

JAN 13 2010

Mr. Vern Christensen
Executive Director
Mackenzie Valley Environmental Impact Review Board
BOX 938, 5102-50TH AVENUE
YELLOWKNIFE NT X1A 2N7


Dear Mr. Christensen:

**Dezé Energy Corporation, Taltson Hydroelectric Expansion
Project EA0708-007 – December 16, 2009 MVEIRB Information Request**

In response to your letter dated December 16, 2009 the Government of the Northwest Territories (GNWT) provides, attached, additional information to the gaps the Review Board has identified in respect to the potential impacts of the proposed development on caribou. The GNWT will have a caribou biologist available for questioning at the January 14th and 15th Public Hearing.

If you have any questions or concerns please do not hesitate to contact me.

Sincerely,



Gary A. Bohnet
Deputy Minister

Attachment



Information gaps response to MVEIRB December 16, 2009 request

Since the release of the Taltson Hydroelectric Expansion Project Developer's Assessment Report in March 2009, the Government of the Northwest Territories *(GNWT) has participated in MVEIRB Technical Sessions (May 27 - 28, 2009 and October 1, 2 & 5, 2009), information request processes, discussions with Dezé Energy Corporation and are now preparing for the January 14-15, 2010 Public Hearing.

A number of issues were discussed at the May 27 - 28, 2009 Technical Session in Yellowknife. Unfortunately there is no formal record of these discussions. It was at this session that the sub-points of response #1 below were first raised. Dezé Energy Corporation (Dezé) has provided answers to these points throughout the process as referenced in the responses below.

The information below responds to the information gaps identified by the Review Board, brought forward in the December 16, 2009 letter to the GNWT.

1 A summary of the discussions and results from the meeting referenced in the report from November 30, 2009, including attendees and any caribou experts involved.

1.1 - 1.6 are a summary of the "outstanding issues" that were listed in the November 30, 2009 meeting report.

Meeting attendees were identified in the November 30, 2009 meeting report.

1.1 What will be the effects of improved access?

Please see question #2 response below.

1.2 Failure to of the DAR to include Don Thomas's work on Beverly caribou in the Fort Smith region.

References:

May 27 - 28, 2009 MVEIRB Technical Session

June 10 and November 23, 2009 meeting between GNWT and Dezé Energy Corporation.

Information Request #50 - Commitments 2009 (Dezé Energy Corporation. commitments arising from the MVEIRB Technical Sessions held in Yellowknife October 1, 2 and 5 and Lutsel K'e September 30, 2009).

Information Request #50 (Version 2 – December 22, 2009) – the response that replaces that provided in the Document: Commitments 2009 (Dezé Energy Corporation commitments arising from the MVEIRB Technical Sessions held in Yellowknife October 1, 2 and 5 and Lutsel K'e September 30, 2009).

Proponent's Conclusions:

Based on a review of Don Thomas's studies and analysis of more recent collar data than was available for the DAR, Dézé concluded that the winter range of central Canadian barren-ground caribou was once larger than suggested by the satellite collar data collected from 1996 to 2007. This range contraction in the Taltson River basin is likely a result of extensive forest fires in 1979. Based on the findings of Thomas et al. (1995), caribou may return to these areas in the next 10 to 30 years, although it may not become a preferred area for another 120 years (Information Request #50 – Version 2).

GNWT Conclusions:

Don Thomas's work being included in the Commitments document provides a much improved description of the barren-ground caribou winter range.

1.3 There is uncertainty about how caribou will react to the transmission line. Is it acceptable that Dézé propose to monitor caribou behaviour around the transmission line during operation?

References:

DAR Sections 9 & 12 – Pages 12.3.12, 9.5.40, 12.7.2

May 27 – 28, 2009 MVEIRB Technical Session

June 10 and November 23, 2009 meeting between GNWT and Deze Energy Corporation.

October 5, 2009 MVEIRB Technical Session Transcripts Page 17 – 27.

Information Request #50 (Version 2) – the response that replaces that provided in the Document: Commitments 2009 (commitments arising from the MVEIRB Technical Sessions held in Yellowknife October 1, 2 and 5 and Lutsel K'e September 30, 2009).

