

COMMENTS ON BAFFINLAND IRON MINES CORPORATION RESPONSES TO INFORMATION REQUESTS FROM CANADIAN TRANSPORTATION AGENCY STAFF

In March 2011, following a review of the Environmental Impact Statement for the Mary River Project, Agency staff submitted information requests regarding:

- the permafrost and the railway,
- emergency responses to a potential train derailment,
- railway noise and vibrations,
- potential collisions of caribou and trains,
- clarifications regarding railway components of the project

Below are the comments of Canadian Transportation Agency (CTA) staff to Baffinland Iron Mines Corporation's responses to these information requests as well as an additional information request regarding track design.

TRACK DESIGN (additional information request)

It is noted on plans that from station 82+500 to station 95+000, the profile of the track will vary from elevation 192.93 to 43.70, a difference of about 150 metres over a distance of 12.5 km, in a series of downgrades similar to a stairway. The train would travel over 13 km of downgrades with brakes applied. The train could run out of air before reaching the bottom of the slope; even with using dynamic brakes from the two engines, it might not provide enough braking power to keep the train under control and if so, excessive forces could open the track gauge under load. The number of loaded cars would need to be reduced.

Information Request: *Has a train simulation been done for a loaded train of 144 cars coming down from the mine on that particular stretch of track to see what would be the behaviour of a train?*

(Previous information requests, responses and comments)

PERMAFROST

1. In volume 9, it is indicated (table 9-2.4) that geotechnical investigations would be relied upon to circumvent potential problems with ice rich soils, seismicity, floods, embankment stability, stability of overburden cuts, and of major rock cuts, bridges stability and tunnels stability. This could go as far as changing the alignment of the track.

It is indicated that culverts and bridges would be designed to a return period of 1:200. Please indicate if there are hydrology records extending over such a long period of time.

Response: 200 years of hydrological data are not available for the Project area. A description of the process used to derive the estimated peak flows in the Project area is provided on pages 23 and 24 in the hydrology baseline report included in Appendix 7A.

CTA Comment: *Response noted.*

EMERGENCY RESPONSE

2. Volume 10 describes Baffinland's environmental management system. The system includes policy orientations, roles and responsibilities for environmental protection, adherence to a precautionary approach to risk assessment, and the identification of certain regulations. Section 6.0 describes the company's Emergency and Spill Response Plan, including roles and responsibilities of key interveners in the event of a spill. Subsection 6.3.4 mentions that "An appropriate number of site personnel are selected and appropriately trained to form the Emergency Response Team". Training will be provided and emergency response exercises conducted.

Train derailments do not seem to be covered as a possible source of spills of hazardous materials. The project site is remote and subject to rigorous winter conditions for most of the year. Distances and weather conditions may delay the deployment of emergency response personnel and resources – particularly those from outside the region that would be readily available in southern regions of the country. Although the presence of ice will prevent the immediate entry of petroleum products or other hazardous materials into water bodies, blowing snow may very quickly cover such spills and make it difficult to later locate and clean them.

How would human and material resources be quickly deployed to the site of a train derailment where fuel would have been spilled in proximity to a water body along the railway corridor? The EIS should describe tangibly how resources can be deployed to respond to environmental emergencies. This should include the deployment of Baffinland personnel and of outside resources when required.

Response: Various spill scenarios are discussed in the Emergency and Spill Response Plan (Appendix 10C-1). In the event of a derailment, resources (first responders) could be deployed by helicopter. Baffinland will draw from the experience gained at ArcelorMittal's Mount Wright-Port Cartier railway operation to finalize the Emergency Response Plan for the railway operation.

Comment: *The Emergency and Spill Response Plan describes roles and responsibilities regarding emergencies and summarizes some measures that would need to be put into place in the case of a spill of hazardous material. Given the severity of the weather at times, the DEIS and the response do not fully address the particular challenges of quickly getting experienced spills management specialists to a train derailment and a hazardous material spill. Having access to the documentation regarding the experience of ArcelorMittal referred to in the response will also be pertinent.*

RAILWAY NOISE AND VIBRATION

3. Volume 5 - Atmospheric Environment, page 83 of 136, the last paragraph indicates a ground absorption of 0.8 for summer conditions was assumed.

Please specify the ground absorption coefficient used for winter conditions and over water.

Response: Vol 5 Table 5.3.4 lists ground absorption coefficient for winter as 1.0.

Comment: *It is noted.*

4. Volume 5 - Atmospheric Environment, page 88 of 136, third paragraph states "...consideration should be given to these dwellings, as it is important for worker health to maintain an adequate sleep environment....due to the nature of this project, a rating of NCB 33 or less is recommended for the work camps". Potential mitigation measures include relocation or reorientation of the dwellings, berms or noise walls, and upgraded building construction. Then on page 103 of 136, predicted worst-case sound levels at the worker accommodation building are presented in Table 5-3.9 as overall dBA values (which are assumed to be 1-hour outdoor L_{eq} values). There is a disconnect between pages 88 and 103 because the sound levels are presented as different units. Although there is reference to an indoor criterion of NCB 33, an evaluation of indoor noise at the worker accommodation building was not presented.

