Beverly and Qamanirjuaq Caribou Management Board

16 January 2015

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BQCMB Comments on the Final EIS for AREVA's Proposed Kiggavik Project (NIRB File No. 09MN003)

On behalf of the Beverly and Qamanirjuaq Caribou Management Board (BQCMB), I would like to thank the Nunavut Impact Review Board (NIRB) for the opportunity to provide comments on the Final Environmental Impact Statement (FEIS) for the Kiggavik Project proposal. We have reviewed AREVA's FEIS and have identified concerns and recommendations for possible terms and conditions for the NIRB to include in a Project Certificate.

We have provided an Executive Summary in both English and Inuktitut with the detailed submission. The French translation is underway and will be submitted as soon as it is available.

The BQCMB's input is from a co-management perspective and is based on both technical review and contributions from caribou-using communities from across the Beverly and Qamanirjuaq caribou ranges in Nunavut, Northwest Territories, Saskatchewan and Manitoba. BQCMB recommendations are based on our conclusion that application of a strongly precautionary approach is required as a result of the high degree of uncertainty associated with AREVA's conclusions regarding residual effects and cumulative effects on caribou and caribou-using people.

If you have any questions about this submission please contact the coordinator of BQCMB participation in this review, Leslie Wakelyn, at wakelyn@theedge.ca or the BQCMB Executive Director, Ross Thompson, at rossthompson@mymts.net.

Sincerely,

Earl Evans
BQCMB Chairperson

Comments on the

Final Environmental Impact Statement (FEIS)

for the Kiggavik Project

(NIRB File No. 09MN003)

Submitted by the

Beverly and Qamanirjuaq Caribou Management Board

to the

Nunavut Impact Review Board

January 16, 2015

Executive Summary

The Beverly and Qamanirjuaq Caribou Management Board (BQCMB) was established in 1982 and operates through collaboration among traditional caribou-using communities and governments responsible for conservation of the Beverly and Qamanirjuaq barren-ground caribou herds and their habitat. Governments and communities look to the BQCMB for advice, and communities also look to the BQCMB for support of their traditional caribou-using way of life. About 20 communities in Nunavut, the Northwest Territories (NWT), Saskatchewan and Manitoba share the two herds.

AREVA's proposed Kiggavik Project is a large and precedent-setting uranium mining complex near Baker Lake, Nunavut. Caribou from the Ahiak, Beverly, Lorillard, Qamanirjuaq and Wager Bay herds seasonally use the Kiggavik project area.

The BQCMB is concerned about:

a) Kiggavik's large size and complexity (five pits at two sites with a mill, connected by a 20 km road and accessed by roads from Baker Lake, and a large airstrip to be used for flying the mined uranium as yellowcake to Saskatchewan);
b) new access into a previously roadless area (provided by a 99 km winter road and possibly a 114 km all-season road);
c) an unknown mine construction start date (that AREVA states will be determined by market conditions);
d) the likelihood that the Kiggavik Project could open up the area to other exploration and development (partly due to the mill and access road(s)); and
e) the first uranium project in Nunavut and in a tundra environment.

The BQCMB reviewed AREVA's Final Environmental Impact Statement (FEIS) on the proposed Kiggavik Project and identified concerns and recommendations for possible terms and conditions for the Nunavut Impact Review Board (NIRB) to include in a Project Certificate. The BQCMB's input is from a co-management perspective and is based on both technical review and contributions from caribou-using communities from across the Beverly and Qamanirjuaq caribou ranges.

1) The BQCMB remains concerned about the residual cumulative effects on caribou. AREVA projected a decline over 26 years for all cumulative effects on the Qamanirjuaq herd but the BQCMB is uncertain that is sufficiently conservative given that the herd is likely already declining. The residual cumulative effects will likely reduce sustainability of one or more caribou herds given that:

- the trend of the Qamanirjuaq, Ahiak, Beverly, Lorillard and Wager Bay herds is declining or uncertain;
- caribou mortality, especially from increased harvesting, will increase;
- future exploration and development made more feasible by the Project will increase cumulative effects on caribou; and
- it is likely that agencies will not have the capacity for regional monitoring with the precision required to measure effects and identify appropriate mitigation.

As a result of the uncertainty in the assessment, including planning for mitigation and monitoring, the BQCMB concludes that the cumulative effects on caribou are significant and there will be transboundary effects on Qamanirjuaq caribou harvesters outside Nunavut. There is strong concern about potential reduction in harvesting opportunities in NWT and Saskatchewan communities, which

have already experienced reductions as a result of major changes in other caribou herds, and also for Manitoba communities, for which Qamanirjuaq caribou are the only accessible barren-ground caribou herd.

2) The FEIS does not clearly answer key questions for the traditional caribou-using people across the herd's ranges within and outside Nunavut on the availability and safety of caribou as food and for maintaining their traditional cultures. Insufficient weight was given to the perspective of traditional caribou-using peoples when making conclusions about significance of effects on caribou and to acknowledged effects on traditional cultures (likely reduction and possible loss of traditional values and knowledge). Gaps remain about working with Nunavut and Athabasca Denesuline communities during hazard management and emergency response planning for transportation of yellowcake and incorporating perception of radio-activity risk into assessment of effects on food security.

3) The BQCMB is concerned that monitoring and mitigation for cumulative effects will be complex, demanding and require coordination between several agencies. Requirements may exceed the capacity of these agencies to monitor and mitigate with sufficient precision to detect Kiggavik effects. Collaborative planning for monitoring and mitigation of cumulative effects from induced development is required, and therefore we have recommended that a regional terrestrial cumulative effects framework be established through the Nunavut General Monitoring Program that is based on collaboration with AREVA and others.

4) The BQCMB is concerned about the lack of transfer of experience in monitoring and mitigation with the uranium mines in Saskatchewan – in particular for dust control and use of local knowledge.

5) The BQCMB notes the high degree of uncertainty in assessment of incremental effects for caribou mortality, habitat loss and caribou movements. AREVA acknowledged the uncertainty associated with their reliance on information from collared caribou and the high annual variation in both the rate at which caribou interact with the project area and the time they spend in the area. The natural variability in caribou mortality and movements will make it more difficult for monitoring to detect effects.

6) The high degree of uncertainty will require a strongly precautionary approach which depends on adaptive management to ensure that mitigation is adjusted over time to protect caribou and their habitat. AREVA's proposed mitigation is incomplete and does not include, for example, offsets (used elsewhere such as for mines and caribou in British Columbia). Monitoring and mitigation need to be linked more closely as adaptive management. The Monitoring and Mitigation Plan should be revised and reviewed prior to project approval.

7) AREVA was open to discussing BQCMB technical comments on their Draft EIS and has made efforts to address issues identified by the BQCMB at the Pre-Hearing Conference. It is essential that this cooperation continues during project monitoring and mitigation if the Project proceeds. The BQCMB recommends that an independent advisory committee or technical working group be established to work with AREVA on monitoring and mitigation during all phases of the Project in cooperation with wildlife agencies and traditional caribou-using people (Nunavut Department of Environment, Nunavut Tunngavik Wildlife Secretariat, Nunavut Wildlife Management Board, Kivalliq Wildlife Board, Kivalliq Hunters and Trappers Organizations, Athabasca Denesuline, Manitoba Denesuline, Lutsel K'e Dene First Nation, and the BQCMB).

8) The BQCMB recommends that the all-season road not be approved. This would help reduce potential for unsustainable caribou harvest, dust levels and induced development.

9) The BQCMB questions the assumption that a winter access road will not increase caribou harvest and cautions that methods to manage access for the Project's roads have not yet been developed.

10) If the Project is approved by the NIRB but there is a significant change in project design or a delay in project start-up (i.e., more than 2 years), the BQCMB's position is that a new assessment should be required to incorporate updated information about key elements such as:

a) the current status and vulnerability of the caribou herds;
b) the herds' recent range use patterns (e.g., from collar data, IQ and project monitoring);
c) harvest rates and changes resulting from existing roads in the region; and
d) ongoing and planned exploration and development projects.

ᐊᐅᓚᑦᓯᔩᑦ ᑐᑭᓯᓇᖅᓯᑎᑦᑎᔾᔪᑖᑦ

ᐅᑯᐊ ᑎᒡᔭᓕᐅᑉ ᐊᒻᒪᓗ ᖃᒪᓂᕐᔪᐊᖅ ᑐᒃᑐᖕᒋᐊᐅᓚᑦᓯᔨᑦ ᑲᑎᒪᔨᖏᑦ ᓴᕿᑕᐅᓚᐅᖅᓯᒪᔪᑦ 1982-ᒥ ᐊᒻᒪᓗ ᐊᐅᓚᔪᑦ ᑕᒪᐅᓐᓇ ᐃᑲᔪᖅᑎᒌᒃᓗᑎᒃ ᐱᐅᓯᑐᖃᕐᒥᒍᑦ ᑐᒃᑐᐃᑦ ᐊᑐᖅᑕᐅᑎᓪᓗᒋᑦ ᓄᓇᓕᖕᓂ ᐊᒻᒪᓗ ᑲᔾᒪᒃᑯᑦ ᐱᔭᒃᓴᖄᖅᑐᑦ ᓄᖑᑕᐅᑕᐃᓕᒪᑎᓪᓗᒋᑦ ᑎᒡᔭᓕᐅᑉ ᐊᒻᒪᓗ ᖃᒪᓂᕐᔪᐊᖅ ᑐᒃᑐᖕᒋ ᓄᓇᑐᐃᓐᓇᒦᑦᑐᑦ ᐊᒻᒪᓗ ᐅᐸᒃᐸᒃᑕᖕᒋᖕ. ᑲᔾᒪᒃᑯᑦ ᐊᒻᒪᓗ ᓄᓇᓖᑦ ᕿᓂᕈᑦ ᑎᒡᔭᓕᐅᑉ ᐊᒻᒪᓗ ᖃᒪᓂᕐᔪᐊᖅ ᑐᒃᑐᖕᒋᐊᐅᓚᑦᓯᔨᑦ ᑲᑎᒪᔨᖏᓄᑦ ᐅᖃᐅᑎᔭᐅᔪᒪᓪᓗᑎᒃ, ᐊᒻᒪᓗ ᓄᓇᓖᑦ ᑕᑯᓐᓇᕈᑦ ᑎᒡᔭᓕᐅᑉ ᐊᒻᒪᓗ ᖃᒪᓂᕐᔪᐊᖅ ᑐᒃᑐᖕᒋᐊᐅᓚᑦᓯᔨᑦ ᑲᑎᒪᔨᖏᖕ ᐃᑲᔪᖅᑕᐅᔪᒪᓪᓗᑎᒃ ᐱᐅᓯᑐᖃᕐᒥᖕᓄᑦ ᐋᑎᔪᑦ ᑐᒃᑐᐃᑦ ᐊᑐᖅᑕᐅᖕᒪᑕ ᐃᓅᓯᕐᒥᖕᓄᑦ. ᖃᓂᒋᔮᓂ 20 ᓄᓇᓖᑦ ᓄᓇᕗᒻᒥ, ᓄᓇᑦᓯᐊᕐᒥ, ᓴᓯᑳᑦᓱᐋᓐᒥ ᐊᒻᒪᓗ ᒫᓂᑑᐸᒥ ᐊᑐᖅᑐᑦ ᒫᑉᑯᖕ ᓂᖕᒐᒪᕐᐆᖕᓂᒃ ᑐᒃᑐᓂᒃ.

ᐊᓃᕝᑯᑦ ᑐᒃ ᓯᕋᐅᑖᕿ ᑲᔾᒪᒃᒍᑦ ᐊᖕᕇᔪᖅ ᐊᒻᒪᓗ ᑕᐃᒫᒃ ᑕᐅᖅ ᐋᕿᒃᓯᒪᔭᖕᒐ ᓄᖑᑦᑐᐃᑦ ᑐᒥᒃ ᐅᔭᕋᖕᓂᐊᖅᑐᑦ ᖃᓂᒋᔮᓂ ᖃᒪᓂᑦᑐᐊᖅ, ᓄᓇᕗᑦ. ᑐᒃᑐᐃᑦ ᑕᐃᑲᖕᒋᑦ ᐊHᐃᐊᒃ, ᑎᒡᔭᓕ, ᓗᐊᓕᓛᑦ, ᖃᒪᓂᕐᔪᐊᖅ ᐊᒻᒪᓗ ᐅᒃᑯᓯᒃᓴᓕᒃ ᑐᒃᑐᖕᒥᖕ ᐊᕐᕌᒍ ᐃᓚᖕᒥ ᐊᑐᖅᑕᐅᓲᑦ ᑭᓪᓚᕝᕕ ᐱᓕᕆᐊᖑᔪᓂ ᓄᓇᖕᒥᓂᑦᑐᑦ.

ᐅᑯᐊ ᑎᒡᔭᓕᐅᑉ ᐊᒻᒪᓗ ᖃᒪᓂᕐᔪᐊᖅ ᑐᒃᑐᖕᒋᐊᐅᓚᑦᓯᔨᑦ ᑲᑎᒪᔨᖏᖕ ᐃᓱᒫᓗᑎᖃᖅᑐᑦ ᐅᑯᓂᖕᓇ:

a) ᑭᓪᓚᕝᕕᒃ ᐊᖕᕇᔪᖅ ᐊᒻᒪᓗ ᖃᓄᐃᑦᑐᑐᐃᓐᓇᐅᔪᑦ (ᑕᓪᓕᒪᑦ ᒪᑐᐃᖕᖒᑦ ᓄᓇᒥ ᒪᕐᕈᖕᓂ ᐃᓂᖕᖏᓂ ᐃᒡᓗᕐᔪᐊᕐᑯᑎᖃᖅᓗᑎᒃ, ᑲᑎᖕᖒᖅ 20 ᑭᓕᒥᑕ ᐊᑉᕐᑯᑖ ᐊᒻᒪᓗ ᑎᑭᐅᑎᓯᒪᔪᖅ ᐊᑐᖅᑕᐅᔪᓐᓇᖅᑐᑦ ᖃᒪᓂᑦᑐᐊᕐᒥᑦ, ᐊᒻᒪᓗ ᐊᖕᕇᓪᒪᓇᐋᓗᒃ ᒥᑕᕐᕕᒃ ᐊᑐᖅᑕᐅᔪᖅ ᖄᖕᒋᑦ ᑕᖅᑎᑕᐅᖃᑦᑕᖅᑐᓄᑦ ᐅᔭᕋᖕᓂᐊᖅᑐᓂᒃ ᓄᖑᑦᑐᐃᑦᑐᒥᒃ ᐸᓂᖅᑎᓯᒪᔪᖅ ᖁᖅᓱᖅᑕᐅᔪᖅ ᓴᓯᑳᑦᓱᐋᓐᒧᑦ);

b) ᓄᑖᖅ ᐊᕐᑯᑖᑦ ᑕᐅᖅ ᐊᕐᑯᑎᖃᓚᐅᓐᖏᑐᒥ ᓄᓇᒥ (ᐊᑐᖅᑕᐅᔪᖅ 99 ᑭᓕᒥᑕ ᐅᑭᐅᒃᑯᑦ ᐊᑯᑎ ᐊᒻᒪᓗ ᐃᒻᒪᖄᖅ 114 ᖃᖕᒐᑐᐃᓇᒃᑯᑦ ᐊᕐᑯᑖᑦ);

c) ᖃᐅᔨᒪᔭᐅᓐᖏᖕᑐᖅ ᐅᔭᕋᖕᓂᐊᖅᑐᓂᒃ ᓴᓇᔪᑦ ᐅᕐᑯᒪᐃᑦᑐᑦ ᐱᒋᐊᓚᐅᕐᓂᖕᒐᐅᑉᓗᐊ (ᐅᑯᐊ ᐊᓃᕝᑯᑦ ᐅᖃᖅᓯᒪᔪ ᖃᐅᔨᔭᐅᔪᓐᓇᖅᑐᖅ ᑕᒪᐅᓐᓇ ᓂᐅᕐᕈᓯᓇᓂᖕᖏᑎᒍᑦ);

d) ᓇᓗᓇᖕᖏᑐᖅ ᐅᑯᐊ ᑭᓪᓚᕝᕕᒃ ᒪᑐᐃᖕᖏᑦ ᑎᔪᓐᓇᖅᑐᖅ ᓄᓇᖕᒐᐊᓯ ᐊᒍᑦ ᕿᓂᖅᑐᓂᑦ ᐊᒻᒪᓗ ᐱᕙᓪᓕᐊᑎᑦᑎᔪᓂᑦ (ᐱᓪᓗᒍ ᑕᒪᓐᓇ ᐃᓪᓗᐊᓗᕐᑖᑦ ᐊᒻᒪᓗ ᐊᑐᖅᑕᐅᔪᑦ ᐊᕐᑯᑎ (ᐊᕐᑯᑏᑦ); ᐊᒻᒪᓗ

e) ᓯᕗᓪᓕᖅᐹᖅ ᓄᖑᑦᑐᐃᑦᑐᒥᒃ ᐅᔭᕋᖕᓂᐊᖅᑐᑦ ᓄᓇᕗᒻᒥ ᐊᒻᒪᓗ ᓄᓇᑐᐃᓐᓇᒥ ᐊᕙᑎᓖᑦ.