Proponent's Conclusions:

There is some uncertainty regarding how caribou will interact with a transmission line in a tundra environment. In 2006, Dezé flew the transmission line in a helicopter and made observations of caribou underneath the transmission line. Feeding craters and trails underneath the transmission line were observed. Following a commitment during the first technical session, Dezé reviewed caribou satellite collar data near the Yellowknife to Snare Hydro transmission line. Although this transmission line is in a boreal environment, it is within the Bathurst caribou range. The analysis showed crossings of the transmission line by collared caribou in three winters between 1996 and 2007.

There remains uncertainty on how caribou will interact with a transmission line in a tundra environment, during the post-calving season. The most relevant information from the scientific literature identified by Dezé were from alpine and tundra transmission lines in Scandinavia (October 5, 2009 Technical Session), and of the effects to Bathurst caribou from existing development (DAR page 12.3.12). They have also reviewed satellite Bathurst Caribou collar data in the proposed transmission line route to estimate the likely encounter rate for this herd (DAR page 9.5.40).

In response to this uncertainty, Dezé has proposed monitoring caribou behaviour at the transmission line. Monitoring during the construction phase would focus on avoiding caribou, while operations phase monitoring would attempt to quantify the effect of the transmission line to caribou behaviour (methods outlined in the Draft Monitoring Program Section 5.2.4.5 and 5.3.7). In the Draft Environmental Monitoring Program Dezé describes their proposed monitoring plan for caribou during project construction and operation. The proposed monitoring would involve both biologists and community representatives, in an attempt to both address community concerns, and contribute to the scientific literature.

Further, analysis of GPS collared movement in the vicinity of the transmission line, both before and after construction, is proposed in the Draft Environmental Monitoring Plan. GPS collars have been deployed by the GNWT on Bathurst caribou since 2008, and provide more frequent and accurate data than the older satellite collar technology. It is anticipated that this technology will provide sufficient accuracy and frequency of data to determine if there are movement changes in the vicinity of the transmission line.

GNWT Conclusions:

Dezé's plan to study the impacts of transmission lines on caribou is sufficient and will provide information that can be applied elsewhere. Contributing to the scientific literature will benefit future environmental assessments and aid in our management of barren-ground caribou.

Information on responses of reindeer in Norway in alpine environments to transmission lines suggests barrier effects and avoidance are more likely if there are multiple transmission lines and other infrastructure. Published results are more variable for single transmission lines and the effects should be more limited. Barren-ground caribou may also respond in a different manner than reindeer to power lines. It is noted that ENR is not aware of concerns regarding caribou movements in relation to the existing Snare Hydro transmission line that runs through forested winter range of the Bathurst and Bluenose-East caribou herds. However, given the scarcity of documented information on effects of transmission lines on barren-ground caribou, assessing caribou behavioural responses to the line when operational would be essential. Monitoring during construction would also be useful but caribou are unlikely to be near the construction below treeline during summer, although they could be on the tundra in the northern section. There may be sufficient GPS radio-collar data in future to assess caribou crossing (possible barrier effects or altered movement patterns) of the transmission corridor, and whether there is a zone of influence around the transmission corridor. This evaluation should be considered for future study.

GNWT has committed to working with the developer to further develop their Environmental Monitoring Program as well as the Human Wildlife Conflict Management Plan and other related plans and programs (November 30, 2009, Meeting Report).

1.4 What is the level of confidence in the caribou winter habitat suitability model? (in the absence of a winter barren-ground caribou model, a woodland caribou model was used)

References:

May 27 – 28, 2009 MVEIRB Technical Session

November 23, 2009 meeting between GNWT and Dézé Energy Corporation.

Johnson, C. J., Boyce, M. S., Case, R. L., Cluff, H. D., Gau, R. J., Gunn, A. & Mulders, R. 2005. Cumulative Effects of Human Developments of Arctic Wildlife. Wildlife Monographs, 160, 1-36.

Proponent's Conclusions:

The DAR made extensive use of Habitat Suitability Indices (HSI) in the assessment of effects to caribou. These models attempt to categorize habitat by their value to caribou (such as good, low and poor quality habitat). HSI models must be repeated for each season, as caribou habitat requirements and preferences change with the seasons. Ideally, HSI models are based on resource selection functions that quantify the preference or avoidance that caribou show towards a particular habitat. Resource selection functions specific to Bathurst caribou are available for the tundra range (See Johnson et al. 2005), but not for their winter range within the forest.

As it is a significant undertaking to calculate resource selection functions, the DAR relied on expert models developed for woodland caribou. Based on woodland caribou research, areas with greater than 50 percent peatland were considered highly suitable habitat for woodland caribou, while vegetation types without terrestrial lichens were assumed to be unsuitable habitat for caribou. These simple associates were used to develop a winter HSI for barren-ground caribou, categorizing all habitats into the four classes of high, moderate, low and poor habitat.

