on the south and west of the Misery Camp compound.



Photo 25: As seen, the secondary containment under this equipment was filled with snow and required maintenance.



Photo 26: As seen, there was secondary containment placed under this equipment.



Photo 27: The secondary containment structures required maintenance (ie: drip board repairs).



Photo 28: The equipment staging area on the north and west of the Misery Camp compound.



Photo 29: An underground haul truck was parked at the laydown.



Photo 30: The Permittee must ensure secondary containment is used under parked equipment and is properly maintained.



12/07/2021

Photo 31: Various hydrocarbons in containers are staged in this lined and bermed area in the south of the compound.



12/07/2021

Photo 32: Smaller containers of hydrocarbons were staged in this lockup.



Photo 33: Drip boards and a spill kit at the Misery Camp parking area.



Photo 34: The waste station at the Misery Camp truckshop.



Photo 35: It appears waste at the station was being properly segregated into its designated bins.



Photo 36: This paper, wood and plastic waste bin contained only acceptable waste materials.



Photo 37: The Misery Camp parking area. The white tank holds potable water, the red tank contains fire suppression water and the camp sewage reports to the black tank on the right.



Photo 38: The sewage lift station located east of the sewage holding tank outside the camp buildings.