ᑎᒡᔭᓕᐅᑉ ᐊᒻᒪᓗ ᖃᒪᓂᕐᔪᐊᖅ ᑐᒃᑐᖕᒋᐊᐅᓚᑦᓯᔨᑦ ᑲᑎᒪᔨᖏᖕ ᕿᒥᕐᕈᐊᖅᓯᒪᔪᖅ ᐊᓃᕝᑯᑦ ᐱᔭᓈᖅᓯᔾᔪᑖᓂᒃ ᐊᕙᑎᒥᒃ ᐊᒃᑐᐃᓚᔭᖅᑐᓂᒃ ᐅᖃᖅᓯᒪᔪᑦ ᐱᓪᓗᒍ ᑐᒃ ᓯᕋᖅᑕᖕᒋᑦ ᑭᓪᓚᕝᕕᖕᒍᑦ ᐊᒻᒪᓗ ᓇᓗᓇᐃᖅᓗᒋᑦ ᐃᓱᒫᓗᑎᑦ ᐊᒻᒪᓗ ᐊᑐᓕᕐᑯᔭᐅᔪᑦ ᐊᑐᖅᑕᐅᕐᑯᔭᐅᔪᑦ ᒪᓕᒃᑕᐅᔭᓇᐊᓕᑦ ᑖᐸᑯᓇᖕᒐᓄᓇᕗᒻᒥ ᐱᕙᓪᓕᐊᓂᖕᒐᑕ ᐊᒃᑐᖅᑕᐅᓇᔭᕐᓂᖕᒐᓄᑦ ᕿᒥᕐᕈᓈᑦ ᐃᓚᓕᐅᑎᓯᒪᓂᐊᖅᑐ ᐱᓕᕆᐊᖑᓂᓄᑦ ᐃᓕᓴᖅᓯᔾᔪᑎᓂᒃ. ᐅᑯᐊ ᑎᒡᔭᓕᐅᑉ ᐊᒻᒪᓗ ᖃᒪᓂᕐᔪᐊᖅ ᑐᒃᑐᖕᒋᐊᐅᓚᑦᓯᔨᑦ ᑲᑎᒪᔨᖏᖕ ᐃᓚᓕᐅᑎᔭᖏᖕ ᐅᖃᐅᓯᖏᖕ ᑖᐸᑯᓇᖕᒐᐊᐅᓚᑦᑎᖅᑎᒋᓂᑦ ᑕᐅᑦᑐᖕᖏᓂᑦ ᐊᒻᒪᓗ ᑕᒪᓐᓇ ᒪᓕᒃᑐᖅ ᑕᒪᐃᓐᓂᑦ ᖃᓄᐃᓕᐅᕆᐊᓕᖕᓂᑦ ᕿᒥᕐᕈᐊᖅᓯᒪᓂᖅ ᐊᒻᒪᓗ ᐃᑲᔫᑎᑦ ᑕᒪᒃᑯᓇᖕᒋᑦ ᑐᒃᑐᓂᒃ ᐊᑐᖅᑐᓂᒃ ᓄᓇᓕᖕᓂᑦ ᓇᑭᑐᐃᓐᓇᖅ ᑎᒡᔭᓕᐅᑉ ᐊᒻᒪᓗ ᖃᒪᓂᕐᔪᐊᖅ ᑐᒃᑐᖕᕋᓂ ᖃᓂᒋᔭᓕᖕᓂᑦ.

1) ᐅᑯᐊ ᑎᒡᔭᓕᐅᑉ ᐊᒻᒪᓗ ᖃᒪᓂᕐᔪᐊᖅ ᑐᒃᑐᖕᒋᐊᐅᓚᑦᓯᔨᑦ ᑲᑎᒪᔨᖏᖕ ᐃᓱᒫᓗᑎᖃᐃᓐᓇᖅᑐᑦ ᐱᓪᓗᒍ ᐊᒥᐊᒃᑯᕐᓗᑯᖏᖅᓂᒃ ᐊᒃᑐᐃᖕᖏᖅ ᓇᕋᔭᕐᒪᖕᑏᑕ ᑐᒃᑐᓂᒃ. ᐊᓃᕝᑯᑦ ᓄᖑᐸᓪᓕᐊᓕᕐᓂᐊᕋᓱᒋᔪᑦ ᐅᖕᒑᓄᑦ 26 ᐊᕐᕌᒍᓂ ᑕᒪᐃᓐᓂᒃ ᐊᒃᑐᐃᕝᓗᑎᒃ ᖃᒪᓂᕐᔪᐊᖅ ᑐᒃᑐᖏᖅᓂᒃ ᑭᓯᐊᓂᓕ ᑎᒡᔭᓕᐅᑉ ᐊᒻᒪᓗ ᖃᒪᓂᕐᔪᐊᖅ ᑐᒃᑐᖕᒋᐊᐅᓚᑦᓯᔨᑦ ᑲᑎᒪᔨᖏᖕ ᖃᐅᔨᒪᖕᖏᖕᑐᑦ ᑕᒪᓐᓇ ᓈᒻᒪᒃᑲᓗᐊᕐᒪᖕᒌᑦ ᓴᐳᓐᓂᐊᕈᑎᑦ ᑖᑉᑯᓄᖕᒐᑐᒃᑐᓄᑦ ᐅᑯᐊᓗ ᓄᖑᐸᓕᐊᓕᓈᖅᑐᑦ. ᐊᒥᐊᒃᑯᕐᓗᑯᖏᖅᓂᒃ ᐊᒃᑐᐃᖕᖏᖅ ᓇᕋᔭᕐᓂᖕᖏ ᐊᑎᒃ ᓯᑎᑦᑎᓯᒪᓗᓂ

ᑲᔪᓘᓐᓇᕋᔭᕐᒪᖕᒦᑕ ᐊᑕᐅᓯᖅ ᐅᒡ ᕙᓘᓐ ᓅᑦ ᐅᓄᕐ ᓂᖅᓴ ᐃᑦ ᑐᒃ ᑐᐃᒃ ᑕᑯᓪ ᓗᒋᑦ ᐱᔾ ᔪᑎᒋᓪ ᓗᒋᑦ ᐅᑯᐊ:

- ᐊᓯᑦᓴᖅᑕᖃᑦ ᑕᕐ ᓂᖓᖃᒪ ᓂᕐ ᔪᐊᖅ, ᐊHᐊᐃᐊᒃ, ᑎᒡ ᔭᓕᒃ ᐊᒻᒪᓗ ᐅᒃ ᑯᓯᒃ ᓴᓕᒃ ᑐᒃ ᑐᖏᑦ ᐅᓄᕈᓐ ᓅᖅᐸᓪ ᓕᐊᔪᑦ ᐅᒡ ᕙᓘᓐ ᓅᑦ ᖃᐅᔨᒪᓇᖕᖏᑐᖅ;
- ᑐᒃ ᑐᐃᑦ ᐆᒪᔪᓐ ᓇᕐ ᓂᖏᑦ, ᐱᓗᐊᖅᑐᒥᒃ ᐅᓄᖅᓯᒍᑎᒃ ᐊᖑᓇᓱᒃ ᑕᐅᔪᑦ, ᐅᓄᖅᓯ ᕚᓪ ᓕᕐ ᓂᐊᖅᑐᑦ;
- ᓯᕗᓂᒃ ᓴᑦ ᑎᓂ ᕿᓂᖅᑐᑦ ᐊᒻᒪᓗ ᐱᕙᓪ ᓕᐊᑎᑦ ᑎᔪᑦ ᐱᔭᕐ ᓂᖅᓯᑎᑦ ᑎᓯᒪᔪᑦ ᐱᓕᕆᐊᖑᔪᓂ ᐊᒃ ᑐᐃᖏᓐ ᓇᖅᐹᓪ ᓕᕐ ᑎᑦ ᑎᓂᐊᖅᑐᑦ ᑐᒃ ᑐᓂ; ᐊᒻᒪᓗ
- ᓇᓗᓇᖕᖏᑐᖅ ᐅᑯᐊ ᑎᒥ ᐅᔪᑦ ᐃᓗᓪ ᓕᕈᑎᒃ ᓴᖃᕐ ᓂᐊᓐ ᖏᑦᑐᑦ ᐊᕕᒃ ᑐᖅᓯᒪᔪᓂ ᒥ ᐊᓂᕆᔭ ᕆᐊᒃ ᓴᖅ ᓇᓚᐅᓯᒪᑦ ᑎᐊᖅᑐᓂᒃ ᐆᒃ ᑐᕋᕆᐊᒃ ᓴᖅ ᐊᒃ ᑐᐃᔪᓂᒃ ᐊᒻᒪᓗ ᓇᓗᓇᐃᕐ ᓗᒋᑦ ᓈᒪᒃ ᑐᑦ ᐊᒃ ᑐᓗᐊᖅᑕᐃᓕᑎᑦ ᑎᓂᖅ.

ᑕᐃᒪᓐ ᓇᐅᓂᖕᒥ ᓇᓗᓇᕐ ᓂᖕᒥ ᖃᐅᔨ ᓇᓱᑦ ᑎᐊᕆᐊᒃ ᓴᖅ, ᐃᓚᒋᔭ ᐅᓪ ᓗᓂ ᐸᕐ ᓇᐃᓂᖅ ᐊᒃ ᑐᓗᐊᖅᑕᐃᓕᒪ ᑎᑦ ᑎᔅ ᔪᑎᒃ ᓴᓂᒃ ᐊᓐ ᒪᓗ ᒥᐊᓂᕆᔪ ᑎᓂᒃ, ᐅᑯᐊ ᑎᒡ ᔭᓕᐅᑉ ᐊᒻᒪᓗ ᖃᒪ ᓂᕐ ᔪᐊᖅ ᑐᒃ ᑐᖏᐊᐅᓚᑦ ᓯᓈᑦ ᑲᑎᒪᔨ ᖏᑦ ᐱᔭ ᕇᖅᓯᔅ ᔪᑎᖃᖅᑐᑦ ᐅᑯᐊ ᐊᒃ ᑐᐃᖏᓐ ᓇᕋᔭᖅᑐᑦ ᑐᒃ ᑐᓂ ᐊᖑᕌᔪᑦ ᐊᒻᒪᓗ ᐱᑕᖃᕐ ᓂᐊᖅᑐᖅ ᓇᒧ ᖕᕕᑎᕆᓂᖏᑦ ᓄᑦ ᐊᒃ ᑐᐃᓗᓂ ᖃᒪ ᓂᕐ ᔪᐊᑉ ᑐᒃ ᑐᖏᑕ ᐊᖑᓇᓱᒃ ᑐᖏᑦ ᓂᒃ ᓯᓚᑖᓂ ᓄᓇᕗᒻ ᒥ. ᐅᓇ ᓴᖕ ᖕᕌᔪᖅ ᐃᓱᓖ ᓘᑎ ᐱᓪ ᓗᒍ ᐅᓄᕈᓐ ᓅᕋᔭᕐ ᓂᖏᑦ ᓂᒃ ᐊᖑᓇᓱᒃ ᑕᐅᔪᓐ ᓇᖅᑐᑦ ᓄᓇᑦ ᓯᐊᕐ ᒥ ᐊᒻᒪᓗ ᓴᓯᑳᑦ ᓱᐊᓐ ᓄᓇᖏᓂ, ᐅᑯᐊᓗ ᐊᑐᖅᓯ ᓕᓃᖅᑐᑦ ᐅᓄᓐ ᖏᓗᐊᓕᕐ ᓂᖏᑦ ᓂᒃ ᐱᓪ ᓗᒍ ᐊᖕᖑᑦ ᐊᓯᑦᓴᕐ ᓂᖏᑦ ᓄᑦ ᐊᓯᖏᑦ ᓄᑦ ᑐᒃ ᑐᓄᑦ, ᐊᒻᒪᓗ ᑖᒃ ᑯᐊᑦ ᑕᐅᖅ ᒪᓂᑑᐸ ᓄᓇᓕᖕᖏᑦ, ᐅᑯᐊᓗ ᖃᒪ ᓂᕐ ᔪᐊᖅ ᑐᑐᖏᑦ ᓂᒃ ᐱᔪᓐ ᓇᖅᑐᑐᐊᑦ ᓄᓇᑐᐃᓐ ᓇᒥᑦ ᑐᑐᓂᒃ.

2) ᑕᒪᓐ ᓇ ᐱᔭ ᓇᖅᓯᔅ ᔪᑖᑦ ᐊᕙᑎᑦ ᑎᓂᒃ ᐊᒃ ᑐᐃᓂᐊᖅᑐᓂᒃ ᐅᖅᑲᖅᓯᒪᔪᑦ ᑭᐅᓯᓯᒪᑦ ᑎᐊᓐ ᖏᑦ ᑐᖅ ᐊᐱᕐᑯᑎᓪ ᓚᓇᐅᔪᓂᒃ ᐱᓪ ᓗᒍ ᐊᑐᖅᑕᐅᕙᒍᓯ ᑐᖅᑲᖏᑦ ᑐᒃ ᑐᐃᒃ ᐃᓄᖕ ᓂᑐᒃ ᑐᖅᑲᖅᑐᓂ ᐃᓗᐊᓂ ᐊᒻᒪᓗ ᓯᓚᑖᓂ ᓄᓇᕗᑦ ᐊᑐᐃᓐ ᓇᐅᔪᑦ ᐊᒻᒪᓗ ᐅᓗᓇᐊᓇᖅᑐᒦ ᓕᖅᑯᓇᒋ ᑐᒃ ᑐᐃᑦ ᓂᖅᑭᖕᒋᐊᒻᒪᓗ ᐊᑐᖅᑕᐅᖕᖏᑦ ᓇᕐ ᓗᓂ ᐃᓄᐃᑦ ᐱᐅᓯ ᑐᖃᖕᖏᑦ. ᐱᑕᖃᓐ ᖕᒋᓗᐊᖅᑐᖅ ᑕᐅᑦ ᑐᖕᖏᑦ ᓂᒃ ᐱᐅᓯ ᑐᖃᖕᖏᑦ ᓂᒃ ᑐᒃ ᑐᐃᒃ -ᐊᑐᖅᑐᓐ ᓗ ᐃᓄᐃᑦ ᐃᓱ ᓕᑦ ᑎᔅ ᔪᑎᖕᖓ ᐱᓪ ᓗᒍ ᐊᖕᖒ ᓂᖕᒪᐊᒃ ᑐᐃᓚ ᔭᕐ ᓂᖕᒐᑐᒃ ᑐᓂᒃ ᐊᒻᒪᓗ ᐅᖃᐅᓯ ᐅᓗᑎᒃ ᐊᒃ ᑐᐃᓚ ᔭᖅᑐᑦ ᐱᐅᓯ ᑐᖃᖕᖏᑦ ᓂᒃ (ᐅᓄᕈᓐ ᓅᖅᐸᓪ ᓕᕋᔭᖅᑐᑦ ᐊᒻᒪᓗ ᐊᓯ ᐅᓗᑎᒃ ᐱᐅᓯ ᑐᖃᓂᑦ ᐊᓐ ᓂᕐ ᓇᖅᑐᑦ ᐱᓐ ᓇᓚᔭ ᐅᔪᑦ ᐊᒻᒪᓗ ᖃᐅᔨ ᒪᔭ ᐅᔪᑦ). ᐃᖅᐸᖅᓯᒪᔪᖅ ᓱᓕᐅᕝᕖᖅ ᐱᓪ ᓗᒍ ᓴᓇᖃᑎᖃᕐ ᓂᖅ ᓄᓇᕗᒻ ᒥ ᐊᒻᒪᓗ ᐊᑕᐹᔅ ᑲ ᑎᓂ ᓄᓇᖕᖏᑦ ᓂᒃ ᑕᐃᑲᓂ ᐊᑦ ᑕᕐ ᓇᖅᑐᓕᕆᓂᕐ ᒥ ᐊᐅᓚᑦ ᑎᓂᖅ ᐊᒻᒪᓗ ᑐᐊᕕᕐ ᓇᖅᑐᓕᕆᓂᖅ ᐸᕐ ᓇᑕᐅᓂᖕᒐᐊᑐᖅ ᑕᐅᓂᖕᒐ ᐊᓪ ᔭᖅᑐᖅ ᑕᐅᓂᖕᒑ ᓄᖕᒎᑦ ᑐᐃᑦ ᑐᒥᒃ ᐸᓂᖅ ᑎᓯᒪᔪᖅ ᖁᖅᓱᖅ ᑕᐅᔪᖅ ᐊᒻᒪᓗ ᐃᓚᓕᐅᑎᓯᒪᔪᖅ ᑕᐅᑦ ᑐᖕᒐᐊᐅᒃ ᓯᔪᓐ ᓇᖅᑐᑦ ᐅᓗᕆᐊᓇᖅᑐᑦ ᖃᐅᔨ ᔭᐅᓇᓱᑦ ᑎᐊᕐ ᓗᑎᒃ ᐊᒃ ᑐᕈᓐ ᓇᖅᑕᖕᖏᑦ ᓂᒃ ᓂᕿᑦ ᑐᓂ.