It is recognized that barren-ground caribou and woodland caribou are separate ecotypes that display different behaviour and habitat preferences. To address this concern, the winter HSI model results were tested using collar data from Bathurst caribou. The results indicated that the model was capable of predicting caribou habitat selection within the broad classes of high, moderate, low and poor habitat.

The assessment of effects to barren-ground caribou habitat loss was based on an estimate of the amount of high and good quality habitat lost to existing development, and due to existing development plus the Taltson and Gahcho Kue projects. For the purposes of the assessment, the key question is the relative loss of high and good quality habitat due to development. An improved HSI model would reduce uncertainty in these results. However, the DAR did not find significance in the cumulative caribou habitat loss despite over-estimation of effects, and it is unlikely that this would change with an improved HSI model.

GNWT Conclusions:

The use of a woodland caribou habitat suitability model is reasonable given the lack of suitable barren-ground caribou data. The validation with barren-ground caribou collar data suggests again that the habitat suitability model is probably acceptable. It may be possible to update the model when there is better information on caribou habitat preferences in the winter range.

1.5 Why wasn't the GNWT burn database used in the caribou assessment?

References:

May 27 – 28, 2009 MVEIRB Technical Session

June 10 and November 23, 2009 meeting between GNWT and Deze Energy Corporation.

Johnson, C. J., Boyce, M. S., Case, R. L., Cluff, H. D., Gau, R. J., Gunn, A. & Mulders, R. 2005. Cumulative Effects of Human Developments of Arctic Wildlife. Wildlife Monographs, 160, 1-36.

Proponent's Conclusions:

Landscape classifications used in the DAR were used to assess effects within the entire range of the Bathurst herd, as required by the Terms of Reference. Analysis on this large geographic scale is useful for assessing the cumulative effects to the Bathurst caribou, but it may limit the resolution of analysis.

Landscape classifications were used in the DAR to support estimates of direct habitat loss, indirect habitat loss (due to avoidance of development by caribou), and habitat fragmentation. The landscape classes used were similar to those used by Johnson et al. (2005), and included classes for young and old burns. Resource selection functions for Bathurst developed by Johnson et al. (2005) describe the degree of preference or avoidance of habitat types by caribou, and included only young and old burn classes. As such more precise data could have been down-graded these two classes. The winter HSI described above used a similar approach.

There were also other limits to the scale and detail of the data included in the models, as the assessment considered most of the Bathurst caribou range. For example, habitat patches and linear developments were re-sampled to 200 m cell or pixel size, although the original source data was accurate to within 30 m or less. This was necessary due to computational constraints of the software used.

Again, the assessment of effects to barren-ground caribou habitat loss was based on an estimate of the amount of high and good quality habitat fragmented, lost or avoided due to development. More precise landscape classification data or burn history data is unlikely to change the effects assessment for the Bathurst herd, particularly considering the overestimation of effects in many steps of the assessment.

GNWT Conclusions:

The GNWT is satisfied with Dezé's conclusions.

1.6 Rare plant survey was not conducted.

References:

May 27 – 28, 2009 MVEIRB Technical Session

July 18, 2009 correspondence from GNWT to Deze Energy Corporation regarding the GNWT review of the wildlife at risk aspects in the Developer's Assessment Report.

November 12, 2009 response from Deze Energy Corporation to GNWT regarding the July 18, 2009 correspondence.

Proponent's Conclusions:

Section 15.4.6 of the DAR states that overall effects to rare plant habitat are anticipated to be low for the following reasons:

- less than 0.5 percent of any single land cover class in the study area with rare plant potential would be directly altered by the Project;
- the entire area of all water bodies within the Project footprint is was included in the calculations, whereas vascular plants would only occur on shorelines;
- in many areas, vegetation removal within the transmission line right-of-way would be selective (for vegetation greater than 3 m in height only) or not completed at all (in tundra areas and within the proposed East Arm National Park, for example);
- most of these plant species are low-lying plants; the exceptions to this include two willows (*Salix ovalifolia* and *Salix sphenophylla*) and the velvetleaf blueberry (*Vaccinium myrtilloides*), which are low-lying plants and unlikely to be cleared in areas where vegetation less than 3 m in height is preserved; and
- all of the land cover classes with a high potential for rare plants (water, wetland-herb, exposed land and rock/rubble) are low-lying communities which do not require vegetation clearing for the transmission line.

