



NI 43-101 Technical Report for the 2026 Rare Earth Element Mineral Resource Estimate on the Nechalacho Basal Project, Northwest Territories, Canada

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1 SUMMARY

1.1 INTRODUCTION

Avalon Advanced Materials Inc. (Avalon) has retained Micon International Limited (Micon) to independently review and verify the Mineral Resource Estimate (MRE) for the Nechalacho Basal Project (the Project or Property) located approximately 110 km east of Yellowknife in the Northwest Territories, Canada, and to compile a Canadian National Instrument (NI 43-101) Technical Report disclosing the results of the MRE. The Project MRE has also been disclosed in an American S-K 1300 Technical Report.

1.2 PROPERTY DESCRIPTION AND LOCATION

The Nechalacho Basal Project is located at Thor Lake on the north shore of the Great Slave Lake in the Northwest Territories (NWT), Canada. The Project is approximately 110 km east of the territorial capital of Yellowknife and 5 km north of the Hearne Channel.

The Project lies within the Mackenzie Mining District of the Northwest Territories and Thor Lake is shown on the Canadian National Topographic System (NTS) map sheets 851/1 and 851/2. It is located at approximately 62°06'30" N and 112°35'30" W (6,886,500 mN and 417,000 mE).

The Nechalacho Basal Project mineral leases have been legally surveyed and are recorded on a Plan of Survey, Number 69408 M.C. in the Legal Surveys Division of the Federal Department of Energy, Mines and Resources, Ottawa, now Natural Resources, Canada. The perimeter boundaries of the lease lots were surveyed as part of the leasing requirements.

The Nechalacho Basal Project contains five contiguous mineral leases (totalling 5,786.1 ha, or 14,298 acres).

1.2.1 Ownership

In May, 2005, Avalon purchased from Beta Minerals Inc. (Beta) a 100% interest and full title, subject to royalties, in the Thor Lake property which hosts the Nechalacho Basal Project.

On January 30, 2019, Avalon announced that it had signed a binding Terms Sheet under which Cheetah Resources Pty Ltd. (Cheetah) acquired ownership of the near surface resources above a depth of 150 m above sea-level, principally the T-Zone and Tardiff Zones for a total consideration of CD\$5 million while Avalon retained ownership of the deeper resources in the Basal Zone (BZ) which was the subject of the 2013 Feasibility Study. Avalon will continue to manage work programs on the Property and retain its 3% NSR type royalty.

On October 30, 2019, Avalon announced that it had received the final installment payment of the CD\$5 million purchase price for the near-surface resources on the Nechalacho Basal Project from Cheetah. It was also noted in Avalon's press release that on October 22, 2019, Vital Metals Ltd. completed its acquisition of privately held Cheetah following receipt of shareholder approval earlier in the month.

On May 19, 2026, Avalon announced that it established Magmic Rare Earths Inc. (Magmic) as the dedicated subsidiary through which Avalon intends to advance the Nechalacho Basal Project. The structure is expected to provide a focused platform for project-level development, strategic partnerships, government funding, and potential third-party capital participation.

Royalty Interests

One underlying royalty exists on the Nechalacho Basal Project and originated with Highwood Resources Ltd. (Highwood), the initial developer of the Property. Signed in 1977, the Murphy Royalty Agreement entitles J. Daniel Murphy to a 2.5% NSR royalty which applies to the entire Nechalacho Basal Project and is capped at an escalating amount indexed to the rate of inflation. Under the agreement, Avalon is permitted to purchase the royalty at the commencement of production at a fixed, inflation-adjusted price.

In July, 2012 Avalon bought out the 3% Calabras/Lutoda NSR royalty on the Nechalacho Basal Project which entitled Calabras (Canada) Ltd. and Lutoda Holding Ltd. to NSR royalties of 2% and 1%, respectively.

1.2.2 First Nation Communities

The Nechalacho site is located within the Akaitcho Dene asserted traditional territory and is subject to the comprehensive land claim negotiation between the Akaitcho Dene First Nations (Yellowknives Dene First Nation (Dettah), Yellowknives Dene First Nation (Ndilo), Lutsel K'e Dene First Nation and Deninu Kue First Nation) and the Federal government.

