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RE: 2BE-KIG – AREVA Resource Canada – Kiggavik–Sissons Exploration Project.

On behalf of Environment Canada (EC), I have reviewed the information submitted with the above-mentioned application. The following specialist advice has been provided pursuant to Environment Canada's mandated responsibilities for the enforcement of the *Canadian Environmental Protection Act*, Section 36(3) of the *Fisheries Act*, the *Migratory Birds Convention Act,* and the *Species at Risk Act.*

The Kiggavik-Sissons Project is a uranium surface exploration project located approximately 80 km west of Baker Lake. AREVA Resource Canada Inc is proposing a program of diamond drilling and environmental baseline work that will result in an improved understanding of the project site and known mineral deposits. In addition to diamond drilling, exploration activities will include prospecting, geological mapping, and geochemical and geophysical surveys will be carried-out throughout the lease areas. A total of 13 to 22 diamond drill holes corresponding to about 4,500 meters to 7,000 meters of diamond drilling are planned for 2007. A total of about 11,000 meters are planned in 2008.

Existing buildings (10 in total) at the Kiggavik camp will be repaired and used, where possible. It is expected that the drill and environment crews will be mobilized to the site during May and June. The program is expected to shut down and prepared for winter by the end of September.

Environment Canada recommends that the following conditions be applied throughout all phases of the exploration project:

General

- The proponent shall not deposit, nor permit the deposit of any fuel, drill cuttings, chemicals, wastes or sediment into any water body. According to the *Fisheries Act,* Section 36(3), the deposition of deleterious substances of any type in water frequented by fish, or in any place under any conditions where the deleterious substance, or any other deleterious substance that results from the deposit of the deleterious substance, may enter any such water, is prohibited.
- Any sumps, including those created for the disposal of drill cuttings, shall be located above the high water mark of any water body and in such a manner as to prevent the contents from entering any water body frequented by fish. Further, all sumps shall be backfilled upon completion of the field season and contoured to match the surrounding landscape.

Drilling

- Environment Canada would like to inform the proponent that the *Canadian Environmental Protection Act* has listed CaCl as a toxic substance. The proponent shall therefore ensure that if

CaCl is used as a drill additive, all sumps containing CaCl are properly constructed and located in such a manner as to ensure that the contents will not enter any water body.

- Drilling additives or mud shall not be used in connection with holes drilled through lake ice unless they are re-circulated or contained such that they do not enter the water, or demonstrated to be non-toxic.
- Land based drilling should not occur within 30 m of the high water mark of any water body. Drilling wastes from land based drilling shall be disposed of in a sump such that the contents do not enter any water body.
- The proponent shall not store materials on the surface ice of lakes or streams, except that which is for immediate use.
- If an artesian flow is encountered, the drill hole shall be immediately plugged and permanently sealed.

Waste Disposal

The application currently states that a simple unit (i.e. 45 gallon drum) may be used on site for the incineration of combustible waste.

- Environment Canada recommends the use of an approved incinerator for the disposal of combustible camp wastes.
    - Environment Canada recognizes that timely disposal of camp waste - specifically food waste - is of critical importance to minimize safety risks associated with wildlife attraction. Timely disposal is usually achieved through burning. However, burning of waste products releases numerous contaminants to the air, many of them persistent, bioaccummulative and toxic (e.g. polycyclic aromatic hydrocarbons - PAH's - heavy metals, chlorinated organics – dioxins and furans). These contaminants can result in serious impacts to human and wildlife health through direct inhalation and they can also be deposited to land and water, where they bioaccumulate through food chains affecting wildlife and country foods. Therefore, burning should only be considered after all other alternatives for waste disposal have been explored.
    - A variety of incineration devices are available and selection of the most appropriate will depend on considerations of technical and economical feasibility for each situation. For large, permanent camps and/or operational facilities (e.g. diamond mines), installation of an incineration device capable of meeting the emission limits established under the Canada-wide Standards (CWS) for Dioxins and Furans and the CWS for Mercury Emissions is required (both the Government of Canada and the Government of the Nunavut are signatories to these Standards and are required to implement them according to their respective jurisdictional responsibility). For small, temporary camps the use of a modified burn barrel may be acceptable. The proponent should review the incineration options available and provide justification for the selected device to the regulatory authority.
    - If burning is the only alternative available, the proponent should ensure that the waste is burned in a device that promotes efficient combustion and reduction of emissions, and that the amount of waste burned is reduced as much as possible. The use of appropriate waste incineration technology should be combined with a comprehensive waste management strategy (especially waste segregation) that is designed to reduce and control the volumes of wastes produced, transported, and disposed of.
    - The **Waste Management Plan** should consider and include:
        - Purchasing policies that focus on reduced packaging,
        - On-site diversion and segregation programs (i.e. the separation of non-food waste items suitable for storage and subsequent transport and disposal or recycling).
        - If incineration is required, ensure diligent operation and maintenance of the incineration device and ensure appropriate training is provided to the personnel operating and maintaining the incinerator.