3) ᐅᑯᐊ ᑎᒡ ᔭᓕᐅᑉ ᐊᒻᒪᓗ ᖃᒪ ᓂᕐ ᔪᐊᖅ ᑐᒃ ᑐᖏᐊᐅᓚᑦ ᓯᓈᑦ ᑲᑎᒪᔨ ᖏᑦ ᐃᓱᓖ ᓘᑎᖅᑲᖅᑐᑦ ᐅᑯᐊ ᒥ ᐊᓂᕆᓂᖅ ᐊᒻᒪᓗ ᐊᒃ ᑐᓗᐊᖅᑕᐃᓕ,ᑎᑦ ᑎᔅ ᔪᑏᑦ ᐊᒃ ᑐᐃᖏᓐ ᓇᕐ ᓂᐊᖅᑐᓄᑦ ᐱᔭᕐ ᓂᓐ ᖑᑑᓂᐊᖅᑐᖅ, ᑭᓯ ᐊᓂᐅᑎᑦ ᑎᓗᓂ ᐊᒻᒪᓗ ᑲᒪᒋᔭ ᐅᔭ ᕆᐊᖅᑲᕐ ᓗᑎᒃ ᐊᕙᑖᓂᑦ ᐊᒥᓯᓂᑦ ᑎᒥ ᐅᔪᓂᑦ. ᑕᐃᒪᓐ ᓇᐅᔭ ᕆᐊᖅᑲᕐ ᑎᑦ ᑎᔪᑦ ᐅᖕᒑᓅᐊᕋᔭ ᖅᑐᖅ ᐱᓕᕆᔪᓐ ᓇᕐ ᓂᖕᒍᑕ ᐃᓗᓪ ᓕᕈᓐ ᓇᕐ ᓂᖕᒍᑕ ᐱᔪᓐ ᓇᖅᑕᖏᑦ ᓄᑦ ᑖᒃ ᑯᐊ ᑎᒥ ᐅᔪᑦ ᒥ ᐊᓂᕆᓂᐊᕐ ᓗᑎᒃ ᐊᒻᒪᓗ ᐊᒃ ᑐᓗᐊᖅᑕᐃᓕᒪ ᑎᑦ ᑎᓂᐊᕐ ᓗᑎᒃ ᑭᓪ ᓕᕕᒃ ᑯᑦ ᐊᒃ ᑐᕋᔭᖅᑕᖏᑦ ᓂᒃ. ᐃᑲᔪᖅᑎᕇᓪ ᓗᑎᒃ ᐸᕐ ᓇᐃᓗᑎᒃ ᒥ ᐊᓂᕆᓂᐊᖅᑐᓂᒃ ᐊᒻᒪᓗ ᐊᒃ ᑐᓗᐊᖅᑕᐃᓕᒪ ᑎᑦ ᑎᔅ ᔪᑎᒃ ᓴᓂᒃ ᐊᒃ ᑐᐃᕝᕕᖕ ᓂᐊᖅᑐᓂᒃ ᐱᕙᓪ ᓕᐊᑎᑦ ᑎᓗᐊᓐ ᖑᕈᑎᒃ ᑕᐃᒪᓐ ᓇᐅᔭ ᕆᐊᓕᒃ, ᐊᒻᒪᓗ ᑕᐃᒪ ᐃᒻ ᒪᑦ ᐊᑐᓕᖅ ᑕᐅᖅᑯᔮ ᕗᒍᑦ ᐅᑯᐊ ᐊᕕᒃ ᑐᖅᓯᒪᔪᓂ ᓄᓇᒥ ᐊᒃ ᑐᐃᕝᕕᖕ ᔭᖅᑐᓄᑦ ᐊᕙᓗᒃ ᓴᖕᖓᓂᓴ ᕿᑦ ᑎᓗᑎᒃ ᓇᓂᑐᐃᓐ ᓇᖅ ᓄᓇᕗᑉ ᒥ ᑕᒪ ᐃᓐ ᓂᒃ ᒥ ᐊᓂᕆᓗᑎᒃ ᐱᓕᕆᑎᑦ ᑎᔅ ᔪᑏᑦ ᐅᑯᐊᓗ ᒪᓕᒡ ᓗᑎᒃ ᐃᑲᔪᖅᑎᕇᖕᓂᒃ ᑯᑦ ᑖᒃ ᑯᐊᓗ ᐊᓃᕙ ᐊᒻᒪᓗ ᐊᓯᖏᑦ.

4) ᐅᑯᐊ ᑎᒡ ᔭᓕᐅᑉ ᐊᒻᒪᓗ ᖃᒪ ᓂᕐ ᔪᐊᖅ ᑐᒃ ᑐᖏᐊᐅᓚᑦ ᓯᓈᑦ ᑲᑎᒪᔨ ᖏᑦ ᐃᓱᓖ ᓘᑎᖅᑲᖅᑐᑦ ᐱᑕᖃᓐ ᖕᒋᖕᒐ ᐊᑐᖅᓯᒪᑦ ᑎᐊᖅᑐᓂᒃ ᒥ ᐊᓂᕆᕐ ᔫᑦ ᐊᒻᒪᓗ ᐊᒃ ᑐᓗᐊᖅᑕᐃᓕᑎᑦ ᑎᓂᕐ ᔫᑦ

ᓄᖑᑦᑐᐃᑦᑐᑦ ᐅᔭᕋᖕᓂᐊᑦᑕᐅᔪᑦ ᓴᓯᑳᑦᓱᐊᓐᒥ -ᐱᓗᐊᖅᑐᒥᒃ ᐸᓂᖅᑐᖅ ᑲᑕᒐᒑᒐᔭᖅᑕᖖᓂᒃ ᐊᒻᒪᓗ ᐊᑐᖅᓯᙱᓂᙱᓂᒃ ᓄᓇᓕᖕᓂ ᖃᐅᔨᒪᔪᓂᒃ.

5) ᐅᑯᐊ ᑎᓪᔭ ᓕᐅᑉ ᐊᒻᒪᓗ ᖃᒪᓂᕐ ᔪᐊᖅ ᑐᒃ ᑐᙵᐊᐅᓚᑦᓯᓈᑦ ᑲᑎᒪᔩᙶ ᖃᐅᔨᒪᕐᑯᔩ ᕗᑦ ᐊᙱ ᓂᙵ ᖃᐅᔨᒪᓇᖏᑦᑐᑦ ᖃᐅᔨᓇᓱᑦ ᑎᐊᓇᐊᓕᐊᒃ ᑐᐃᒐᔭᖅᑐᓂᒃ ᑐᒃ ᑐᑐᕐᑯᑦ ᑕᕈᓯᙱᓂᒃ, ᐃᓂᙶ ᐊᓯᐅᔪᑦ ᐊᒻᒪᓗ ᑐᒃ ᑐᐃᒃ ᓅᒃ ᑕᕐ ᓂᖏ. ᐊᓖᓐᒃ ᑯᑦ ᐅᖃᖅᓯᒪᔪᑦ ᖃᐅᔨᒪᑦ ᑎᐊᖏᓗᐊᕐ ᓂᕐ ᒥᖕ ᓂᒃ ᐱᓪ ᓗᒍ ᑕᒪᓐ ᓇ ᖃᐅᔨᒪᑎᑦ ᓂᖅ ᑕᒪ ᐅᓐ ᓇ ᕐᑯᖕᒐᖅᓯᒪᔪᓂᒃ ᑐᒃ ᑐᓂᒃ ᐊᒻᒪᓗ ᐅᓄᖅᑑᓂᙱᓂᒃ ᐊᕐ ᕌᒍ ᑕᒫᑦ ᑕᒪ ᐃᓐ ᓂ ᖄᔫ ᐅᑎᒋ ᓂᖏᑐᒃ ᑐᑦ ᐱᓪ ᓗᒍ ᐱᓕᕆᐊᖑᔪ ᓂ ᓄᓇᖕᓂ ᐊᒻᒪᓗ ᖃᓄᖅ ᐊᑯ ᓂᐅᑎᒋ ᔪᒥᒃ ᑖᒥ ᓅᐸᖕ ᓂᙶ ᓄᓇᖕᓂ. ᑕᐃᒪ ᓇᐅᕙᒍ ᓯ ᑐᖃᖏᑦ ᖃᓄᑐᐃᓐ ᓇᖅ ᑐᒃ ᑐᐃᑦ ᑐᕐᑯᕖᒃ ᑐᑦ ᐊᒻᒪᓗ ᓄᒃ ᑕᕐ ᓂᖏ ᐱᔭ ᕐ ᓂᓐ ᖏᕐᖅᓴ ᐅᓂᐊᖅᑐᑦ ᒥᐊᓂᕆᔭ ᕆᐊᒃ ᓴᖅ ᖃᐅᔨ ᓇᓱᑉ ᓗᒋᑦ ᐊᒃ ᑐᖅᑕᐅᔾ ᔪᓯᙶ.

6) ᖃᓅᑎᒋ ᓂᙵᓇᓗᓇᐃᖅᑐᑦ ᐱᑕᖃᕆᐊᖃᕐ ᓂᐊᖅᑐᖅ ᓴ ᖕᖏᒥᒃ ᐱᑦ ᑎᐊᓕᑲ ᓂᕆᐊᕐ ᓗᑕ ᐱᒋ ᐊᕈᑎᒋ ᓗᒍ ᐅᑯᐊᓗᑭᓯ ᐊᓂᐅᔪᑦ ᐊᑐᕐ ᓗᑎᒃ ᓱᖏᐅᓴᐅᑎᒃ ᓴᓂᒃ ᐊᐅᓚᑦ ᑎᓂᕐ ᒧᑦ ᖃᐅᔨᒪ ᓂᐊᕋᑉ ᑕᐊᒃ ᑐᓗᐊᖅ ᑕᐃᓕᑎᑦ ᑎᓂᕐ ᒥ ᐋᕿᒋ ᐊᕈᓐ ᓇᖅᑐᒃ ᐊᑯᓂᐅᔪᒃ ᑯᑦ ᓴᐳᓐ ᓂᐊᕐ ᓂᐊᕐ ᓗᒋᑦ ᑐᒃ ᑐᐃᑦ ᐊᒻᒪᓗ ᐃᓂᙶ. ᐊᓖᓐᒃ ᑯᑦ ᑐᒃ ᓯᕋᐅᑖᑦ ᐊᒃ ᑐᓗᐊᖅ ᑕᐃᓕᑎᑦ ᑎᑦ ᔪ ᑎᒃ ᓴ ᐃᑦ ᐱᔭ ᓇᖅᓯᒪ ᖕᖏ ᑐᖅ ᐊᓪ ᓗ ᐃᓚᓯ ᒪᒐᓂ, ᓲᕐ ᓗ ᑑᒃ ᑑᑎᒋ ᓗᒍ, ᓈᒻ ᒪ ᖕᖏᓲᑎᔪ (ᐊᑐᖅᑕᐅᔪ ᓇᓂᑐᐃᖕ ᓇᖅ ᓲᕐ ᓗ ᐅᔭ ᕋᖕᓂᐊᖅᑐᓂ ᐊᓪ ᓗ ᑐᒃ ᑐᓂ ᐹᑎᓯ ᑲ ᓚᑉ ᓇᐊᒥ). ᒥᐊᓂᕆᓂᖅ ᐊᒻᒪᓗ ᐊᒃ ᑐᓗᐊᖅ ᑕᐃᓕᒪ ᑎᑦ ᑎᑦ ᔪ ᑕᐅᔪᑦ ᑲ ᑎᖑᔭ ᓇᐊᓕᑦ ᖃᓂᖕ ᓂᖅ ᓴ ᐅᔪ ᒥᒃ ᑕᐃᒪ ᓗ ᓯ ᖕᖏᐅᓴ ᐅᑕᐅᓂᐊᖅᑐᑦ ᐊᐅᓚᑦ ᑎᓂᕐ ᒧᑦ. ᐅᓇ ᒥ ᐊᓂᕆᓂᖅ ᐊᒻᒪᓗ ᐊᒃ ᑐᓗᐊᖅ ᑕᐃᓕᒪ ᑎᑦ ᑎᑦ ᔪ ᑕᐅᔪᑦ ᐸᕐ ᓇᐅᑎ ᐋᕿᒋ ᐊᑦ ᑎᐊᑲ ᓂᕐ ᓗᒍ ᐊᓪ ᓗ ᕿᒥᕐ ᑭ ᐊᖅ ᑕᐅᓗᓂ ᐱᓕᕆᐊᖑᓂᐊᖅᑐᖅ ᐊᖕ ᖏᖅ ᑕᐅᓚᐅᓐ ᖏᓂᙵᓂ.