Based on these findings, a rare plant survey was not considered necessary, and is unlikely to identify further mitigation.

Dezé has performed a search of the "Virtual Herbarium", the results of which are available to ENR. The search results did not indicate that changes are required to the assessment of effects to rare plants presented in the DAR. Dézé has agreed to keep the information contained in the July 18, 2009 letter from GNWT in mind throughout this environmental assessment.

GNWT Conclusions:

The July 18, 2009 correspondence was intended to identify some discrepancies in the report and to provide information on wildlife at risk, under ENR's responsibility, that could be of use in developing Dezé's environmental management plans and programs.

The GNWT is satisfied with Dezé's response.

2 ENR's view on how the developer's proposal to reduce access will effectively mitigate increased access and related caribou mortality.

References:

May 27 – 28, 2009 MVEIRB Technical Session

June 10 and November 23, 2009 meeting between GNWT and Deze Energy Corporation

October 5, 2009 MVEIRB Technical Session Transcripts Page 27 - 31.

Taltson Expansion Project: Draft Environmental Monitoring Program, October 2009 - Sections 3.1.1 & 3.2.5

Commitments 2009 (commitments arising from the MVEIRB Technical Sessions held in Yellowknife October 1, 2 and 5 and Lutsel K'e September 30, 2009).

Proponent's Conclusions:

The project will require new winter roads from both Fort Smith/Twin Gorges, and from the existing Tibbitt to Contwoyto Winter road. Concern to date has centred on the new access originating from Fort Smith/Twin Gorges, which would intrude into the winter range of barren-ground caribou. Dezé has outlined the improvements to access that will be created by the Project, and the proposed mitigation, in the response to information requests during the October technical session (Commitments 2009, see pages 86 to 91). An update to this response is that INAC has determined that a gate cannot be erected at the start of the winter road on the east side of the Slave River (across from Fort Smith), as this remains crown land. However, as Twin Gorges is leased land, NTPC may erect a fence and gate at the start of the new winter road from Twin Gorges to Nonacho Lake. Thus, the proposed mitigation to reduce effects of access is as follows:

- The winter road from Fort Smith to Nonacho Lake would be closed with fences and locked gates at Twin Gorges, and only Project vehicles would be permitted to use the road beyond this point.
- Fencing will extend from the gates into the adjacent forest/shrub to inhibit detouring around the gate.
- The gate would be closed and locked at the end of each hauling season.

- At the end of the final winter road season (i.e., February or March 2013), the start of the Fort Smith to Twin Gorges winter road would be permanently blocked with a combination of slash windrows (i.e., piled trees and other vegetation cleared for construction), by falling trees across the road, or blocking the road with boulders.
- Environmental monitors will record public use of the roads, and evidence of land use, such as hunting, fishing, camping or firewood harvesting.

Dezé plans to limit winter access by truck and snow machine. As indicated above, access to the Southern Sector winter roads in the summer is difficult. With regards to ATV travel, the existing trail to Twin Gorges may be slightly improved by the re-opening of the winter road, but access beyond Twin Gorges is likely beyond the range of ATV travel.

GNWT Conclusions:

Increased access for hunters to caribou and other wildlife is always a concern for ENR when new development is proposed. However, ENR's understanding is that there are existing trapline trails, suitable for skidoos, from Ft Resolution and Lutsel K'e too much of the area that will be accessed south of the treeline by the proposed transmission line and winter road, thus the increase in access would be limited. The developer also has plans to place a gate and fence on the winter road and will monitor activity on the road. Much of the forest SW of Great Slave Lake was burned within the last 40 years and caribou use of this area has been limited. In ENR's experience, relatively few hunters are willing to skidoo hundreds of km to hunt caribou. The proposed winter road would be accessible to trucks for 2-3 years, potentially increasing hunter traffic during this time. Areas accessible by truck (e.g. north of Yellowknife) are much more likely to see large caribou harvests in winter. A check-station could be set up near the south end of the proposed winter road to monitor vehicle traffic and hunter kills. If there is evidence of heavy hunter traffic, ENR has legislative tools that can be used to manage harvest such as establish a no-hunting zone around the winter road or portions of it. North of treeline, skidoos are already able to travel in winter to all areas with suitable terrain, thus there is unlikely to be much change in access. ENR maintains check-stations on all winter roads in the North Slave region, providing an estimate of hunter traffic for the area directly north of Great Slave Lake. The results from these check stations indicate that the amount of harvest is directly related to whether caribou are in the vicinity of the winter roads or not. The transmission line itself will have sections where tall brush is left in place, limiting likely use by skidoos or ATV's.