The proponent should provide indoor sound levels at the worker accommodation building. Please describe if any of the proposed mitigation measures will be implemented into the design.

Response: There are no "dwellings" in the project LSA. Page 88 includes recommendation for noise levels inside worker accommodation although this was not modelled. Page 103, table 5.3.9 refers to a worst case predicted noise level in dBA at Steensby port. All worker accommodation will meet OHSA standards which apply. During Detailed Design phase is the appropriate time to confirm which mitigation measures will be applied to ensure that the noise level inside the worker accommodation meets the recommended criteria of NCB 33.

Comment: *Occupational Health and Safety (OHS) legislation is intended to protect workers at their workplaces. OHS legislation does not apply to workers when they are off duty (e.g. workers resting inside the accommodation building). It is important for workers' health that noise levels inside the worker accommodation buildings meet the indoor criterion indicated above in criteria NCB33.*

5. The above request also applies to the Milne Port and Mine Site.

Response and CTA to information request #4 apply.

6. ISO and CSA standards suggest that certain noise characteristics may affect how people perceive sounds (e.g. low frequency content, tonality, and impulsiveness). These noise characteristics can be annoying and disruptive to people.

Please indicate if any adjustment factors were applied to the predicted noise levels. Provide a rationale if adjustment factors were not considered.

Response: The LSA is uninhabited and no human settlements are foreseen in the near or distant future. Placing a focus on human health receptors is therefore not relevant. The focus of the air quality monitoring plan is therefore on air quality parameters susceptible to affects wildlife habitat.

Comment: *It is noted that the LSA is uninhabited and probably will remain so – except for the worker accommodations. The following comment applies to the later: certain noise characteristics such as low frequency content, tonality, and impulsiveness from rail operations can be disruptive and annoying to workers resting in the accommodation building. These unique characteristics should be considered as part of the detailed design of the worker accommodation building. Some standards such as ANSI and CSA recommend that adjustment factors be applied to the predicted sound level.*

7. Volume 5 - Atmospheric Environment, page 91 of 136, second paragraph states that "Construction noise effects are temporary in nature".

The proponent should clarify the duration of construction activities at Milne Port, Mine Site, and Steensby Port.

Response: Milne Port - construction activities will be limited to the establishment of a freight dock and periodic unloading of construction materials and equipment required for the construction activities at the Mine Site and upper section of the railway. Duration - 4 years during the open water season;
Tote Road Upgrade - first year of construction;
Mine Site - 3 year construction period - mining operation (stripping and stockpiling of ore) to begin during the third year of construction;
Railway construction - critical path - construction expected to last 4 years;
Steensby Port - early staging required in order to complete construction of facilities and railway within 4 years.

Comment: *Response is noted. Thank you.*

8. Volume 5 - Atmospheric Environment, page 103 of 136, states that the "Worst-case predicted operational noise levels are summarized in Table 5-3.9. Graphical representation of summer and winter operations is provided in Figures 5-3.9 and 5-3.10, respectively". According to Figure 5-3.9 on page 101 of 136, there does not appear to be any activities occurring in the rail yard, next to the accommodation complex.

Please clarify why rail yard activities were not included in the worst-case operating scenario for the accommodation complex. It should be noted that a worst-case scenario of the Local Study Area (LSA) is not necessarily a worst-case scenario at the accommodation complex.

Response: All worker accommodation will meet OHSA standards which apply. During Detailed Design phase is the appropriate time to confirm which mitigation measures will be applied to ensure that the noise level inside the worker accommodation meets the recommended criteria.

Comment: *See previous CTA comment regarding workers accommodations.*

9. Request #8 above also applies to the Milne Port and Mine Site.

Response: same as # 8.

Comment: *See previous CTA comment regarding workers accommodations.*

10. Atmospheric Environment, pages 89, 90, and 92 of 136, state that construction noise may be “moderate to loud”. Given the location of the Milne Port and Steensby Port along the shoreline, there is some concern that noise due to construction may travel efficiently over water (due to reduced absorption and the effects of wind and temperature inversions).

Please indicate if there are any noise sensitive receptors across or along the shoreline of the Milne and Steensby Ports, beyond the 3 km LSA.

Response: There are no noise sensitive receptors identified across or along the shoreline of the Milne and Steensby Ports, beyond the 3 km LSA.

Comment: *It is noted. Thank you.*

POTENTIAL COLLISIONS OF CARIBOU AND TRAINS

11. In volume 6, p. 129, it is stated that caribou may use gravel roads in their efforts to avoid harassment from insects. Would the railway line not serve the same purpose? On p. 142 it is also stated “that snow accumulation [along railway] will likely facilitate caribou movement”. Although it is acknowledged that caribou mortality from collisions with trains may occur, little is said of the probability that caribou will use the railway as a trail and be on the line when a train passes. On p. 147, the EIS concludes that “Currently, the caribou are in a trough of a population cycle. Consequently, a very low probability of direct project-related mortality is expected”.

On what other factors, besides the limited number of caribou in the region, are these conclusions based?