7) ᐊᓖᓐᒃ ᑯᑦ ᒪᑐᐃᖕᖓᐅᖅᑐᑦ ᐅᖃᖃᑎᒌ ᔪᑎᖃᕈ ᓐ ᓇᖅ ᓘᑎᒃ ᑎᓪ ᔭ ᓕᐅᑉ ᐊᒻᒪᓗ ᖃᒪ ᓂᕐ ᔪ ᐊᖅ ᑐᒃ ᑐᙵᐊᐅᓚᑦ ᓯᓈᑦ ᑲᑎᒪᔩ ᖕᖏᓂᒃ ᖃᓄᐃᓕᐅᕆᐊᖃᖅᑐᓄᑦ ᐅᖃᐅᓯᒃ ᓴᓂᒃ ᐱᓪ ᓗᒍ ᐆᒃ ᑑᑎᖕᖓ ᐊᕙᑎᒥ ᖕ ᓂᒃ ᐊᒃ ᑐᐃᒐᔭᖅᑐᓂᒃ ᐅᖃᖅᓯᒪᔪᓂ ᐊᓪ ᓗ ᐱᓕᕆᓇᓱᓚᐅᖅᑐᑦ ᐅᖃᐅᓯ ᕆᓪ ᓗᑎᑦ ᐱᔾ ᔪᑕᐅᔪᑦ ᓇᓗᓇᐃᖅᑕᖏᑦ ᑖᒃ ᑯᐊ ᑎᓪ ᔭ ᓕᐅᑉ ᐊᒻᒪᓗ ᖃᒪ ᓂᕐ ᔪ ᐊᖅ ᑐᒃ ᑐᙵᐊᐅᓚᑦ ᓯᓈᑦ ᑲᑎᒪᔩ ᖕᖏ ᑕᐃᑲ ᓂ ᓈᓚᖕ ᓂᐊᓵᖅ ᓘᑎᒃ ᑲᑎᒪᕖᒃ ᔪ ᐊᕐ ᑎᓪ ᓗᑎᑦ. ᐱᓪ ᓚᕆᐅᕝᖅ ᐃᑲᔪ ᖃᑎᖑ ᑦᑎᐊᕈᑎᒃ ᓈᓚᑦ ᑎᐊᕈᑎᒃ ᑲᔪᓯ ᓗᒍ ᑕᐃᑲᓂ ᐱᓕᕆᐊᖑᔪ ᓂᒥ ᐊᓂᕆᓂᖅ ᐊᒻᒪᓗ ᐊᒃ ᑐᓗᐊᖅ ᑕᐃᓕᒪ ᑎᑦ ᑎᑦ ᔪ ᑕᐅᔪᑦ ᑕᐃᒪ ᓗ ᐱᓕᕆᐊᖑᓂᐊᖅᑐᖅ ᑲᔪᓯ ᓂᐊᕈᓂ. ᐅᑯᐊ ᑎᓪ ᔭ ᓕᐅᑉ ᐊᒻᒪᓗ ᖃᒪ ᓂᕐ ᔪ ᐊᖅ ᑐᒃ ᑐᙵᐊᐅᓚᑦ ᓯᓈᑦ ᑲᑎᒪᔩ ᖕᖏ ᐊᑐᓕᖅ ᑕᐅᕐᑯᔩ ᕗᑦ ᑕᒪ ᓇ ᐃᓪ ᒥ ᔫᖅ ᑐᓂᑦ ᐅᖃᐅᔾ ᔩ ᔩ ᓂᑦ ᑲᑎᒪᔩ ᕋᒐᖃᕐ ᓗᑎᒃ ᐅᓪ ᕗᓘᓐ ᓅᑦ ᖃᓄᐃᓕᐅᕆᐊᖃᖅᑐᓄᑦ ᓴᓈᑦ ᑲᑎᒪ ᖃᑦ ᑕᕐ ᓗᑎᒃ ᓄᐃᑕᐅᓗᑎᒃ ᑖᒃ ᑯᐊ ᐱᖃᑎᒋ ᓗᒋᑦ ᓴᓇᖃᑎᒋ ᓗᒋᑦ ᐊᓖᓐᒃ ᑯᑦ ᒥᐊᓂᕆᓂᕐ ᒥ ᐊᒻᒪᓗ ᐊᒃ ᑐᓗᐊᖅ ᑕᐃᓕ,ᒪ ᑎᑦ ᑎᑦ ᔪ ᑎᒃ ᓴ ᓂ ᖃᖕᖓᑐᐃᖕ ᓇᒃ ᑯᑦ ᐱᕝᓕ ᓕᐊᓂᙵ ᐱᓕᕆᐊᖑᔪ ᖅ ᐃᑲ ᔪᖅ ᑕᐅᓗᑎᒃ ᒪᓕᑦ ᑎᐊᖃᑦ ᑕᕐ ᓗᑎᒃ ᓂᕐ ᔪ ᓯ ᕆᔪ ᓂᒃ ᑎᒥ ᐅᓂᒃ ᐊᒻᒪᓗ ᑐᒃ ᑐᓂ - ᐊᑐᖅ ᑕᐅᔪ ᐃᓄᙵ ᓂ (ᓄᓇᕗᒻ ᒥ ᐊᐅᓚᑦ ᓯ ᕚᖓᐊᕙᑎᓕᕆᔨ ᒃ ᑯᑦ, ᓄᓇᕗᒻ ᒥ ᑐᒃ ᖕᖓᕚ ᒃ ᑎᒥ ᖕᖓᓂᕐ ᔪ ᓯ ᕆᔨ ᒃ ᑯᑦ, ᐸᐸᑦ ᑎᔨ ᖕᖒ, ᓄᓇᕗᒻ ᒥ ᐆᒪ ᔪ ᓕᕆᔨ ᕐ ᔪ ᐊᒃ ᑯᑦ, ᑭᕙᓪ ᓕᖅ ᐆᒪ ᔪ ᓕᕆᔨ ᒃ ᑯᑦ ᑲᑎᒪᔩ ᖕᖏ, ᑭᕙᓪ ᓕᖅ ᐊᖑᓇᓱ ᒃ ᑐᓕᕆᔨ ᒃ ᑯᑦ, ᐊᑎᐸᐟ ᑲ ᑎᓂ, ᒫ ᓂᑑᐸ ᑎᓂ, ᓗᑦ ᓯ ᑭ ᐅ ᑎᓂ ᐊᓪ ᓚᐃᑦ, ᐊᒻᒪᓗ ᐅᑯᐊ ᑎᓪ ᔭ ᓕᐅᑉ ᐊᒻᒪᓗ ᖃᒪ ᓂᕐ ᔪ ᐊᖅ ᑐᒃ ᑐᙵᐊᐅᓚᑦ ᓯᓈᑦ ᑲᑎᒪᔩ ᖕᖏ).

8) ᐅᑯᐊ ᑎᓪ ᔭ ᓕᐅᑉ ᐊᒻᒪᓗ ᖃᒪ ᓂᕐ ᔪ ᐊᖅ ᑐᒃ ᑐᙵᐊᐅᓚᑦ ᓯᓈᑦ ᑲᑎᒪᔩ ᖕᖏ ᐊᑐᓕᖅ ᑕᐅᕐᑯᔩ ᕗᑦ ᑕᒪ ᓇ ᐊᕐ ᕌᒍ ᓖᒥᒃ ᐊᑐᖅ ᑕᐅᓂᐊᖅ ᑐᖅ ᐊᕐᑯᑎ ᐊᖕ ᖏᖅ ᑕᐅᓇ ᖕᖏᓗᑎᒃ. ᐅᓇ ᐃᑲ ᔫ ᑎᒐ ᔭᖅ ᑐᖅ ᐊᑦ ᑎᒃ ᓯᓯ ᒪ ᑎᑦ ᑎᓗᓂ ᖃᓅᑎᒋ ᓗᐊᖅ ᑐᒥᒃ ᐅᓄᓗᐊᖅ ᑐᓂᒃ ᑐᒃ ᑐᖃᑦ ᑕᖅ ᑐᑦ, ᐸᓂᖃᑦ ᑕᖅ ᑐᑦ ᐊᓪ ᓗ ᐱᕚᓪ ᓕᕈᑎᔪ ᐱᕝᓕ ᓕᐊᑎᑦ ᑎᓂᕐ ᒥ.

9) ᐅᑯᐊ ᑎᓪ ᔭ ᓕᐅᑉ ᐊᒻᒪᓗ ᖃᒪ ᓂᕐ ᔪ ᐊᖅ ᑐᒃ ᑐᙵᐊᐅᓚᑦ ᓯᓈᑦ ᑲᑎᒪᔩ ᖕᖏ ᐊᐱᕐᑯᑎᖏ ᑕᐃᒪ ᓇᐅᓇᓱ ᒥᓪ ᓗᒍ ᐅᑯᐊ ᐅᑭ ᐅᒃ ᑯᑦ ᐊᑯ ᑎ ᐊᑐᖅ ᓴ ᐅᔪ ᓇᖅ ᑐᑦ ᐅᓄᖅ ᓯ ᐹᓪ ᓕᕐ ᑎᑦ ᑎᓂᐊᕋᓯ ᒥ ᔭ ᖕᖑ ᑐᑐᖃᑦ ᑕᕐ ᓗᑎᒃ ᐊᓪ ᓗ ᐱᑦ ᑎᐊᓕᕐᑯᔩ ᕗᒍᑦ ᑕᒪ ᓇ

ᑕᐃᒪ ᓐ ᓇᐅᔾ ᔪ ᑖᑦ ᐊᐅᓚᑕᐅᓗᓂ ᐊᑐᕈ ᓐ ᓇᖅ ᑕᖏ ᓄᑦ ᐱᓕᕆᐊᖑᔪ ᖅ ᐊᕐᑯᑎᖏ ᓱ ᓕ
ᓴ ᓇᔭ ᐅᓯ ᒪ ᓐ ᖏ ᑐᑦ .

10) ᑕᐃᒪ ᓗ ᐱᓕᕆᐊᖑᔪ ᖅ ᐊᕐ ᖏᖅ ᑕᐅᒍ ᓂ ᑖᑉ ᑯ ᓇᖃᓄᓇᕗᒻ ᒥ ᐱᕚᓪ ᓕᐊᓕᖃ
ᐊᑉ ᑐᖅ ᑕᐅᔪ ᓐ ᓇᖅ ᓂᖅᓴ ᕿᒥ ᕐ ᕈ ᓃ ᑦ ᑭ ᓯ ᐊᓂᓕ ᐊᖅᕿᓃ ᒫ ᑦ ᐊᓯ ᑦ ᓃ ᓂᐊᖅ ᑐᖅ ᐱᓕᕆᐊᖑᔪ ᑉ
ᓴ ᓇᓯ ᒪ ᓂᖅᓴ ᐊᒻ ᒪ ᓗ ᑭ ᖑᕚᖅ ᓯ ᒪ ᒍ ᓂ ᐱᓕᕆᐊᖑᔪ ᖅ ᐱᒋ ᐊᕐ ᕖᑉ ᓴ ᖃ(ᓲ ᕐ ᓗ ᐅᖕᑖᓄ 2 ᐊᕐ ᕌ ᒍ ᓄᑦ),
ᐅᑯ ᐊ ᑎᒡ ᔭ ᓕᐅᑉ ᐊᒻ ᒪ ᓗ ᖃᒪ ᓂᕐ ᔪ ᐊᖅ ᑐᑉ ᑐᖓᐊᐅᓚᑦ ᓯ ᓈ ᑦ ᑲ ᑎᒪ ᓈ ᖏ ᐃᓂᖃᖅ ᑐ ᓄᑖᓂᑉ
ᖃᐅᓈ ᓇᓱ ᑦ ᑎᐊᕐ ᓗᑎᑉ ᐃᓚᓕᐅᑎᓯ ᒪ ᓂᐊᕐ ᓗᒍ ᒫ ᓐ ᓇᒨ ᐊᓕᕐ ᑎᑦ ᑎᔾ ᔪ ᑎᑦ ᐱᓪ ᓗᒍ ᐃᓚᓕᐅᑎᓯ ᒪ ᔪ ᑦ
ᓲ ᕐ ᓗ ᐅᑯ ᓂᖅᑲ;

a) ᒫ ᓐ ᓇᐅᔪ ᖅ ᖃᓄᐃᓕᖓᓂᖏᐊᒻ ᒪ ᓗ ᐊᑦ ᑕᕐ ᓇᖅ ᑐᒦ ᓂᖏᑐᑉ ᑐᐃᑦ ;
b) ᑐᑉ ᑐᐃᑦ ᒫ ᓐ ᓇᐅᔪ ᖅ ᖃᓂᑐᒦ ᑦ ᑐᑦ ᐊᑐᖅ ᓯ ᓗᑎᑉ (ᓲ ᕐ ᓗ ᕐᑯᖅᑯ ᖅ ᓯ ᒪ ᓗᑎᑉ , ᐃᓄᐃᑦ ᖃᐅᔨ ᒪ ᔭ ᑐᖏ ᐊᒻ ᒪ ᓗ ᐱᓕᕆᐊᖑᔪ ᓂᑉ ᒥ ᐊᓂᕆᓂᖅ);
c) ᐊᖑᓇᓱ ᒃ ᑕᐅᖃᑦ ᑕᖅ ᑐᑦ ᖃᑦ ᓯ ᐅᓂᖏᐊᒻ ᒪ ᓗ ᐊᓯ ᑦ ᓈ ᐅᑎᔪ ᑦ ᑕᐃᒪ ᓐ ᓇᐅᓇᔭ ᕐ ᒪ ᑕ ᑖᑉ ᑯ ᓴ ᖃ ᒫ ᓐ ᓇᐅᔪ ᑦ ᐊᑐᖅ ᑕᐅᔪ ᓂᑉ ᐊᕐᑯᑎᓂᑦ ᐊᕕ ᒃ ᑐᖅ ᓯ ᓚᒧ ᖓᓂ; ᐊᒻ ᒪ ᓗ
d) ᑲ ᔪ ᓰ ᓐ ᓇᖅ ᑐᑦ ᐊᒻ ᒪ ᓗ ᐸᕐ ᓇᒃ ᑕᐅᓯ ᒪ ᔪ ᑦ ᕿᓂᖅ ᑐᑦ ᐊᒻ ᒪ ᓗ ᐱᕚᓪ ᓕᐊᑎᑦ ᑎᔪ ᑦ ᐱᓕᕆᐊᖑᔪ ᓂᑉ .

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1.0 Introduction

This submission to the Nunavut Impact Review Board (NIRB) provides comments and recommendations from the Beverly and Qamanirjuaq Caribou Management Board (BQCMB) on AREVA's Final Environmental Impact Statement (FEIS) for the proposed Kiggavik uranium mine and mill project based on input from: BQCMB community and government representatives; community and regional Aboriginal organizations which are BQCMB partners; Dr. Anne Gunn, BQCMB technical advisor; and BQCMB Executive Director Ross Thompson and Contract Biologist Leslie Wakelyn.

1.1 BQCMB as Intervenor

BQCMB Mandate and Direction

The Beverly and Qamanirjuaq Caribou Management Board (BQCMB) is a co-management board established in 1982 that operates through collaboration between traditional caribou-using communities and governments. Involvement in the NIRB's review of the Kiggavik Project proposal addresses a key part of the BQCMB's mandate to advise governments and communities on ways to safeguard the caribou herds. Board members from across the caribou ranges are concerned about the effects of human land use activities on barren-ground caribou and the long-term impacts these activities will have on the sustainability of caribou herds and harvest, as well as the traditional lifestyles and food security of northern communities. Anxiety has increased in recent years as a result of the declines in many caribou herds across Canada, the uncertain but likely declining population status of the Qamanirjuaq herd and other herds that have historically occupied and/or currently use habitat in the project area (Ahiak, Beverly, Lorillard and Wager Bay herds), and recent and likely future increases in mineral exploration and development activities across the ranges of these herds.

BQCMB Participation in Review of Proposed Kiggavik Project

The BQCMB has been a fully engaged participant in all stages of the NIRB's screening and review processes for the Kiggavik Project proposal, including review and submission of technical comments on AREVA's Draft Environmental Impact Statement and participation in the Pre-hearing Conference. The Board's participation is intended primarily to help the NIRB to assess the potential impacts of this proposed project on caribou, caribou habitat and caribou-using people and to identify and evaluate measures available to minimize negative project effects and cumulative effects.

BQCMB input is provided to the NIRB from the Board's co-management perspective and is based on both technical scientific review and contributions from caribou-using communities from across the Beverly and Qamanirjuaq ranges in Nunavut, Northwest Territories, Saskatchewan and Manitoba. Input from caribou harvesters and communities about the Project proposal has been obtained through: discussions at bi-annual BQCMB board meetings since 2010 (BQCMB membership includes eight community representatives, two from each of the four jurisdictions); informal and written reports from staff of Athabasca Denesuline Né Né Land Corporation and the Prince Albert Grand Council on input received during meetings in Athabasca Denesuline communities; BQCMB-led workshops with the Baker Lake and Arviat Hunters and Trappers Organizations; and other discussions with community members and people working with community and regional organizations. It is expected that an upcoming workshop with the Lutsel K'e Wildlife, Lands and Environment Committee will provide additional information to inform BQCMB input prior to the Final Hearing.