The objective should be to ensure that only food waste and food-contaminated waste is burned (the use of paper, cardboard and clean wood as supplementary fuel is acceptable).

- Used absorbent materials, oily or greasy rags, and equipment servicing wastes (such as used engine oil, antifreeze, hydraulic oil, lead acid batteries, brake fluid and other lubricants) should be safely stored and transported in sealed containers (odour free to prevent animal attraction) and safely transported to a facility that is authorized for the treatment and disposal of industrial hazardous wastes.
- The proponent shall ensure that all non-combustible and hazardous wastes, including waste oil, receive proper treatment and disposal at an approved facility.

Winter Road

- Proponent should not travel until the ground is sufficiently frozen to provide support and avoid surface damage and rutting.
- Stream crossings shall be located to minimize approach grades. Bank disturbance is to be avoided, and mechanized clearing should not be done immediately adjacent to any watercourse.
- Winter lake/stream crossings shall be constructed entirely of ice and snow materials; stream crossings shall be removed or notched prior to spring break-up.

Fuel Storage/Spill Contingency Plan

- EC has noted that Double-walled Environtanks are being considered for the 2008 exploration project. Environment Canada is proposing to repeal the existing "Registration of Storage Tank Systems for Petroleum Products and Allied Petroleum Products on Federal Lands and Aboriginal Lands Regulations" and replace it with a regulation that has a broader scope of application. The new regulation under the *Canadian Environmental Protection Act* (CEPA) 1999, Part 9 will incorporate mandatory technical requirements (secondary containment, leak detection, corrosion protection, overfill, spill containment) and be more in line with those regulations that already exist in most provincial and territorial jurisdictions. Compliance with the proposed regulations will be mandatory, and EC will conduct inspections to ensure compliance with the regulations. The proponent is encouraged to consult and implement the recommendations found in the 2003 CCME Guidance Document PN 1326 entitled "Environmental Code of Practice for Above Ground and Underground Storage Tank Systems containing Petroleum Product and Allied Petroleum Products". This document provides up to date information regarding best practices for the storage of petroleum products and allied petroleum products. EC strongly recommends that the Proponent incorporate environmental best practices for fuel storage in the 2007 exploration program and not wait until the following year.
- All fuel caches shall be located above the high water mark of any water body. Further, EC recommends the use of secondary containment, such as self-supporting insta-berms, when storing barreled fuel on location rather than relying on natural depressions. Secondary containment or a surface liner (drip pans, fold-a-tanks, etc) should be placed under all container or vehicle fuel tank inlet and outlet points, hose connections and hose ends during fuel or hazardous substance transfers. Secondary containment should be of adequate size and volume to contain and hold fluids for the purpose of preventing spills (the worst-case scenario). Appropriate spill response equipment and clean-up materials (absorbents, containment devices, etc) must be on hand during any transfer of fuel or hazardous substances and at vehicle-maintenance areas.
- Transfer operations should be attended by trained personnel at all times.
- Decanting of snow or water from the berm area should proceed only if the appropriate chemical analysis has determined the contents meet the requirements of Section 36.3 of the Fisheries Act.
- Fuel containers, including barrels, should be marked with the responsible party's name, product type, and year purchased or filled.
- Waste tracking, or "manifesting," should be implement to ensure proper use, storage, and management of materials. Manifests provide detailed information to first responders in the event of an accident and serve as a tool for confirming that shipments of dangerous or hazardous waste are properly handled, transported, and disposed of.