The socio-economic study area for the Nechalacho site consists of those communities that are more likely to experience effects due to their relatively close proximity to the proposed site, as well as their possible contributions to the Project workforce. On this basis, the primary study communities related to the Nechalacho site include Yellowknife, Ndilo, Dettah, Lutsel K'e and Fort Resolution.

Present non-traditional land uses near the Nechalacho site include mineral exploration, harvesting, recreation and tourism. Traditional harvesting continues to be an important part of Aboriginal cultures in the Northwest Territories.

Avalon has entered into Negotiation Agreements with the Lutsel K'e Dene First Nation (LKDFN), Yellowknives Dene First Nation (YKDFN), the Deninu Kue First Nation (DKFN), the North Slave Métis Alliance, and the NWT Métis Nation. As of February 2014, Avalon has finalized an Accommodation Agreements with the DKFN and a Participation Agreement with the NWT Métis.

1.3 ACCESSIBILITY, CLIMATE, LOCAL RESOURCES, INFRASTRUCTURE AND PHYSIOGRAPHY

1.3.1 Accessibility

The Nechalacho site is located approximately 110 km east of Yellowknife and 5 km north of the Hearne Channel on the East Arm of the Great Slave Lake.

There is no road access into the Nechalacho site. It is accessible by barge during the summer months and year-round by aircraft. The site has been serviced using float planes and ski planes, with helicopter support over freeze-up and break-up.

A 30.4 m wide by 305 m long airstrip provides all-year fixed-wing service to the site, if necessary. In addition, ice roads on the Great Slave Lake have been utilized to mobilize equipment to the site in winter as and when required.

1.3.2 Climate, Physiography, Local Resources and Infrastructure

Air temperature at the Nechalacho site recorded displays typical seasonal fluctuations, with warm temperatures occurring from late May to August, with the coldest period occurring from December to February. The monthly average temperatures expected at site range from -26°C in January to 16°C in July. Monthly average temperatures rise above 0°C for significant periods of time in May and fall below 0°C for significant periods in October.

Average annual total precipitation at Thor Lake is approximately 275 mm. Rainfall predominates during May to October, and snowfall predominates during October to April.

The Nechalacho landscape consists of a gently undulating relief that gradually decreases in elevation towards the Great Slave Lake. Elevation ranges from 235 m along the shore of Thor Lake, to around 265 m on top of the highest bedrock knobs. Elevations progressively drop to approximately 160 m along the north shore of the Great Slave Lake.

Dock facilities at camp site were destroyed in the wildfire in 2025 and will need to be rebuilt. The existing access road to the Nechalacho site from the dock, a distance of approximately 8 km will need to be upgraded. During the winter, heavy equipment and bulk materials can access the site using winter roads on the ice cover of the Great Slave Lake.

Northern Transportation Company Limited (NTCL) now known as Marine Transportation Services (MTS) operates a commercial barging service on the Great Slave Lake and serves the communities of Lutsel K'e and Fort Reliance from the Port of Hay River. Hay River is a major transportation hub for the Northwest Territories and is one of Canada's largest inland ports. Hay River also has the only rail connection in the Northwest Territories.

Most lakes in the area do not freeze to the bottom and process water will be available year-round. Freeze-up commences in late October and break-up of the majority of the lakes in the area is generally complete by late May. The Great Slave Lake freezes later and remains ice-free longer than the smaller lakes.

Yellowknife (estimated 2026 population 23,187) and Hay River (estimated 2026 population 3,291) are two key transportation hubs in the Northwest Territories. Both communities have very good supporting infrastructure and are located in relatively close proximity to the Nechalacho site. The local economy is generally dependent upon government services, although both communities act as transit sites for mining and mineral exploration activities throughout the Northwest Territories and Nunavut.