1.2 Context for BQCMB Review

The Value of Caribou

The comments and recommendations provided in this submission reflect the value of caribou to Inuit, Dene, Cree and Métis people from about 20 communities across the historic Beverly and Qamanirjuaq caribou ranges. The true value of caribou for Aboriginal peoples is reflected in the strong traditional, cultural and spiritual relationship that exists between the people and these animals. This relationship is an essential part of the traditional harvester's identity which has been passed down through many generations. Although harvesting caribou is not simply a means to provide food and income, the economic value of the harvest from the Beverly and Qamanirjuaq herds has been estimated to be about $20 million annually based on harvest estimates for 2005-2006.

Key Project Characteristics

The BQCMB's main concerns about the proposed Kiggavik Project are related to the following characteristics:

- large size and complexity (five pits at two sites with a mill, connected by a 20 km road and accessed by roads from Baker Lake, and a large airstrip to be used for flying the mined uranium as yellowcake to Saskatchewan);
- new access into a previously roadless area (provided by a 99 km winter road and possibly a 114 km all-season road);
- an unknown mine construction start date (that AREVA states will be determined by market conditions);
- the likelihood that the Kiggavik Project could open up the area to other exploration and development ("induced development" partly from the mill and access road(s));
- uranium extraction and associated radio-activity; and
- precedent-setting (first project of its kind in Nunavut and in a tundra environment)

Major Issues

The principal issues regarding project effects and cumulative effects on caribou can be stated from the perspective of caribou harvesters[1] as six fundamental questions:

1) Will caribou continue to be available for harvest:
    a) in the Kiggavik area (Regional Study Area)
    b) in the areas between the existing and currently planned mines and roads (between Kiggavik and Meadowbank, between Meadowbank and Meliadine) and
    c) in the areas between the additional new mines and roads that are likely to be established in the region?
2) Will caribou harvesters be able to access caribou hunting areas (in areas a, b, and c above)?
3) Will caribou be safe to eat? If they are not, how will they know and who will tell them?
4) Will harvesters be able to continue to feed their families by hunting caribou?

[1] Similar issues were described by B. Parlee, University of Alberta, for the Meliadine Gold Project in a submission provided as Appendix 2 IN: Technical Review of the Final Environmental Impact Statement (FEIS) for the Meliadine Gold Project by Nunavut Tunngavik Inc. and Kivalliq Inuit Association for Nunavut Impact Review Board. July 18, 2014.

5) Will communities continue to have opportunities to teach their children/grandchildren how to hunt caribou and live on the land?
6) Will communities continue to be able to choose to harvest caribou as a way to maintain their cultural and spiritual connection to the land?

These issues will apply for a period of more than 50 years under the currently proposed project timeline, from before construction begins to more than 20 years after decommissioning, and probably longer as a result of other development expected to occur in the region, in part as a result of the proposed Kiggavik Project access roads and mill.

1.3 Results of the FEIS Review

AREVA has made efforts to address the outstanding issues described by the BQCMB in our technical comments on the DEIS in April 2013 and presented to the Pre-Hearing Conference in June 2013, which were discussed in detail with representatives of AREVA in a meeting in April 2014[2]. The BQCMB acknowledges that some of the BQCMB's technical concerns have been addressed in the FEIS. However, we have identified concerns about the proposed Project during our review of the FEIS based on technical appraisal as well as evaluation from the perspective of caribou-using peoples from across the historic Beverly and Qamanirjuaq caribou ranges.

Principal Issues

Comments from the BQCMB regarding the Kiggavik FEIS focus on the following issues:

Comments based on Community Concerns

1) Assessment of Significance
2) Cumulative Effects Assessment Approach
3) Value of Caribou and Traditional Caribou-Using Cultures
4) Radio-Activity, Safety of Caribou as a Food Source and Food Security
5) Transboundary Effects Assessment for Caribou
6) Assessment of the All-Season Road

Technical Comments – Cumulative Effects and Integrated Planning

7) Cumulative Effects
8) Mitigation (Mitigation and Monitoring Plan)
9) Monitoring (Mitigation and Monitoring Plan)
10) Environmental Protection Plan

[2] Reports on this meeting were submitted to the NIRB and are available at: ftp://ftp.nirb.ca/02-REVIEWS/ACTIVE%20REVIEWS/09MN003-AREVA%20KIGGAVIK/2-REVIEW/02-GENERAL%20CORRESPONDENCE/

Technical Comments – Incremental Effects

11) Mortality
12) Habitat
13) Movements
14) Health

The detailed comments and recommended terms and conditions for a Project Certificate provided in this submission reflect the BQCMB's caribou conservation principles[3], which include application of the precautionary principle. BQCMB recommendations are generally based on our conclusion that strict application of a precautionary approach is required as a result of the high degree of uncertainty associated with AREVA's conclusions regarding residual effects and cumulative effects on caribou, caribou habitat and caribou-using people.

2.0 Detailed Review Comments

2.1 Comments based on Community Concerns

FEIS Comment:	**BQCMB – 1**
Issue:	**Assessment of Significance**
References:	Volume 1, Popular Summary; Volume 6, Sections 3.3.5, 3.4.6, 13.1.3, 13.5.1, 13.5.2, 13.8
Relevant FEIS Statements	
Volume 6, Section 13.1.3: - "A residual effect is considered not significant if the effect causes a change in the condition of an individual or population (or their habitat) that is within the range of natural variability or does not affect the integrity of a population in a measurable way." - "In the absence of legislated or otherwise identified thresholds, the significance of effects are determined based largely on experience, and precedence or lessons learned from other project environmental assessments."	
FEIS Conclusions	
- "The residual Project effects on caribou mortality risk, caribou and muskox habitat, caribou movement, and caribou and muskox health are assessed as not significant." (Volume 6, Sec. 13.5.1) - "When considered in the context of cumulative effects, the Project effect on the cumulative loss of habitat and increased cumulative mortality risk on Qamanirjuaq caribou is likely not significant." (Volume 6, Section 13.5.2)	

[3] BQCMB 2014. Beverly and Qamanirjuaq Caribou Management Plan 2013 – 2022. Beverly and Qamanirjuaq Caribou Management Board, Stonewall MB. 102pp.

- "Changes to caribou distribution could influence local harvesting. However, given that the Project effects on caribou are assessed as being not significant, distribution is not considered to be an important determinant of access in the socioeconomic assessment on harvesting. Maintaining the long-term viability of caribou populations will allow future generations of local harvesters are able (sic) the ability to successfully hunt caribou." (Volume 6, Section 13.8)

BQCMB Community Concerns

The BQCMB and caribou-using communities disagree with these FEIS conclusions because they are based on an approach that assesses significance of effects based entirely on anticipated influence on the long-term viability of a herd or its recovery using scientific knowledge about the herds, including knowledge about natural variability. The BQCMB considers this unrealistic and inadequate given the lack of scientific knowledge about the caribou herds using the Kiggavik Project area. The high level of uncertainty results in low confidence in prediction of non-significance.

The key questions for assessing significance of effects for traditional caribou harvesters are:

- "Will the caribou harvest continue to be sustainable at current levels and levels required in future as communities grow for supporting both subsistence harvesters and others who want to maintain their cultural and spiritual connections to the land?"
- "Will the caribou continue to be accessible as a key part of on-the-land experiences for teaching and learning to maintain Aboriginal cultures across the caribou ranges?"

Effects that negatively influence sustainable harvest levels and accessibility of caribou are sufficient to be "significant effects" for harvesters. These effects are different and likely less extreme than effects required to reduce population viability or recovery. For example, a herd might change its movement patterns to avoid disturbance, physical barriers or changes in the landscape caused by a mine, while the herd is healthy with no imminent danger of a major decline or loss. Alternatively, a herd that is still viable may experience a decline sufficient to result in reduction in area used as annual range. In both cases if caribou are no longer close enough to communities to be available to harvesters, then the effects are significant for them, especially subsistence harvesters, and for their communities.

BQCMB Conclusions

BQCMB concludes that the criteria and methods for assessing significance do not adequately reflect the perspectives, knowledge or needs of caribou harvesters and caribou-using communities. Maintaining the long-term viability of caribou populations is a necessary but not sufficient condition for both current and future generations of local harvesters to have access to caribou for their communities.

BQCMB Objectives and Recommendations for possible NIRB Terms and Conditions

Objective: To ensure that effects assessments for caribou incorporate the perspectives and knowledge of caribou-using communities.

Recommendation:

1. The results of the effects assessment and cumulative effects assessment need to be re-evaluated to incorporate the perspectives and knowledge of caribou harvesters for assessing significance of changes in migratory movements, seasonal range use patterns and availability of caribou to harvesters.

FEIS Comment:	BQCMB – 2
Issue:	**Cumulative Effects Assessment Approach**
References:	Volume 1, Popular Summary, Appendix 1E; Volume 6 Sections 3.4, 13.3, 13.5.2; Table 13.3.6

FEIS Conclusions

- "The EIS concludes that the Project will have effects but there will be no significant adverse Project, cumulative or transboundary effects on the biophysical environment." (Volume 1, Popular Summary, page ii)
- "When considered in the context of cumulative effects, the Project effect on the cumulative loss of habitat and increased cumulative mortality risk on Qamanirjuaq caribou is likely not significant." (Volume 6, Section 13.5.2)
- "Project effects are generally limited to the Project area with no potential interaction with other environmental effects from other human activities." (Volume 1, Popular Summary, page xxv)

BQCMB Community Concerns

The BQCMB and caribou-using communities disagree with the FEIS conclusions because the approach that AREVA has used for assessing effects and cumulative effects on caribou is not adequate. It is a concern that categories of Project effects (habitat, health, mortality, movements) are evaluated separately and conclusions of no significant residual effects are drawn from this perspective, and that these conclusions then exclude some potential effects from being considered during cumulative effects assessment for caribou. It is also a concern that residual cumulative effects for changes in mortality risk, habitat availability and caribou energetics are evaluated in isolation with separate conclusions of non-significance for each effect. The BQCMB and communities believe this approach does not adequately reflect the way in which caribou integrate stresses received from their environment, as effects will not occur in isolation of each other.

A high level of concern is shared by caribou harvesters and communities that a substantial number and variety of accumulating effects will be experienced by caribou as a result of the Project and similar future projects that are made possible because of the Project's roads and mill (i.e., "induced development"). Concerns have frequently been expressed about effects that accumulate during the life of individual caribou from radio-activity, dust, noise, aircraft disturbance, decreased habitat availability, changes to caribou movement patterns, increased access for harvest and accidental deaths. Most of these concerns apply to both exploration activities and mine development as sources of effects. It is acknowledged that each of these sources may contribute only a small effect, but it is expected that many separate effects will act in combination and accumulate over time and space to produce significant negative impacts on individual caribou and caribou herds.

It is also a concern to the BQCMB and communities that the level of uncertainty is so high for so many of the factors that must be considered in assessing Project and cumulative effects, including: the current population status of the caribou herds; the vulnerability of the herds to stress; the level of negative effects that the caribou have experienced recently/currently resulting from both natural causes (e.g., predation, diseases and parasites) and human activities (e.g., mineral exploration and development, climate change); and the number, type, location and timing of exploration and development projects with which the caribou will interact during the lifetime of the Kiggavik Project

and near future development (including exploration induced by the Kiggavik access roads).

BQCMB Conclusions

AREVA's approach to assessments of project and cumulative effects on caribou is not adequate and has a high level of uncertainty. Effects assessments should be conducted using a more holistic approach that integrates all potential incoming stresses on caribou. These assessments should be done from the perspective of caribou as receivers of multiple stresses that add up over time and space as animals move across their range throughout their lives. The BQCMB believes that strict application of a precautionary approach is required due to the high degree of uncertainty.

BQCMB Objectives and Recommendations for possible NIRB Terms and Conditions

Objective: To ensure that effects assessments for caribou are ecologically meaningful and conducted from the perspective of caribou rather than industry.

Recommendations:

1. The results of the effects assessment and cumulative effects assessment need to be re-evaluated from the perspective of caribou:
   a) as receivers of stresses from multiple sources that integrate the effects of those combined stresses
   b) as migratory animals that accumulate effects from across their ranges during their seasonal movements as well as throughout their lives.

FEIS Comment:	**BQCMB – 3**
Issue:	**Value of Caribou and Traditional Caribou-Using Cultures**
References:	Volume 1, Popular Summary; Volume 9 Part 1 Section 9.1.2, 9.1.3; Tables 9.1-1, 9.2-1

FEIS Conclusions

- "Any reduction of harvesting, or sharing of harvest, has potential for effect on food security (particularly of the more vulnerable), nutrition and therefore health. Ongoing government support for traditional culture is expected to assist in the retention of traditional skills, language, values and knowledge. Effects on traditional culture are expected to be negative overall. . . Effects on well-being are expected to be positive overall. . . Overall, as people adjust to change with time, most negative effects are expected to be moderate and positive effects are expected to gain momentum." (Volume 1, Popular Summary)
- AREVA acknowledges residual project effects and cumulative effects on traditional cultures (Tables 9.1-1, 9.2-1), specifically:
  - high likelihood of reduction in traditional values and knowledge over the medium-term, predicted with high confidence to be significant
  - low likelihood of loss of traditional values and knowledge over the long-term, predicted with medium confidence to be not significant

BQCMB Community Concerns

The BQCMB and caribou-using communities disagree with AREVA's conclusions that effects of the Project on their well-being will be positive overall and that most negative effects will be moderate. This conclusion is even less credible for consideration of cumulative effects that will result from induced development (including future projects made possible because of Kiggavik's roads and mill).

A high level of concern is shared by the BQCMB, many caribou harvesters and communities that the Project will contribute to the loss of caribou as an essential means for maintaining a traditional cultural and spiritual way of life. Loss of the traditional caribou-harvesting culture would be a major, permanent and non-mitigable effect. There will not be positive effects associated with that loss, or any increasing momentum of positive effects over time.

AREVA's proposed mitigations for reduction and loss of traditional culture are government programs and "workforce management measures" by AREVA (Table 9.2-1). But there is no certainty that government programs will be sufficient to maintain traditional culture, particularly if caribou availability is reduced or harvest is not sustainable.

The importance of caribou and harvesting to traditional culture are recognized in the FEIS but not all aspects are adequately valued. What needs to be weighted more heavily in evaluation of significance of effects are ***both*** the critical contribution to food security provided by harvest and consumption of caribou by families reliant on subsistence harvest ***as well as*** the equally important contribution for preserving a traditional cultural and spiritual way of life (through harvesting, processing, eating, sharing and using secondary products as well as the overall on-the-land experience), which is equally important for families who are heavily or less reliant on caribou economically.

BQCMB Conclusions

The BQCMB concludes that there is substantial risk that the Project will play a significant role in reduction or loss of caribou harvest and traditional culture over the long-term by opening up the region for other exploration and development. Application of a strongly precautionary approach is required due to the extreme importance, permanence and non-mitigable nature of this potential effect.

BQCMB Objectives and Recommendations for possible NIRB Terms and Conditions

Objective: To ensure that the value of caribou to caribou-harvesting cultures is being given adequate consideration during assessment of effects and cumulative effects on caribou and traditional caribou-using cultures and that the Proponent takes responsibility for its role in bringing about changes to these cultures.

Recommendations:

1. The results of the effects assessments and cumulative effects assessments for caribou and traditional culture need to be re-evaluated by giving greater weight to effects on food security and sustainability of caribou harvest and to acknowledged effects on traditional cultures (likely reduction and possible loss of traditional values and knowledge).
2. AREVA should be required to assist governments with the retention of traditional skills, language, values and knowledge held by caribou-using cultures.

FEIS Comment:	BQCMB – 4
Issue:	**Radio-Activity, Safety of Caribou as a Food Source and Food Security**
References:	Volume 1 Popular Summary; Volume 6 Section 13.2.4; Volume 9, Part 1, Section 9.1.3; Appendix 6C Section 5.1.5

FEIS Conclusions

- "Uranium exposure to caribou and muskox will not exceed exposure levels associated with adverse effects and the level of exposure to all other constituents of potential concern are not predicted to change from baseline." (Volume 1, Popular Summary, page xx).
- "Consumption of caribou by people living in the Project area, and across northern Canada, has been shown to add some exposure, primarily due to the natural background levels of Polonium-210." (Volume 1, Popular Summary, page xvii).