- Spills are to be documented and reported to the 24 hour Spill Line at (867) 920-8130. EC recommends that **all** releases of harmful substances, regardless of quantity, are immediately reportable where the release:
    - is near or into a water body;
    - is near or into a designated sensitive environment or sensitive wildlife habitat;
    - poses an imminent threat to human health or safety; or
    - poses an imminent threat to a listed species at risk or its critical habitat.
- Section 3.3 *Location and Contents of Spill Kits* of the Spill Contingency Plan fails to include a skimmer as part of the contents. Since spills on muskeg and water may require the use of a skimmer the Proponent should ensure that a skimmer be included as part of the spill kit and available to personnel at all times. EC recommends that Spill kits be located along all transportation routes, and the location of these kits should be indicated on a map. Vehicles used in transporting fuel and chemicals should also be equipped with portable spill kits.

Abandonment and Restoration Plan

Environment Canada has reviewed the Abandonment and Restoration Plan and feels that there is insufficient information to properly assess its effectiveness. The plan should clearly state the remediation objectives that will be met at the end of the exploration season as well as upon final abandonment. In addition, a more comprehensive description of activities should be provided in the plan and the plan be re-submitted for review prior to exploration activities commence. EC recommends the following be addressed in the Abandonment and Restoration Plan:

- How does the Proponent plan to secure buildings over winter.
- The Proponent has not addressed decommissioning or remediation of the helicopter pad or the airstrip. EC recommends that the proponent reclaim the helicopter pad and the airstrip at the end of the project life, including scarification and restoration of topography and vegetation.
- How does the Proponent plan on removing and disposing of the liner of the secondary containment for fuel storage? EC recommends that the liner of the secondary containment be removed from site and disposed of in an approved disposal facility.
- Will soil beneath the lined areas be tested for petroleum hydrocarbons and will contaminated soil be excavated? EC requests information regarding what parameters will be tested for and what quality assurance is being applied to ensure all contaminated soils have been removed.
- Burning of wooden structures should only be considered if the wood has not been treated with chemicals. Burning wood waste that has been treated with preservative chemicals or protective coatings can release harmful substances such as Dioxins and Furans in to the Canadian environment. EC strongly recommends that the proponent remove all wood that are treated with preservatives and protective coatings from the project site upon final abandonment and dispose of these materials at an approved recycling or disposal facility.

Wildlife

- It is recommended that the Proponent develop and implement a Noise Abatement Plan to protect people and wildlife from noise levels caused by exploration and drilling activities. The plan should include a commitment to use noise attenuation devices on drilling rigs and vehicles. Further, EC recommends a minimum flight altitude of 610 m above ground when flights to and from the project site are passing sensitive wildlife and bird areas.

The Canadian Wildlife Service (CWS) of Environment Canada has reviewed the above-mentioned submission and makes the following comments and recommendations pursuant to the *Migratory Birds Convention Act* (the *Act*) and *Migratory Birds Regulations* (the *Regulations)*, and the *Species at Risk Act* (SARA).

- The proposed area for this project is southeast of the Thelon River/Beverly Lake/Aberdeen Lake area that has been identified as a Key Migratory Bird Site (See attached page from Latour, P.B., J. Leger, J.E. Hines, M.L. Mallory, D.L. Mulders, H.G. Gilchrist, P.A. Smith and D.L. Dickson. 2006. Key migratory bird terrestrial habitat sites in the Northwest Territories and Nunavut. 3rd edition. Canadian Wildlife Service Occasional Paper. In press.). This area is especially

important areas for moulting Canada Geese. Moulting geese are temporarily flightless while they lose their flight feathers and grow new ones, and they are particularly sensitive to disturbance at this time. All moulting flocks should be avoided. Pre-moulting flocks of geese generally arrive in mid-June and depart after moulting is complete in mid-August. Although the proponent has not indicated that any activities will take place in this area, the proponent should be aware of the special status of this nearby area. The proponent should avoid activities during mid-June to late August in the area identified as the Key Migratory Bird Site. This includes not flying over this area at that time.