The Thor Lake project is situated in the Akaitcho Territory, an area that is subject to a comprehensive land claim negotiation involving communities belonging to the Yellowknives Dene, Lutsel K'e Dene and the Deninu Kue First Nations. The Yellowknives Dene consists of two communities, known as Ndilo and Dettah, each having over 250 residents. Ndilo is located on Latham Island in the northern part of the City of Yellowknife. Dettah, accessible by road, is located southeast of Yellowknife, across Yellowknife Bay. The Yellowknives Dene assert that the Project lies within their traditional territory known as the Chief Drygeese Territory.

The community of Lutsel K'e is located on Christie Bay on the East Arm of the Great Slave Lake and is accessible by air or boat. It has a population of over 250. Fort Resolution is located on the southeast coast of the main body of the Great Slave Lake in Resolution Bay. The Deninu Kue First Nation is based

in Fort Resolution and has a population of over 500. The community is serviced by road from Hay River and by air.

The town of Hay River, located on the south shore of the Great Slave Lake where the Hay River enters the lake, extends south from the lake along the west bank of the river. The largest Aboriginal community in the Hay River area is the Katlodeeche First Nation, often referred to as the Hay River Reserve, which is located on the east bank of the Hay River across from the town. Hay River is accessible by air, rail and by using Highway 3 from Edmonton, Alberta.

Both the north and south sides of the Great Slave Lake are occupied by two groups of Métis. The North Slave Métis Alliance (NSMA) is located in Yellowknife, while the Northwest Territory Métis Nation is located in Fort Smith (and represents the communities of Fort Smith Métis, Fort Resolution Métis and Hay River Métis).

Yellowknife uses diesel and hydroelectric facilities to generate its power, and this is the closest source of power to the Nechalacho Basal Project. However, there is no transmission line and the generating capacity is limited.

Water is available at Thor Lake from any one of the surrounding lakes.

1.4 HISTORY

The Nechalacho Basal Project area was first mapped by J.F. Henderson and A.W. Joliffe of the Geological Survey of Canada (GSC) in 1937 and 1938. The first staking activity at the Project dates from July, 1970 when the Odin 1-4 claims were staked for uranium by K.D. Hannigan. Shortly after, the Odin claims were optioned to Giant Yellowknife Mines Ltd. and, in 1970, were acquired by Bluemount Minerals Ltd.

In 1971, the GSC outlined a radioactive anomaly over the Project area. A. Davidson of the GSC initiated mapping of the Blatchford Lake intrusive complex. It subsequently became clear that this radiometric anomaly was largely due to elevated thorium levels in the T-Zone within the Project area.

In 1976, Highwood Resources Ltd. (Highwood) discovered niobium and tantalum on the Project. From 1976 to 1979, exploration programs included drilling, geological mapping, sampling and trenching on the Lake, Fluorite, R-, S- and T-Zones. Drilling of 22 holes was completed, seven on the Lake Zone. This work resulted in the discovery of significant concentrations of niobium, tantalum, yttrium and Rare Earth Elements (REEs). Recognizing a large potential resource at the Project, Placer Development Ltd. (Placer) optioned the Project from Highwood in March, 1980 to further investigate the tantalum and related mineralization. The exploration included drilling 21 holes between 1980 and 1981. Preliminary metallurgical scoping work was also conducted, but Placer relinquished its option in April, 1982.

From 1983 to 1985, the majority of the work on the Project was concentrated on the T-Zone and included geochemical surveys, beryllometer surveys, surface mapping, significant drilling, surface and underground bulk sampling, metallurgical testing and a detailed evaluation of the Project by Unocal Canada. However, seven holes were also drilled in the Lake Zone (later renamed the Nechalacho deposit) to test for high grade tantalum-niobium mineralization. In August, 1986, the Property was joint ventured with Hecla Mining Company of Canada Ltd. (Hecla). However, in 1990, Hecla withdrew from the project. In 1990, control of Highwood passed to Conwest Exploration Company Ltd. (Conwest) and

the Project remained dormant until 1996. Through subsequent ownership changes, Highwood became controlled by Royal Oak Mines Ltd. (Royal Oak).