BQCMB Community Concerns

It is a major concern of many individual harvesters and caribou-using communities that accumulation of radio-activity will cause caribou to not be safe to eat. The BQCMB is concerned that a loss of caribou as a food source for traditional harvesters and others could occur through one or more of the following ways.

a) Changes in the health of individual caribou as a result of short- or long-term exposure to radio-activity or by eating contaminated lichen (e.g., via food-chain effects) in the Kiggavik RSA, with exposure accumulating over time as a result of caribou movements around future uranium mines in the area and other uranium mines elsewhere on the caribou range (e.g., in northern SK). Because the cumulative effects assessment does not evaluate life-time accumulation of uranium and other contaminants by caribou this concern has not been addressed adequately.
b) Loss of a portion of the herd on which communities are reliant for harvest as a result of an accident in which radio-active material is introduced to the caribou range outside the Kiggavik RSA, either through decreased health of individuals or because they are no longer safe to eat. (For instance, if a plane crash during transport of yellowcake across caribou range from Nunavut to Saskatchewan distributed radio-active material contaminating a portion of the herd's food or water and negatively affecting the health of the individual animals and/or the safety of meat for human consumption by communities within or outside Nunavut.)
c) Changes in the perception of safety and a resulting loss of confidence by harvesters and their families that caribou are safe to eat, even if individual caribou do not receive uranium exposure levels associated with adverse effects. (A similar situation has resulted from the Mount Polley, B.C. mine tailings pond breach, where despite government tests indicating that fish are safe to eat, First Nations have chosen not to use their traditional fishery.)
d) Decline in availability of caribou as a result of cumulative effects of mineral exploration and development, including effects associated with radio-activity, so that current harvest levels are not sustainable.

BQCMB Conclusions

The BQCMB concludes that a strongly precautionary approach is required because of the extreme importance of caribou health to food security and the potential effects of uranium mining on the perception of caribou as a safe food source.

BQCMB Objectives and Recommendations for possible NIRB Terms and Conditions

Objective: To ensure that complete assessments of effects and cumulative effects on caribou are conducted that adequately address concerns of caribou harvesters regarding issues related to food safety and security.

Recommendations:

1. The cumulative effects assessment should evaluate life-time accumulation of uranium and other contaminants by caribou from across their range including from multiple uranium mines anticipated through induced development in Nunavut as well as Saskatchewan and incorporate perception of radio-activity risk into assessment of effects on food security.
2. Long-term monitoring of caribou and contaminants associated with uranium mining, including radioactivity concentrations in caribou and caribou forage species, needs to be conducted across the caribou ranges (as well as in the Kiggavik RAA).
3. The hazard management and emergency response plans need to ensure that a plane crash during transport of yellowcake across caribou range from Nunavut to Saskatchewan would not distribute radio-active materials.
4. AREVA should be required to work with Nunavut and Athabasca Denesuline communities during hazard management and emergency response planning for transportation of yellowcake and to incorporate perception of radio-activity risk into assessment of effects on food security.
5. AREVA's engagement initiatives for communities across the caribou ranges need to include frequent and regular updates on results of contaminant monitoring, including radioactivity concentrations in caribou and caribou forage species from across the caribou ranges (not just from the Kiggavik RAA).

FEIS Comment:	**BQCMB – 5**
Issue:	**Transboundary Effects Assessment**
References:	Volume 1 Popular Summary, Appendix 1E Section 2.4; Volume 6 Sections 3.6, 13.4

FEIS Conclusions

- "A transboundary effect may occur when a residual effect occurs outside the Nunavut Settlement Area. The Qamanirjuaq and Beverly caribou herds migrate across jurisdictional boundaries. The absence of significant Project and cumulative effects on caribou removes the potential for significant transboundary effects." (Volume 1, Popular Summary)
- "Predicted cumulative effects to caribou include a possible shift in proportional caribou herd take or an overall increase in harvest to the Qamanirjuaq herd given the development of the alternative all-season access road option and potential associated changes in harvest patterns. The latter effect, in combination with harvesting of the same caribou populations outside of Nunavut, would be a transboundary effect. Considering that none of the Project effects or the cumulative effects to caribou are significant, no significant adverse transboundary effects are predicted for caribou." (Volume 6, Section 13.4, p. 13-104)

BQCMB Community Concerns
A high level of concern is shared by caribou harvesters and communities from the Beverly and Qamanirjuaq caribou ranges outside Nunavut (in NWT, SK and MB) that the Project (and similar future projects that are made possible because of Kiggavik's roads and mill) will reduce availability of Qamanirjuaq caribou for harvest by their communities. This could result even if the herd remains viable (AREVA's definition of non-significant effects) but it declines to a level at which harvest levels are reduced. AREVA acknowledges that increased harvest of Qamanirjuaq caribou in the project area may result, but does not assess the ramifications of such a change on harvest sustainability for communities within or outside Nunavut. Additional harvest from a declining herd would not be sustainable and there would therefore be transboundary effects for availability of caribou to communities. Reduced caribou harvest has been experienced recently by communities in northern Saskatchewan and the Northwest Territories as a result of changes in availability and accessibility of caribou because of both reduction in caribou numbers and densities (via herd decline) and reduction in area used by declining herds (via range contraction) for the Beverly, Bathurst, and Bluenose East herds. Consequently concern about the same situation occurring for the Qamanirjuaq herds is particularly acute for the Athabasca Denesuline communities of northern Saskatchewan and communities of south-eastern NWT. Also, the Manitoba Denesuline communities are particularly concerned because the Qamanirjuaq herd are the only barren-ground caribou accessible to them.
BQCMB Conclusions
BQCMB recommends a strongly precautionary approach as the residual effects are projected to reduce sustainability which will affect caribou harvesters outside Nunavut.
BQCMB Objectives and Recommendations for possible NIRB Terms and Conditions
Objective: To ensure that effects assessments for caribou consider transboundary effects in a meaningful way. ***Recommendation:*** 1. The assessment of transboundary effects needs to be re-evaluated to account for potential reduction in sustainable harvest levels and availability and accessibility of caribou for harvest by communities outside Nunavut.

FEIS Comment:	**BQCMB - 6**
Issue:	**Assessment of the All-Season Road**
References:	Volume 1 Popular Summary; Volume 2 Sections 4, 12; Volume 6, Sections 13.2, 13.3
FEIS Conclusion	
"The alternate option of an all-season access road (winter road preferred option) may act in combination with local hunter harvest resulting in a cumulative mortality effect on caribou. Use of the road for harvesting may affect the distribution of harvest or the total harvest taken. Should the all-season access road be required and approved, AREVA will work with caribou stakeholders in	

determining how to control and manage public access on a potential Kiggavik access road in ways that respect safety, the environment and company use of the road." (Popular Summary, Volume 1)

BQCMB Community Concerns

AREVA acknowledges that the all-season road would likely have significant negative effects on caribou, but has not developed a plan to mitigate those effects. Experience with roads elsewhere, including in Nunavut (e.g., Meadowbank and Meliadine), indicate that successful management of public access will be difficult or perhaps not possible. A commitment to future work with non-specified stakeholders to look for a way to manage public access is not adequate.

The BQCMB disagrees that the Project's assessment should be concluded and Project approval requested without a clear plan for preventing increased caribou harvest and other negative effects that may result from the all-season road, including increased dust, deflection of movements and loss of habitat.

BQCMB Conclusions

The BQCMB concludes that inadequate planning has been conducted to mitigate the effects of the all-season road and therefore this option should not be approved unless a plan acceptable to all caribou stakeholders is developed.

BQCMB Objectives and Recommendations for possible NIRB Terms and Conditions

Objective: To ensure adequate planning for mitigation of effects on caribou occurs.

Recommendations:

1. Before the Project is approved, a clear and feasible plan must be developed for mitigating negative effects to caribou that may result from the all-season road (including increased harvest, increased dust, deflection of movements and loss of habitat) that is acceptable to caribou stakeholders, including the BQCMB and representatives from NWT, Saskatchewan, and Manitoba caribou-using communities. The plan must include feasible measures for managing public access.
2. If a feasible plan for mitigating negative effects to caribou that may result from the all-season road cannot be agreed upon, the all-season road should be removed as a secondary option for the Project.

2.2 Technical Comments - Cumulative Effects and Integrated Planning

FEIS Comment:	BQCMB - 7
Issue:	**CUMULATIVE EFFECTS**
References:	Volume 1, Section 4; Volume 6, Section 13.3; Appendix 1E; Appendix 2T
BQCMB Community Concerns	Communities are not confident that the approach taken for cumulative effects assessment is adequate to assess effects to caribou that accumulate across time and space.
BQCMB Summary of Assessment	

Mortality

1) Cumulative effects assessment for caribou is limited to the Qamanirjuaq herd only. It is also limited to assessing mortality, the energetic cost of behavioral responses (ZOI) and redistribution and indirect habitat loss, and does not include movements (deviations and interruptions), or health.

2) AREVA comments that increased access (roads) and improved information on caribou locations available to hunters will cumulatively affect mortality. For example, the harvest within 5 km of the Meadowbank road doubled after the road was built. However, conclusions are limited as AREVA commented: "Based on the contradictory data on current caribou population levels and harvest rates, the determination of whether Baker Lake harvesters are capable of harvesting more caribou than sustainable limits is difficult to determine, creating uncertainty in the confidence of cumulative effects predictions.". The assessment also refers to lack of information on natural mortality and how, for example, climate change will interact with natural mortality and change the context for the effect of harvesting (Volume 6 p. 13-83).

3) The cumulative effects mortality assessment was based on the all-weather road as the winter access road option is not expected to increase "winter harvest access (Volume 6 p. 13-85).

4) The FEIS provides a relatively detailed account of harvesting and notes that lack of harvest studies are a limitation. Depending on harvest estimates, it is uncertain whether the current harvest is sustainable or not which also assumes stable herd size. For its calculations regarding Baker Lake harvest of Qamanirjuaq caribou specifically, the FEIS does not indicate when citing information from BQCMB reports that even rough estimates of Baker Lake's caribou harvest (total or by herd) have not been available since 2006-2007, and that its total harvest and proportions from different herds are annually variable. Predictions about current or future harvest by Baker Lake will have low confidence.

5) For cumulative effects, there are three classes of mitigation: AREVA's actions; collaborative actions between AREVA and government or other regulatory agencies; actions independent of AREVA. AREVA's actions include traffic speed control and closure, a no-hunting zone along the road and complying with Caribou Protection Measures. Compliance will be collaborative with other agencies. AREVA also lists relevant actions proposed in the GN draft 2010 Caribou Strategy.

6) The magnitude rating for increased mortality is negligible and the level of confidence in the prediction is moderate (Volume 6 Table 13.3-4.).

7) The monitoring described is participation in: a harvest study; GN-led caribou collaring

program; GN-led herd delineation and population estimate survey; and Project-specific caribou monitoring programs such as ground-based observations.

Direct Habitat Loss

8) The direct cumulative habitat loss (6,525 km^2) is estimated (Table 13.3-2) as <0.036% of the total CE study area (1,501,608 km^2).9) Mitigation and monitoring is the same as for the Project case.

10) The magnitude rating for direct habitat loss is low and the level of confidence in the prediction is moderate (Volume 6 Table 13.3-4.).

Indirect Habitat Loss

11) Indirect habitat loss was assessed through applying a model which looked at the energetic costs of the Zone of Influence (change in caribou behavior and diet from being displaced). The model assessment used current telemetry and vegetation mapping and information on body weight, pregnancy and age structure from the 1960s. The assumptions were conservative.

12) The cumulative effects scenario (with All season road) was a projected annual decrease in body weight of 0.8 kg and 0.68 kg for cows and calves respectively. The corresponding change in pregnancy rates led to a decline in the Qamanirjuaq herd size which could be offset by reducing harvest by 5% (Vol. 6, Attachment A p. 33).

13) The key mitigation was the winter road and the mitigation actions listed for the Project effects.

14) The magnitude rating for indirect habitat loss and energetic costs is low and the level of confidence in the prediction is moderate (Volume 6 Table 13.3-4.).

15) The monitoring was the same as proposed for mortality.

16) AREVA concluded that the cumulative effects to caribou are not significant, which then meant that no significant adverse transboundary effects are predicted for caribou.

BQCMB Comments

1. The projected cumulative effects on mortality include a possible shift in the proportional caribou herd harvest or an overall increase in harvest of the Qamanirjuaq herd unless winter roads are used instead of the all-season access road option. The direct cumulative habitat loss (<0.036%) using combined rather than distinct annual or seasonal herd ranges dilutes the cumulative habitat loss preventing the assessment of its significance to caribou.
2. The approach including the review of other CE assessments is useful. The description of the ambiguity in the harvest information is revealing. The energetic model and scenarios reveal AREVA's willingness to listen and respond to concerns raised during the environmental assessment.
3. The mitigation and monitoring for cumulative effects will be complex involving regional monitoring which may lack statistical power to detect effects such as changes in mortality. It is also unclear how AREVA will control and manage public access on either the winter or all-season road and how this will influence harvest levels.
4. The cumulative effects to caribou are likely under-estimated based on the Qamanirjuaq herd projections. (Estimates were for an increase for the scenario with no developments and a decrease for the cumulative effects scenario). Unfortunately adult survival rates measured from the caribou telemetry were unavailable and the model instead used data from the 1960s. The herd is already likely to be declining which changes the context for harvesting and the

population energetic modelling.
5. The far-future scenario with a further three uranium mines within 200 km of Kiggavik is a concern given that the current cumulative effects assessment results in a projected decline.
6. There are uncertainties in the encounter rates, residency time, vital rates, body weights and diet for the Qamanirjuaq herd, and these uncertainties are even greater for the other herds (e.g., Lorillard, Wager Bay, Ahiak, Beverly).
7. Cumulative effects should be rated with a high magnitude (measurable effect on sustainability) and low level of prediction confidence as a result of uncertainties about use of a winter or all-season road and harvest levels in combination with the lack of implemented management strategies (including a total allowable harvest) and the projected population decline for the Qamanirjuaq herd.
8. The assessment notes that "The confidence in any prediction of climate change is too low to adequately inform an effects assessment" but this uncertainty should be considered additive to the uncertainties associated with the existing cumulative effects assessment.

BQCMB Conclusion

BQCMB concludes that the residual cumulative effects are projected to reduce sustainability, have a high degree of uncertainty and are significant.

BQCMB Objectives and Recommendations for possible NIRB Terms and Conditions

Objective: To account for uncertainties in the status of the Qamanirjuaq herd, harvest levels, and selection of winter or all-season roads to be developed.

Recommendation:

1. Increase magnitude of cumulative effects to high (measurable effect on sustainability) and reduce level of prediction confidence to low. Change rating to significant.

Objective: To ensure appropriate and responsive adaptive management.

Recommendations:

1. AREVA should re-examine the energetic model population projections using current vital rates and combine with harvest scenarios to project population trends for the Qamanirjuaq herd for best and worst case scenarios.
2. GN should make results of their monitoring programs available for modeling, assessment and planning for mitigation.
3. GN should provide timelines for implementing the draft 2010 Caribou Strategy and in particular for mitigation actions (Section 3.1) and non-regulatory harvest management strategies (Section 5.1).
4. GN with co-management partners should collaboratively implement the BQCMB Caribou Management Plan goals and objectives (Section 3.2) and its strategies outlined for commercial land use and cumulative effects (Section 6) such as "No new all-season roads should be allowed on the caribou ranges." (p. 44)
5. AREVA should work with industrial partners and government to implement mitigation to reduce the extent of ZOI as a factor in determining cumulative effects.
6. AREVA and GN should examine the likelihood that regional monitoring programs have enough statistical power to detect project effects.