- Section 6(a) of the Migratory Birds Regulations states that no one shall disturb or destroy the nests or eggs of migratory birds. Therefore, EC recommends that all activities in which there is a risk of disturbing or destroying nests or eggs be conducted outside the migratory bird breeding season, which extends from approximately May 15 to July 31. These dates are approximate, and if active nests (i.e. nests containing eggs or young) are encountered outside of these dates the proponent should avoid the area until nesting is complete (i.e. the young have left the vicinity of the nest).
- If activities are permitted to occur during the breeding season, EC recommends that the proponent confirm there are no active nests (i.e. nests containing eggs or young) in the vicinity of their operations before activities commence. If active nests of migratory birds are discovered, the proponent should halt all activities in the nesting area until nesting is completed (i.e. the young have left the vicinity of the nest).
- In order to reduce disturbance to nesting birds, EC recommends that aircraft used in conducting project activities maintain a flight altitude of at least 610 m during horizontal (point to point) flight unless safety or cloud ceiling do not permit. EC acknowledges that lower flight altitudes will be required for the geophysics surveys.
- In order to reduce disturbance to resting, feeding, or moulting birds, EC recommends that aircraft used in conducting project activities maintain a vertical distance of 1000 m and minimum horizontal distance of 1500 m from any observed concentrations (flocks / groups) of birds.
- EC recommends that camp waste be made inaccessible to wildlife at all times. Camp waste can attract predators of migratory birds (e.g., foxes and ravens) to an area if not disposed of properly.
- Section 35 of the *Migratory Birds Regulations* states that no person shall deposit or permit to be deposited, oil, oil wastes or any other substance harmful to migratory birds in any waters or any area frequented by migratory birds.
- All mitigation measures identified by the proponent, and the additional measures suggested herein, should be strictly adhered to in conducting project activities. This will require awareness on the part of the proponents' representatives (including contractors) conducting operations in the field. EC recommends that all field operations staff be made aware of the proponents' commitments to these mitigation measures and provided with appropriate advice / training on how to implement these measures.
- Implementation of these measures may help to reduce or eliminate some effects of the project on migratory birds, but will not necessarily ensure that the proponent remains in compliance with the *Migratory Birds Convention Act* (the *Act*) and *Migratory Birds Regulations (*the *Regulations)*. The proponent must ensure they remain in compliance with the *Act* and *Regulations* during all phases and in all undertakings related to the project.

The following comments are pursuant to the Species at Risk Act (SARA), which came into full effect on June 1, 2004. Section 79 (2) of SARA, states that during an assessment of effects of a project, the adverse effects of the project on listed wildlife species and its critical habitat must be identified, that measures are taken to avoid or lessen those effects, and that the effects need to be monitored. This section applies to all species listed on Schedule 1 of SARA. However, as a matter of best practice, EC suggests that species on other Schedules of SARA and under consideration for listing on SARA, including those designated as at risk by the Committee on the Status of Endangered Wildlife in Canada (COSEWIC), be considered during an environmental assessment in a similar manner.

Species at Risk that	COSEWIC		Government Organization with Primary Management

may be encountered	Designation	Schedule of SARA	Responsibility [1]
Short-eared Owl	Special Concern	Schedule 3	Government of Nunavut
Peregrine Falcon (subspecies tundrius)	Special Concern	Schedule 3	Government of Nunavut
Grizzly Bear	Special Concern	Pending	Government of Nunavut
Wolverine (Western Population)	Special Concern	Pending	Government of Nunavut

[1] Environment Canada has a national role to play in the conservation and recovery of Species at Risk in Canada, as well as responsibility for management of birds described in the *Migratory Birds Convention Act* (MBCA). Day-to-day management of terrestrial species not covered in the MBCA is the responsibility of the Territorial Government. Thus, for species within their responsibility, the Territorial Government is best suited to provide detailed advice and information on potential adverse effects, mitigation measures, and monitoring.

Impacts could be disturbance and attraction to operations.

Environment Canada recommends:

- Species at Risk that could be encountered or affected by the project should be identified and any potential adverse effects of the project to the species, its habitat, and/or its residence noted. Refer to the Species at Risk registry at www.sararegistry.gc.ca for information on specific species.
- If Species at Risk are encountered or affected, the primary mitigation measure should be avoidance. The proponent should avoid contact with or disturbance to each species, its habitat and/or its residence.
- The proponent should record the locations and frequency of any observations of Species at Risk and note any actions taken to avoid contact or disturbance to the species.
- For species under the responsibility of the Territorial Government, the Territorial Government should be consulted to identify other appropriate mitigation and/or monitoring measures to minimize effects to these species from the project.
- Mitigation and monitoring measures must be taken in a way that is consistent with applicable recovery strategies, action plans, and management plans.

If there are any changes in the proposed project, EC should be notified, as further review may be necessary. Please do not hesitate to contact me with any questions or comments with regards to the foregoing at (867) 975-4631 or by email at cindy.parker@ec.gc.ca.

Yours truly,

Original signed by

Cindy Parker
Environmental Assessment Technician

cc: (Colette Spagnuolo, Environmental Assessment & Contaminated Sites Specialist, Environment Canada, Iqaluit)