

Paul Mercredi

From: Paul Mercredi
Sent: Friday, October 14, 2011 5:19 PM
To: David Swisher (dswisher@avalonraremetals.com)
Subject: Information for Conformity Review: Deficiency Statement MVEIRB Request #1

Hello David,

Staff have been directed to request the following from Avalon in order to establish conformity on a remaining key matter.

Background

The TOR portion related to MVEIRB #1 reads as follows:

3.2.4 Description of the existing environment

A detailed description of the existing environment is required, including current status and trends for all valued components. Wherever possible, the developer is responsible for providing a clear picture of what typical environmental conditions currently exist in the environmental assessment study area prior to the start of this environmental assessment. This must consider the current state of baseline conditions, the natural variability of background conditions, and to the extent possible differentiate between natural background conditions and any effects from past development such as exploration.

In addition, the developer must provide a description of the methods used to acquire the information used to describe baseline conditions. This description will distinguish between techniques used to measure parameters in the field from information derived from the utilization of models. Avalon will provide complete references for historical data and indicate how and when historical data was used as a basis for conclusion(s).

Biophysical environment

The following description should be at a level of detail sufficient to allow for a thorough assessment of project effects. Describe the biophysical environment within the relevant environmental assessment study areas including:

Both sites

...

15. Terrain, surficial geology, structural geology, mineralogy, bedrock geology (type, depth, composition, and permeability), seismic activity records and risk factors, permafrost locations and types within the environmental assessment study area. In particular:

...

c. identify the chemical composition of host rock and ore bodies at the mine site including:

...

ii. uranium, thorium and beryllium content in ore.

In the Deficiency Statement prepared by the Review Board, Deficiency MVEIRB #1 reads as follows:

Appendix F (SGS Environmental Characterization of ore, concentrate and tailings Interim Report Feb 28, 2011) is not yet complete. Submit the final Report on characterization of ore, concentrate and tailings to the Review Board.

Avalon's response to Deficiency MVEIRB #1 reads as follows:

Avalon is pleased to submit as Attachment 1 to this Deficiency Response document the SGS Final Report dated August 30, 2011 entitled: *Environmental Characterization of Ore, Concentrate and Tailings From the Nechalacho*

Rare Earth Element Project – Phase 2. This report serves to replace the Interim Report dated February 28, 2011 which was previously provided as Appendix F in the Avalon DAR.

The Review Board acknowledges that Avalon responded to Deficiency MVEIRB #1 by providing the final SGS report. However, upon subsequent review of the final SGS report, it is clear that the SGS report does not address all aspects of the underlying TOR requirements. This is in no way a reflection on the quality or thoroughness of the SGS report, but proper interpretation of the laboratory results requires critical information linking how the samples represent the site materials and processes.

Basis for Deficiency MVEIRB #1

The intent of the TOR requirement underlying Deficiency MVEIRB #1 is to provide the Review Board with sufficient information to understand the geology and mineralogy of the proposed project site and the chemical composition of the host rock and ore bodies at the mine site. The TOR requirement specifically requests information on the uranium, thorium, and beryllium content of the ore because of the potential environmental and human health risks and the potential public concern associated with these elements.

The SGS report includes test results on 32 samples. These include 6 head samples, 10 tailings samples, 1 decant sample, 9 concentrate samples, 4 water samples, and 2 process simulation samples. The implication is that the 6 head samples represent the ore or the host rock, but there is insufficient information in either the SGS report or elsewhere in the Developer's Assessment Report (DAR) to identify the source location of the head samples or to substantiate that the head samples are representative of the ore or the host rock. In particular, there is insufficient context to determine whether the analyzed head samples provide a reasonable, conservative, upper bound on the concentrations of the elements of potential concern – U, Th, and Be.

In Table 2 of the SGS report, the 6 head samples are listed, but neither the SGS report nor other parts of the DAR explain the source of the samples, why they were chosen, how the three composite head samples were prepared, or why the XPS samples are expected to be similar to the production materials. There is no apparent statement or explanation in the reports that the source of samples is the proposed mine area, leaving it up to the reader to make that assumption without adequate justification.

It is clear that Avalon possesses extensive additional information on the geological characterization of the proposed project site that is not included in the DAR. Some of this information is discussed or displayed on the developer's website, http://avalonraremetals.com/projects/thor_lake/thor_lake_intro/, such as maps showing the details of the drilling programs, details of the program for core analysis, details on the metallurgical test or pilot programs, and the core assay results. Other references to the existence of additional data appear in the SENES Radioactivity Pathways Assessment, e.g. the footnote in Table 2.4 that says "Based on the results from a large numbers of samples (> 4000)". Furthermore, the characterization of the deposit required for the resource estimate undoubtedly provided information that would help fulfill the TOR requirement.

Remedying Deficiency MVEIRB #1

The requests below are intended to guide Avalon in collecting, preparing, and providing information to the Review Board that would remedy Deficiency MVEIRB #1. The requests are based on the information that the Review Board has received, is aware of, or infers exists, but Avalon may possess other information which would better fulfill the intent of the requests or more completely respond to the TOR requirements.

- a) Please provide details on the drilling programs used to characterize the geology of the project site showing the locations of the drillholes in plan view in relation to both the aboveground and underground proposed project components.
- b) Please provide details on the drilling programs that explain the core sampling program including the core drillholes, core depths or elevations, and the core numbering system so that specific laboratory samples can be traced to physical locations.

- c) Please provide, in tabular form, details on all of the analytical or assay tests performed on core samples from the proposed project site as well as a statistical summary of the distribution of the test results. The detailed results should allow the reader to trace specific cores to physical locations. The detailed results should specifically include information on U, Th, and Be.
- d) Please provide cross sections of Avalon's conceptualization of the geologic profiles of the proposed underground mine areas and access portals that include the drillholes used as a basis for the profiles. For completeness, please indicate on the cross sections any additional information that would assist the Review Board in its evaluation such as the locations of core samples sent to SGS for analysis, hydraulic conductivity data, and information on mapped fractures or joints.
- e) Please explain the sources, reasons for selection, and sample preparation of the following 6 head samples listed in Table 2 of the SGS report and explain how these samples are representative of the expected production materials.

Master Comp 3	F25, F28, F29, and F30 Head
Avalon Head Sample 1	F33 Head
Avalon Head Sample 2	F36 Head
Avalon Head Sample 3	F37 Head
XPS PP Comp 2 Head	XPS MPPX
XPS PP Comp 3 Head	XPS MPP Run 2 Head

- f) Please explain the sources, reasons for selection, and sample preparation of the 10 tailings samples listed in Table 2 of the SGS report and explain how these samples are representative of the expected production tailings.
- g) Please explain the sources, reasons for selection, and sample preparation of the 9 concentrate samples listed in Table 2 of the SGS report and explain how these samples are representative of the expected production concentrate.
- h) Please explain the sources, reasons for selection, and sample preparation of the 1 decant sample and 2 process simulation samples listed in Table 2 of the SGS report and explain how these samples are representative of the corresponding expected production steps.
- i) Please describe the pilot plant processes and demonstrate that these processes are representative of the expected production processes.

If any of the information requested above already appears in the DAR or other submitted documents, Avalon should indicate where it can be found.

Regards,

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 Mackenzie Valley Environmental Impact Review Board

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