FEIS Comment:	BQCMB - 8
Issue:	**MITIGATION** (Wildlife Mitigation and Monitoring Plan - Appendix 6D)
References:	Volume 6, Appendix 6D

BQCMB Comments

1. AREVA comments that the Mitigation and Monitoring Plan (WMMP) will evolve with input from regulators and stakeholders. Its three main components are (i) mitigation and monitoring actions; (ii) reporting mechanism and (iii) a review process.
2. On one hand the listed mitigation actions suggest learning from previous experience and IQ (such as 'let the leaders pass' and snow management to leave escape gaps). On the other hand, they are relatively vaguely written and not linked to addressing reducing specific effects.
3. Including the experience of other mines was somewhat useful. However, it would have been more useful to include a large comparable mine such as Ekati (open pit mine with two sites separated by a road) or northern Saskatchewan uranium mines. The description of mitigation at the other mines is generalized and incomplete (for example, caribou stopped using the island at the Diavik mine). No use was made of approaches to mitigation and monitoring from caribou and mines elsewhere, such as off-sets for mines in British Columbia.
4. Mitigation is listed as general terms under habitat loss, movements and mortality for project design, construction, operation and closure. The 12 actions listed for caribou (and muskoxen) are brief and general (Section 4.1.1.4, pp. 4-6 to 4-7), except a relatively detailed Decision Matrix for wildlife and road operations (Figure 4.1, p. 4-5). The mitigation actions are given with unquantified triggers for their implication with no clear indication of how and when they could be intensified or reduced: for example, shutdowns will be initiated "if it is determined necessary" without specifying what will be considered "necessary".
5. To be operational, mitigation actions need to be described in more detail. Examples where more detail is needed are: "All road activities that may interfere with migration will cease if caribou are observed migrating through the area", as it is unclear what is meant by "all road activities" or "may interfere"; and "If caribou appear to be migrating through the Project area, the lead groups will be allowed to pass, which may encourage the remaining caribou to follow and move through the area", as it is unclear what is meant by "appear to be migrating" and how "the lead groups will be allowed to pass" (Section 4.1.1.4, p. 4-7).
6. The mitigation "In the event that caribou migrate within 2 km of the Project, AREVA will not initiate new activities, or increase the frequency or intensity of existing activities" (Section 4.1.1.4,p. 4-6) raises the question of the practicality of reducing existing activities in an operational mine. How the caribou would be detected is not explained.
7. Although avoiding aerial surveys is listed as mitigation, aerial surveys are included as a possible monitoring action relative to indirect habitat loss.
8. The mitigation "No construction, fuel caching, blasting or drilling activities will occur within 10 km of a designated and/or recognized caribou crossing between May 15 and September 1 in accordance with the DIAND Caribou Protection Measures" should be a commitment regardless of whether protection measures are applied through federal legislation or the Nunavut land use plan. 9. It is vague to state that the effluent pipeline along the access road between Kiggavik and Sissons will be designed to allow wildlife to cross without possible details of how this will be

done (Section 4.2.2), perhaps with reference to experience at other mines.
10. It is a useful point about designing the water management ponds and the Tailings Management Facilities to reduce the attractiveness of the facilities to wildlife (such as avoiding emergent vegetation).
11. The Reporting mechanisms is a brief and vague section: there is no mechanism for input and while AREVA states it will communicate the results of the WMMP to local hunters and trappers this is explained in the Environmental Management Plan (Tier 3, Appendix 2T) as a report every 3-5 years.
12. Although a review process is mentioned as a component in the Introduction, there is no section on a review process.

BQCMB Conclusion

BQCMB concludes that the description of mitigation is inadequate and further detail is required prior to project approval.

BQCMB Objectives and Recommendations for possible NIRB Terms and Conditions

Objective: To ensure appropriate and responsive adaptive management.

Recommendations:

1. AREVA should develop a detailed hierarchical mitigation strategy clearly linked to thresholds and monitoring prior to project approval.
2. The strategy should include a detailed review process and be collaborative with land and wildlife management agencies and stakeholders (Baffinland's terrestrial environment working group would be a useful model).
3. AREVA should provide for annual reporting on monitoring and mitigation with periodic (3-5 year) reviews.

FEIS Comment:	**BQCMB - 9**
Issue:	**MONITORING** (Wildlife Mitigation and Monitoring Plan – Appendix 6D)
References:	Volume 6, Appendix 6D and Volume 2, Appendix 2T

BQCMB Comments

1. The intent of the monitoring framework is to evaluate impact predictions, inform continual improvement opportunities and identify when adaptive management measures are needed. However it is not always clear which of those three objectives are met by the listed monitoring activities. For example, the three categories of monitoring (Baseline Research, Surveillance, and Monitoring) do not relate to the three intentions of the monitoring framework which is confusing.
2. The monitoring table format is useful with stated goal, objective, design, thresholds etc but does not include the likely effect size relative to the precision of the monitoring technique – the probability of detecting an effect. It is important to design the monitoring not to miss an effect if one has occurred (Type II statistical errors).
3. A weakness is that the monitoring tables only present objectives to assess the presence or

absence of predicted effects. Mitigation activity and its objective and thresholds are not presented together so it is difficult to see how monitoring will trigger mitigation actions and how monitoring results will lead to reduction or intensification of mitigation. For example for indirect habitat loss, the objective is to evaluate trends in caribou (and muskox) distribution in the ZOI and to evaluate potential mechanisms of habitat avoidance. The threshold (Appendix 6D, Table 5.4-1) is "Occurrence within the ZOI equivalent to the prediction made in the Project EIS". However mitigation of indirect habitat loss should be to reduce the extent of indirect habitat loss as estimated by a reduction in the extent of the zone of influence. This would also mitigate contributions to cumulative effects.

4. An additional example of the disconnect between monitoring and mitigation is that under mitigation, it is listed that "In the event that caribou migrate within 2 km of the Project, AREVA will not initiate new activities, or increase the frequency or intensity of existing activities" (Appendix 6D, Section 4.1.1.4, p 4-6). But the section on monitoring does not relate the monitoring activity (telemetry or land-based) that could detect in a timely way this scale of caribou movements.

5. The proposed regional monitoring is contributing to the caribou collaring program to further understand seasonal distributions by herd and to support of the GN-DoE-led herd delineation and population estimate survey to determine regional herd population trends. However lack of access to telemetry data limited the baseline assessment, such as describing habitat use, which raises questions for GN about the availability of telemetry data for monitoring.

6. The Hunter Harvest Study to support the determination of total harvest by herd – Given the lack of success in harvesting studies previously (Baseline report), it needs to be clarified how the harvest monitoring can be increased in precision to detect changes in harvest relative to road access.

7. The threshold for mortality risk as an indirect result of the Project through increased harvester knowledge of and access to the area is stated as "Exceeding the herd's Total Allowable Harvest" (Appendix 6D, Table 5.4.3). This is a concern as the calculation used for TAH applies to stable herds, while the status of all herds harvested by Baker Lake is uncertain or declining.

BQCMB Conclusion

BQCMB concludes that the proposed monitoring plan is inadequately described to ensure that it can meet its objectives.

BQCMB Objectives and Recommendations for possible NIRB Terms and Conditions

Objective: To ensure appropriate and responsive adaptive management.

Recommendations:

1. AREVA needs to expand monitoring descriptions to link monitoring to mitigation.
2. GN should make telemetry data available for monitoring programs.
3. Clarify commitments of GN and its capacity to undertake and report on regional monitoring and if the regional monitoring is able to detect the predicted project thresholds and effects such as <10% deflection in migration (monitoring of populations and harvest, and management of public access along the roads).

FEIS Comment:	BQCMB - 10
Issue:	**ENVIRONMENTAL MANAGEMENT PLAN** (Appendix 2T)
References:	Appendix 2T; Volume 6, Appendix 6D

BQCMB Comments

1) The Wildlife Mitigation and Monitoring Plan is one of the plans to be incorporated into the Integrated Management System. The overall management system outlines how mine design, environmental assessment findings, commitments, mitigation and monitoring plans are integrated for the construction, operation and decommissioning phases.
2) In Section 2.2.2 of the Environmental Management Plan (Appendix 2T) AREVA describes how the effects monitoring determines the magnitude and extent of effects and if there is deviation from measurement endpoints, then adaptive management is used to add alternate mitigation or contingency measures. But this is a general description and there are no examples of alternate or intensified mitigation in the Mitigation section.
3) Section 2.2.2 (Appendix 2T) also refers to using monitoring data for continual improvement in operations and monitoring but the difference between adaptive management relative to continual improvement is not clear. Adaptive Management in environmental assessment and management is typically regarded as a very specific disciplined and experimental approach. However, this is not how it is described here and it is unclear how continual improvement as a measured system differs from informal adaptive management.
4) In the section on management authorities and agreements (Appendix 2T, Section 3.3), AREVA comments on a collaborative initiative to develop regional aquatic cumulative effects framework under the auspices of the Nunavut General Monitoring Plan. AREVA describes their support and suggests the need for similar collaborative initiatives in the terrestrial and socio-economic disciplines which fits with the objectives of the NGMP.

BQCMB Conclusion

BQCMB concludes that clarification between continual improvement relative to adaptive management is necessary with examples.

BQCMB Objectives and Recommendations for possible NIRB Terms and Conditions

Objective: To ensure appropriate and responsive adaptive management.

Recommendations:

1. AREVA to determine when continual improvement can be replaced by adaptive management.
2. NGMP to take the lead to implement a partnership with AREVA (and others) for a collaborative initiative for a regional terrestrial cumulative effects framework.

2.3 Technical Comments - Incremental Effects

FEIS Comment:	BQCMB - 11
Issue:	**MORTALITY**
References:	Volume 6, Sections 13.1.3, 13.2.1
BQCMB Community Concerns:	Communities are concerned about any industry-caused caribou mortality. This includes mortality resulting from collisions with vehicles (project-related or public), the interaction of caribou with project infrastructure or elements of the environment modified by industry (e.g., hazardous materials, tailings, waste rock, other waste etc.), project-caused disturbance (e.g., low-level surveys and other flights) and other accumulating effects on caribou health and productivity.
BQCMB Summary of Assessment	
1) AREVA acknowledges that the lack of information on natural mortality rates (assumed to be constant over time) and harvest patterns introduce uncertainty in the assessment (p. 13-7). Assessing mortality through the exposure of caribou cows to fencing and roads-based encounter rate/residence of collared cows adds further uncertainty as AREVA acknowledged limitations of reliance on the collared cows (p. 13-7). 2) Direct mortality is anticipated to be low from traffic or fence entanglement while indirect mortality, which is not described, is a consequence of increased energy expenditure from behavioral responses to disturbance. Increased harvest from road access is considered in the Cumulative Effects section. 3) The assessment described the recorded deaths from other mines and some steps to reduce them such as type of fencing. 4) Mitigation is speed limits, education, signs, snow management and post-death evaluation. 5) The threshold is one death/year and <5% change based on Total Allowable Harvest at population scale (Section 13.1.3). 6) Magnitude of change in mortality risk for both the winter and all-season roads is rated as negligible with moderate to high prediction confidence (Table 13.2.2). 7) Monitoring is continued participation in: the GN-led caribou collaring program; GN-led herd delineation and population estimate survey (determine regional herd population trends); reporting wildlife collisions; and continue Project-specific caribou monitoring programs (e.g., ground-based observations).	
BQCMB Comments	
1. Natural mortality (predation, diseases, accidents) in a declining herd (Qamanirjuaq) is unlikely to be constant over time which changes the context for projected-related deaths and harvesting. 2. Indirect mortality is not described but is possible as reduced calf survival as a consequence of maternal cows expending energy in response to disturbances on post-calving ranges especially if the cows are in poor condition from natural variation in forage (GN has concluded that the largest and most important influence on long-term population trends are forage and range (p. 13-83).	

3. The potential for mortality varies between herds and may be higher than projected given possible exposure – for example, the collars suggest that over several years up to 18% of the Lorillard's cows have encountered the Local Assessment Area.
4. The emphasis on collared cows may have led to under-estimating effects – bulls are more likely to spend time within the vicinity of the mine and, for example, become entangled in fencing (based on other mine's experience).
5. The probability of encounters with roads is rated as low but was not estimated and instead was based on locations of all collared caribou over the total monitoring period (up to 20 years). Encounter rates should be at the annual scale as given in Vol. 6 Attachment A (Energetics). This is more comparable with the threshold which is 1 caribou death/year (however, at Meadowbank, average mortality was 2 caribou deaths/year over a 7-year period).
6. The listed mitigations were not hierarchical (increasing or decreasing in intensity corresponding to monitoring thresholds).
7. The planned monitoring relies on collaring rather than other methods (cameras; user observations; dashboard video; track fecal pellet surveys; surveys) which could include thresholds and also calibrate collar exposure.
8. Magnitude of the possibly under-estimated residual effects should be rated as low with low prediction confidence.

BQCMB Conclusion

BQCMB concludes that mortality effects are under-estimated given the uncertainty.

BQCMB Objectives and Recommendations for possible NIRB Terms and Conditions

Objective: To account for the uncertainty and declining status of the Qamanirjuaq caribou herd.

Recommendation:

1. Reduce confidence rating for residual effects on mortality to low (from moderate to high) and increase rating for magnitude to low (from negligible).

Objective: To ensure appropriate and responsive adaptive management.

Recommendation:

2. Before project approval, provide detailed descriptions of adaptive monitoring and mitigation with intensifying levels of mitigation clearly tied to monitoring thresholds.

Objective: To address possible under-estimation of effects resulting from reliance on collaring.

Recommendation:

3. Increase local site-specific monitoring techniques to reduce reliance on collars.

FEIS Comment:	**BQCMB - 12**
Issue:	**HABITAT**
References:	Volume 6, Sections 13.1.3, 13.2.2
BQCMB Community	Damage to vegetation that is used by caribou as food is a concern for communities. This includes reduced nutritional value as a result of dust and

Concerns	contamination resulting from radio-activity.

BQCMB Summary of Assessment

1) AREVA assessed direct growing and winter season habitat loss within the Project footprint and within the Zone of Influence reduced by direct or indirect habitat loss (14 km ZOI and 4 km for roads, noise and dust). The analyses were categorical (high, medium, low habitat utility index) and restricted to Regional Assessment Area. (A more typical analysis used for environmental assessment, such Resource Selection Function, was not possible due to GN restricting collar data access).
2) Mitigation is to minimize construction areas for direct loss and dust control and traffic management for indirect loss. AREVA recognized that despite examining dust control at Meadowbank, uncertainties remain about effective dust control and that additional monitoring is required (p. 13-27).
3) Magnitude for direct and indirect habitat loss for the mine with either a winter road or all-season road is rated as moderate and prediction confidence as moderate (Table 13.2-13).
4) AREVA noted a lack of habitat loss or disturbance thresholds specific to barren-ground caribou and proposed a threshold of 10% within seasonal range or population (Section 13.1.3).
5) AREVA will develop a monitoring program for indirect habitat loss including caribou distribution in the Zone of Influence (incidental observations, aerial surveys or collaring).

BQCMB Comments

1. It is a concern that the perception of habitat loss is so relative. For example, loss of high quality habitat is <0.1% of the annual range but 24 - 27% of high quality habitat in the Regional Assessment Area for growing season and winter, respectively (Table 13.2-9). Caribou use may be high in some winters, as, for example, up to 50% of the Lorillard collars were within the RAA in 2012 (p. 13-52).
2. The Zone of Influence is not a fixed attribute and the objective of mitigation should be to reduce its extent such as from 14 to 7 km which could be possible if mitigation, including the adequacy of dust suppression, was increased.
3. Given the uncertainties in mitigation and the relative coarse-scaled (categorical) assessment approach, the rating for confidence in predicted effects for changes to habitat should be reduced to low (from moderate) for the moderate rating for magnitude.
4. Monitoring is inadequate and should include measurement of habitat outside Project footprint including dust fall, as well as monitoring the nature of the road surface consolidation, wind speeds, traffic type and frequency and vehicle speeds.

BQCMB Conclusion

BQCMB concludes that mitigation and monitoring of habitat effects should be increased.

BQCMB Objectives and Recommendations for possible NIRB Terms and Conditions

Objective: To ensure appropriate and responsive adaptive management.