Response: The conclusion is based on the fact that the low caribou numbers and large amount of available habitat reduces the probability of caribou encountering the train. The road and railway embankments are similar to many other geographic features in the area (e.g. eskers, moraines, boulder fields, talus slopes), so in most areas will not provide unique landscape features that the caribou will be attracted to.

Comment: *Given the scarcity of data for caribou in northern portion of Baffin Island, predicting the impacts of the rail line on the caribou population is a challenge. We note that the conclusions of a “very low probability of caribou mortality” from collision with trains are based on the observations/estimations that a small caribou population exists over a large territory. The conclusion that caribou will not make use of the railway embankment because of the embankment’s similarity to other features of the landscape is a hypothesis.*

12. Who would provide the “repeated on-site observations of caribou behaviour along the transportation corridors” that would monitor caribou mortality and assess the need to “increase traffic controls including seasonal traffic limitations” proposed on p. 147?

Response: Employees are required to report sightings of caribou along the transportation corridor. The EPP will utilize information collected from employees to recommend management decisions related to seasonal traffic limitations.

Comment: *Response is noted.*

13. It is indicated (p. 139) that aerial surveys regarding caribou were conducted in 2010. Based on the surveys and other sources of information, fifty-two current caribou trails, 'key crossings', and 'broad crossing areas' were identified. It was concluded that "While most of the areas do contain small sections that may be barriers to caribou movement, overall caribou movement in the key and broad crossing area will not be affected by physical barriers". In some areas where embankments would be steep, it is proposed to make their inclination gradual and that fine fill material be placed to facilitate the crossing of caribou.

What evidence exists of the permanence of these trails and crossing areas? Could the embankments adapted to facilitate crossing turn out to be underused while other sections of the railway line may turn out to be significant obstacles to caribou movement.

Response: Animal response to mitigation measures will be monitored through the life of the project. Monitoring and mitigation measures will be adaptive giving the opportunity to mitigate or monitor any observed or unexpected impacts in alternative ways. Furthermore, train operations are projected to occur for 300 days of the year, enabling for rail maintenance or periodic reduced frequency of trains due to observed increases in caribou density.

Comment: *Noted. Further comments may be provided during Technical Review.*

CLARIFICATIONS REGARDING RAILWAY COMPONENTS

14. Number of bridges - In Appendix 1B - 3 : p. 9 of 46: (French version - Popular Summary) "**Douze ponts** seront construits, les plus grands étant ceux qui traversent la rivière Ravn et le lac Cockburn...".

In Appendix 1B - 2: p. 6 of 41: (English version - popular summary)."... The railway consists of a rail embankment, **wooden ties**, and steel rails. A total of **24 bridges** will be constructed for the railway, two tunnels, and extensive rock cuts along Cockburn..."

Response: There are actually 31 bridge structures planned along the railway, of which 12 are deemed "major bridges" as they involve multiple spans.

Comment: *Response noted. – 31 bridges.*

15. Number of trains - In Appendix 5C - 4: p. 12 of 32: "... The trains will have 4400 bhp engines, 2 locomotives and **110 wagons per train**..." and under Schedule of Operations: "... **6 trains per day** will travel the railway corridor (145 km) between the Mine Site and Steensby Port ...".

In Appendix 5C - 4 : p. 32 of 32: Table 5C-4-3-4: Qualitative Assessment of Fugitive Dust Emission from Train Operation: in Table 5C-4-3-4b. Fugitive Dust Emission from

Trains: it is indicated: Total Emissions @ **144 Ore Cars and 2 Loaded Trips / Day (Tonnes)**

Response: Discrepancy acknowledged; the air quality assessment is based on a previous railway scenario. Furthermore, 50 years of operating experience with rail transportation of coarse iron ore at the Labrador iron mines indicated that dusting from rail car is not problematic.

Comment: *The response does not answer the question of how many trains per day will operate. The revised doc. Titled: " Table 3-1.1 Key Project Facts (Revised is underlined; DEIS numbers presented in brackets " submitted with Baffinland' letter of May 5, 2011 now shows 4 round trips per day.*

16. Railway ties - In Appendix 2A-2 p. 144 of 703: under reference 12: Matthew Pickard (Baffinland): "The substance they use in the south is called creosote and it makes the ties last longer. We will not be using creosote for this project. We are looking at using **cement or steel ties** with no chemicals. Good question.... "

In Appendix 1B-3, p. 9 of 46: (French version of popular summary)" ... La voie ferrée consistera en un remblai pour la voie (lit de rail), de **traversees en bois** et de rails en acier...."

Response: The railway ties will be untreated wood ties, although cement and steel ties were both considered. Creosote-treated wood ties will not be used, as preservation is not necessary in this climate.

Comment: *Response noted. – Untreated wood ties.*

17. Number of cars - In Appendix 2A-2 p. 159 of 703: under reference 14:)"Matthew Pickard (Baffinland): Yes, one train will have **145 cars**.

Response: Yes, at the time of the meeting referenced, it was planned that each train would have 145 (actually, 144) cars. A different configuration reflecting the latest thinking is presented in the EIS.

Comment: *Response noted. It is still unclear how many cars per trains (what is the latest configuration presented in the EIS).*

Gatineau, Quebec
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