In addition, GNWT has committed to working with the developer to further develop their Environmental Monitoring Program as well as the Human Wildlife Conflict Management Plan and other related plans and programs (November 30, 2009, Meeting Report).

3 ENR's views on the effects of increases in hunting pressures on the herds in the development area, resulting from reduced harvest of caribou herds elsewhere in the NWT and how this may combine with other impacts from the development on caribou.

Proponent's Conclusions:

Section 12.3.6.1 of the DAR summarizes Dezé's predictions regarding the effects of increased access to caribou. Briefly, the Project's winter access roads and winter haul roads may increase human access to caribou when in operation (approximately 8 to 10 weeks each year). Monitoring of traffic on the Tibbitt to Contwoyto winter road by ENR and the Yellowknives Dene has indicated that new Project winter roads may be used to access areas for hunting caribou.

However, hunters would have to travel by snowmobile for a distance of 150 km to 200 km from Fort Smith to reach the most southerly portion of the current Bathurst caribou winter range, and mitigation is proposed to limit this access. Considering the existing access (in the form of winter roads and snowmachine trails), the travel distance, the measures proposed to control access, and the variability in barren-ground caribou winter distribution, it is predicted that the magnitude of the effect of improved access on caribou abundance may only approach or slightly exceed that of existing harvesting in these areas.

GNWT Conclusions:

As noted in the question #2 response, trapline trails from Ft Resolution and Lutsel K'e already provide access to much of the area that will be accessible from the transmission line. The level of traffic and hunter kills could be monitored using a check-station. Areas accessed only by skidoo and ATV are generally used by fewer hunters than winter roads where trucks can be used, and relatively few hunters are willing to travel long distances by skidoo. ENR anticipates that most hunting in the area accessed by the transmission line and winter road would be from communities that already have some access to the area. However, if monitoring indicates a substantial increase in traffic and hunter kills, then a no-hunting buffer could be put in place. Surveys in 2009 have shown that Bathurst and Ahiak herds are in decline, and the Bluenose East herd was declining as of the last population survey (2006). ENR and the Government of Nunavut are planning a survey to estimate the size of the Ahiak herd in 2010. Once this is obtained, ENR will review current management actions and work with communities in the non land claim areas to assess options for recovery such as focusing the harvest primarily on bulls, minimizing wastage and monitoring harvest. ENR is also undertaking public education to inform the public about the need to conserve caribou.

- 4 **ENR's assessment that the cumulative effects on caribou with respect to this development in combination with all other human activities will not cause a significant impact. This would include a consideration of the developer's approach to measuring and evaluating cumulative effects in comparison to ENR's and whether, in ENR's view, this makes a difference in the strength of the developer's conclusions. The potential of induced development would also be a consideration.**

Proponent's Conclusions:

Dezé's conclusions regarding cumulative effects are outlined in Sections 12.4, 12.5, 12.6 of the DAR, and a discussion regarding induced development is provided in Section 12.7.1. Dézé does not have any new information to add to these discussions at this time.

GNWT Conclusions:

All industrial development has some impacts on wildlife, and some effects are difficult to anticipate ahead of time. The spatial modeling carried out by Golder suggests that effects of the transmission corridor on Bathurst caribou winter range will be low. The spatial analysis carried out by Golder is consistent as to zone of influence effects in the summer range with similar studies carried out to date. The translation to likely effects at the population level (population viability analysis) is questionable – the confidence limits on the projected population trend make it difficult to say anything about likely population-level effects. ENR has a demonstration project currently being written up that would link spatial analyses with population-level effects in an evaluation of disturbance in the Bathurst summer range, and hopes to extend this linked analysis to other seasonal ranges. These additional tools should be used once available. At the present time, Golder's analyses are valid, although the translation to population-level effects is somewhat questionable. Assessing effects of development on a caribou herd that is also affected by several other factors (weather, harvesting, predators) and recently in a steep decline is challenging.

Induced development (additional development made more likely by the new power source and corridor) is a best-guess exercise and the proponent has made a reasonable evaluation of further developments that might take advantage of the proposed power line. In reality, changing markets and economics make it difficult to anticipate all possible further developments and their effects.