Recommendation:

1. Reduce confidence rating for residual effects on habitat from moderate to low.
2. Before project approval, provide detailed adaptive monitoring and mitigation with

intensifying levels of mitigation clearly tied to monitoring thresholds. Mitigation objective should be to measurably reduce the extent of the Zone of Influence.

Objective: To further define details of monitoring programs to reduce uncertainty and increase the likelihood of detecting effects and adjusting mitigation.

Recommendation:

3. Increase local site-specific monitoring techniques (tracks, fecal pellet surveys; remote cameras) to reduce reliance on collars.
4. To provide specific triggers to establish when aerial surveys will be undertaken and used to calibrate representativeness of the collars.
5. Monitoring should address dust as a mechanism for indirect habitat loss and relate levels (fugitive and $<PM_{10}$ particles) to mitigation.

Objective: To account for the uncertain and likely declining status of the Qamanirjuaq caribou herd.

Recommendation:

6. The Qamanirjuaq herd is declining and GN has identified forage shortage as the most important influence on caribou trends. This changes the context for habitat loss and suggests thresholds of <5% and a cumulative effects analysis for direct habitat loss are needed.

FEIS Comment:	**BQCMB - 13**
Issue:	**MOVEMENTS**
References:	Volume 2, Section 10.5.1; Volume 6, Sections 13.1.3, 13.2.3; Appendix 6C
BQCMB Community Concerns	Changes to caribou movement patterns are a concern for communities. This includes caribou avoidance of roads or other infrastructure and changes in movements as a result of disturbance to caribou from aircraft associated with exploration and development projects.
BQCMB Summary of Assessment	
1) AREVA categorizes movements as (1) Seasonal migration; (2) water-crossings and (3) local (within ZOI). 2) To assess how the project acts as a semi-permeable barrier, residency time and encounter rates with project structures are estimated from telemetry data from collared caribou. AREVA is clear about the limitations of telemetry (lack of herd representation and sample size). 3) Annual variability in movements is high (Fig. 13.2.10-13) which is a point also made through IQ. AREVA concluded that the project does not intersect key migration routes although 15 water-crossings are within the Regional Assessment Area (Fig. 13.2-18). 4) AREVA acknowledges that thresholds for movements are difficult to establish from the scientific literature and other mine experiences (Section 13.1.3). 5) Mitigation includes reducing the height of berms; snow management; temporary shutdowns if large numbers of caribou approach; Caribou Protection Measures. 6) Residual effects for change in movement were rated as medium magnitude with moderate	

prediction confidence.
7) Monitoring includes make contributions to a government-led caribou collaring program and monitor caribou use of water crossing that are within 10 km of the Project activities.

BQCMB Comments

1. BQCMB agrees with AREVA about the difficulty of predicting and quantifying potential project effects on caribou movements and limitations of depending on the collars. AREVA does a credible job of presenting the collar information such as Figure 13.2.11. Although residency time and encounter rates were generally low, in some years (especially recently), a relatively high percentage of collars (30-50% Figures 13.2.14 and 15) were within the winter road zones of influence. 2. Traffic frequency on the winter road is high (66 passages/day in 2-3 truck convoys) while the traffic frequency on the road between Kiggavik and Sissons is unknown (Volume 2, Section 10.5.1).Project traffic was not compared with other winter roads such as the Tibbitt to Contwoyto road or the Misery road at the Ekati mine.
3. The FEIS lacks analyses and descriptive statistics for the likelihood and potential crossing points for caribou for the proposed road routes, based on all information about caribou movements (not only data from collared cows), including IQ. AREVA suggests the increased exposure of the Qamanirjuaq collared cows during post-calving after 2010 is a result of increased number of collars. But this raises questions about the representativeness of the collars previous to 2010 and the statistical power to detect trends in movements.
4. The listed mitigations are not hierarchical and it is not specified whether they are to avoid, minimize, restore on-site, or offset an adverse effect. It is uncertain if and how actions could be increased or decreased in intensity corresponding to monitoring thresholds, such as when to switch from reducing speed to stopping traffic.
5. FEIS lacks mitigation required to replace Caribou Protection Measures (CPM) if they are not required by the new land use plan (CPM are absent from 2014 draft plan proposed by the Nunavut Planning Commission).
6. FEIS mentions but does not provide descriptive statistics and statistical analyses to capture the annual and individual variation in movements relative to the project site and roads. This variability but sometimes high exposure leads BQCMB to suggest that confidence in the predicted magnitude should be reduced to low and to conclude that effect size will be difficult to monitor.
6. Monitoring should be linked to monitoring requirements for indirect habitat loss (dust fall as well as monitoring the nature of the road surface consolidation, wind speeds, vehicle speeds, traffic type, use of convoys and frequency). Monitoring should also be site-specific along the roads and include ground-based methods (cameras; user observations; dashboard video; track and fecal pellet surveys; surveys) which could include thresholds and also calibrate collar exposure.

BQCMB Conclusion

BQCMB concludes that the residual effects for movements are uncertain without more information on mitigation to reduce effects and increase confidence in predictions.

BQCMB Objectives and Recommendations for possible NIRB Terms and Conditions

Objective: To ensure appropriate and responsive adaptive management.

Recommendation:

1. Reduce confidence rating for residual effects on movements from moderate to low.
2. The link between monitoring and adaptive mitigation needs to be made more explicit and other methods of monitoring movements (more than the satellite collars) need to be applied.
3. Mitigation needs to clarify how it can be intensified or reduced (structured as a hierarchy of actions to avoid, minimize, restore on-site, or offset an adverse effect) according to the monitoring relative to thresholds.

Objective: To ensure mitigation planning is sufficiently adaptive to address changes implemented by the new land use plan.

Recommendations:

4. Explain how Caribou Protection Measures (CPM) will be applied and how they relate to other mitigation.
5. Clarification is required concerning whether CPM will be applied voluntarily if they are not required under the new Nunavut land use plan.

FEIS Comment:	**BQCMB - 14**
Issue:	**HEALTH**
References:	Volume 4 Section 1, Appendix 4C; Volume 6, Section 13.2.4
BQCMB Community Concerns	Radio-activity issues are generally a strong concern for communities. This includes effects of radio-activity on health of caribou. Health effects are a concern at levels both of individual caribou and herds.

BQCMB Summary of Assessment

1) Health is described relative to exposure to dust and radio-activity. Exposure is based on telemetry of collared caribou. Caribou may spend 1.1% time in the LAA and 4.7% in the RAA.
2) At about 12 km from the Project Footprint, total annual deposition begins to approach background levels. The Screening index = exposure/toxicity reference value (=correlated with the potential of an effect); all SIs were lower than toxicity levels
3) Threshold is lowest observable adverse effect levels (LOAELs) based on growth and reproduction.
4) Mitigation is dust control and no specific monitoring is listed as covered by vegetation monitoring.
5) Residual effects were not assessed as the residual effects were less than toxicity levels. The level of exposure for caribou to most chemicals is not expected to change from baseline and the exposure will remain below exposure levels associated with adverse effects.

BQCMB Comments

1. The assumptions about exposure do not take into account variability (for example in caribou movements) which is compounded by variability in encounter rates, residency time and diet. The extent of variation should have been used to generate worst and best case scenarios of metal uptake from forage. The assessment lacks sufficient detail about the duration of uptake in lichens.
2. Monitoring is based on the reference sites - from the modeling, air dispersion did not overlap with the sampled reference sites except for the maximum incremental 24-hour average concentrations of PM10 and PM2.5 – is this enough to discount them as reference sites? While AREVA contended that the reference sites were valid based on the air dispersion models, BQCMB is concerned that the higher level represented natural variability raising the question of how the monitoring will account for that natural variability? For example Table 4.2-8B Plant Tissue Chemistry Data (Lichen) for Mine Local Study Area and Regional Study Area (2007-2009) presents the high variability of Uranium ug/g n=56; 0.37± 2.4 SD <0.006 18.1 (LSA) n=10; 0.014 ± 0.011 <0.01 0.04 (RSA). BQCMB notes the questions raised for monitoring to detect and mitigate effects given the variability which consequently adds to uncertainty.
3. The details about monitoring relative to thresholds is lacking, and there is no mention of monitoring caribou diet and uptake of dust (plant fragment and ash analysis of fecal pellets).

BQCMB Conclusion

BQCMB concludes more information is required to assess residual effects for caribou health.

BQCMB Objective and Recommendations for possible NIRB Terms and Conditions

Objective: To ensure appropriate and responsive adaptive management.

Recommendations:

1. AREVA should re-examine the uptake of metals including Uranium and determine under what conditions a caribou would have sufficient uptake to have measurable effects. The uptake conditions would then become the thresholds for monitoring.
2. Monitoring should be re-designed to take a conservative approach to ensure that sample sites sample gradients for atmospheric transfer of metals including radio-active metals.
3. Caribou diet and uptake of metals should be monitored.

3.0 Summary of Recommendations

BQCMB-1 Assessment of Significance

1. The results of the effects assessment and cumulative effects assessment need to be re-evaluated to incorporate the perspectives and knowledge of caribou harvesters for assessing significance of changes in migratory movements, seasonal range use patterns and availability of caribou to harvesters.

BQCMB-2 Cumulative Effects Assessment Approach

1. The results of the effects assessment and cumulative effects assessment need to be re-evaluated from the perspective of caribou:
   c) as receivers of stresses from multiple sources that integrate the effects of those combined stresses
   d) as migratory animals that accumulate effects from across their ranges during their seasonal movements as well as throughout their lives.

BQCMB-3 Value of Caribou and Traditional Caribou-Using Cultures

1. The results of the effects assessments and cumulative effects assessments for caribou and traditional culture need to be re-evaluated by giving greater weight to effects on food security and sustainability of caribou harvest and to acknowledged effects on traditional cultures (likely reduction and possible loss of traditional values and knowledge).
2. AREVA should be required to assist governments with the retention of traditional skills, language, values and knowledge held by caribou-using cultures.

BQCMB-4 Radio-Activity, Safety of Caribou as a Food Source and Food Security

1. The cumulative effects assessment should evaluate life-time accumulation of uranium and other contaminants by caribou from across their range including from multiple uranium mines anticipated through induced development in Nunavut as well as Saskatchewan and incorporate perception of radio-activity risk into assessment of effects on food security.
2. Long-term monitoring of caribou and contaminants associated with uranium mining, including radioactivity concentrations in caribou and caribou forage species, needs to be conducted across the caribou ranges (as well as in the Kiggavik RAA).
3. The hazard management and emergency response plans need to ensure that a plane crash during transport of yellowcake across caribou range from Nunavut to Saskatchewan would not distribute radio-active materials.
4. AREVA should be required to work with Nunavut and Athabasca Denesuline communities during hazard management and emergency response planning for transportation of yellowcake.
5. AREVA's engagement initiatives for communities across the caribou ranges need to include frequent and regular updates on results of contaminant monitoring, including radioactivity concentrations in caribou and caribou forage species from across the caribou ranges (not just from the Kiggavik RAA).

BQCMB-5 Transboundary Effects Assessment

1. The assessment of transboundary effects needs to be re-evaluated to account for potential reduction in sustainable harvest levels and availability and accessibility of caribou for harvest by communities outside Nunavut.

BQCMB-6 Assessment of the All-Season Road

1. Before the Project is approved, a clear and feasible plan must be developed for mitigating negative effects to caribou that may result from the all-season road (including increased harvest, increased dust, deflection of movements and loss of habitat) that is acceptable to caribou stakeholders, including the BQCMB and representatives from NWT, Saskatchewan, and Manitoba caribou-using communities. The plan must include feasible measures for managing public access.
2. If a feasible plan for mitigating negative effects to caribou that may result from the all-season road cannot be agreed upon, the all-season road should be removed as a secondary option for the Project.

BQCMB-7 Cumulative Effects

1. AREVA should re-examine the energetic model population projections using current vital rates and combine with harvest scenarios to project population trends for the Qamanirjuaq herd for best and worst case scenarios.
2. GN should make results of their monitoring programs available for modeling, assessment and planning for mitigation.
3. GN should provide timelines for implementing the draft 2010 Caribou Strategy and in particular for mitigation actions (Section 3.1) and non-regulatory harvest management strategies (Section 5.1).
4. GN with co-management partners should collaboratively implement the BQCMB Caribou Management Plan goals and objectives (Section 3.2) and its strategies outlined for commercial land use and cumulative effects (Section 6) such as “No new all-season roads should be allowed on the caribou ranges.” (p. 44)
5. AREVA should work with industrial partners and government to implement mitigation to reduce the extent of ZOI as a factor in determining cumulative effects.
6. AREVA and GN should examine the likelihood that regional monitoring programs have enough statistical power to detect project effects.

BQCMB-8 Mitigation (Mitigation and Monitoring Plan)

1. AREVA should develop a detailed hierarchical mitigation strategy clearly linked to thresholds and monitoring prior to project approval.
2. The strategy should include a detailed review process and be collaborative with land and wildlife management agencies and stakeholders (Baffinland’s terrestrial environment working group would be a useful model).
3. AREVA should provide for annual reporting on monitoring and mitigation with periodic (3-5 year) reviews.

BQCMB-9 Monitoring (Mitigation and Monitoring Plan)

1. AREVA needs to expand monitoring descriptions to link monitoring to mitigation.
2. GN should make telemetry data available for monitoring programs.
3. Clarify commitments of GN and its capacity to undertake and report on regional monitoring and if the regional monitoring is able to detect the predicted project thresholds and effects such as <10% deflection in migration (monitoring of populations and harvest, and management of public access along the roads).

BQCMB-10 Environmental Protection Plan

1. AREVA to determine when continual improvement can be replaced by adaptive management.
2. NGMP to take the lead to implement a partnership with AREVA (and others) for a collaborative initiative for a regional terrestrial cumulative effects framework.

BQCMB-11 Mortality

1. Reduce confidence rating for residual effects on mortality to low (from moderate to high) and increase rating for magnitude to low (from negligible).
2. Before project approval, provide detailed descriptions of adaptive monitoring and mitigation with intensifying levels of mitigation clearly tied to monitoring thresholds.
3. Increase local site-specific monitoring techniques to reduce reliance on collars.

BQCMB-12 Habitat

1. Reduce confidence rating for residual effects on habitat from moderate to low.
2. Before project approval, provide detailed adaptive monitoring and mitigation with intensifying levels of mitigation clearly tied to monitoring thresholds. Mitigation objective should be to measurably reduce the extent of the Zone of Influence.
3. Increase local site-specific monitoring techniques (tracks, fecal pellet surveys; remote cameras) to reduce reliance on collars.
4. To provide specific triggers to establish when aerial surveys will be undertaken and used to calibrate representativeness of the collars.
5. Monitoring should address dust as a mechanism for indirect habitat loss and relate levels (fugitive and <PM_{10} particles) to mitigation.
6. The Qamanirjuaq herd is declining and GN has identified forage shortage as the most important influence on caribou trends. This changes the context for habitat loss and suggests thresholds of <5% and a cumulative effects analysis for direct habitat loss are needed.

BQCMB-13 Movements

1. Reduce confidence rating for residual effects on movements from moderate to low.
2. The link between monitoring and adaptive mitigation needs to be made more explicit and other methods of monitoring movements (more than the satellite collars) need to be applied.
3. Mitigation needs to clarify how it can be intensified or reduced (structured as a hierarchy of actions to avoid, minimize, restore on-site, or offset an adverse effect) according to the monitoring relative to thresholds.

4. Explain how Caribou Protection Measures (CPM) will be applied and how they relate to other mitigation.
5. Clarification is required concerning whether CPM will be applied voluntarily if they are not required under the new Nunavut land use plan.

BQCMB-14 Health

1. AREVA should re-examine the uptake of metals including Uranium and determine under what conditions a caribou would have sufficient uptake to have measurable effects. The uptake conditions would then become the thresholds for monitoring.
2. Monitoring should be re-designed to take a conservative approach to ensure that sample sites sample gradients for atmospheric transfer of metals including radio-active metals.
3. Caribou diet and uptake of metals should be monitored.