Royal Oak's subsequent bankruptcy in 1999 resulted in the acquisition of the control block of Highwood shares by Dynatec Corporation (Dynatec). In 2000, Highwood initiated metallurgical, marketing and environmental reviews by Dynatec. Through 2001 to 2004, Navigator Exploration Corp. optioned the Property and conducted additional metallurgical research on the possibility of producing a tantalum concentrate but dropped the Property when tantalum prices fell. Meanwhile, Beta Minerals Inc. (Beta) acquired Highwood's interest in the Property in November, 2002 under a plan of arrangement with Dynatec. No work was conducted by Beta and, in May, 2005, Avalon purchased from Beta a 100% interest and full title, subject to royalties, in the Project.

1.5 GEOLOGICAL SETTING AND MINERALIZATION

1.5.1 Regional and Stratigraphic Geology

The various Thor Lake mineral deposits occur within the Aphebian Blatchford Lake Complex (BLC), which intruded Archean Yellowknife Supergroup metasedimentary rocks of the southern Slave geologic province. The BLC has an alkaline character and intrusive phases vary successively from early pyroxenite and gabbro through to leuco-ferrodiorite, quartz syenite and granite, to peralkaline granite and a late syenite (Davidson, 1982). There appear to be successive intrusive centres with an earlier western centre truncated by a larger centre that consists of the Grace Lake Granite and the Thor Lake Syenite. Nepheline syenite intruded the Thor Lake Syenite and hosts the Nechalacho deposit. This unit was recognized in drilling by Avalon during 2007 to 2010. Outcrops of the nepheline syenite within the area of the Nechalacho deposit display strong hydrothermal alteration and, consequently, the unit was not originally mapped as distinct from the Thor Lake Syenite.

Most of the Property is underlain by the Thor Lake Syenite and Nechalacho Layered Suite within the central part of the Grace Lake Granite. The deposit cross-cut both rock types whereas the Nechalacho deposit is confined to the area of the host in the underlying Nechalacho Nepheline Syenite.

The Thor Lake Syenite is completely enclosed by the Grace Lake Granite. The most distinctive sub-unit is a fayalite-pyroxene mafic syenite which locally has a steep dip and is located close to the margin of the main amphibole syenite and the Grace Lake Granite. It forms a distinct semi-circular ridge, locally termed the rim syenite, which can be traced for a distance of around 8 km and has the appearance of a ring dyke, most prominent on the east side of the Thor Lake body. The rim syenite is clearly identifiable on the airborne magnetic map.

The Nechalacho Layered Suite, both mineralized and unmineralized, is only exposed at surface in a small portion of the Thor Lake Syenite between the Long and Thor Lakes. The Nechalacho Layered Suite dips underneath the Thor Lake syenite in all directions. This is supported by drilling north of Thor Lake, within and close to Cressy Lake and also by drilling south of Long Lake. Also, the Nechalacho mineralization occurs in the top, or apex, of the Nechalacho Nepheline Syenite.

1.5.2 Local Geology and Mineralization

Two ages of diabase dyke swarms are present, known as the Mackenzie and the Hearne. The Mackenzie dykes are dated at 1.27 Ga (billions of years ago), have a north-northeast strike orientation and are part

of the largest dyke swarm on earth. Although there are Mackenzie dykes in the general vicinity of Thor Lake none are known to cut the Nechalacho deposit.

It is interpreted that the Nechalacho Basal Project contains a virtually undeformed deposit where most of the features observed were generated by magmatic and hydrothermal processes. In the least altered portions of the deposit, delicate primary textures are well preserved and no penetrative tectonic or metamorphic fabric is observed.

The distribution of most of the rock units and the mineralization generally follow a sub-horizontal pattern that can be traced for several hundreds of metres. However, the sub-horizontal pattern is interpreted to be locally disturbed by changes in the elevation of up to 40 m. These changes in elevation may occur erratically or along linear trends. As noted above, the deposit is also cut by late diabase dykes, which are part of the east-northeast-trending Hearne dyke swarm. Avalon's geologists have interpreted the changes in elevation of the mineralization as largely due to events during the magmatic stages of the nepheline syenite formation.

Faults are present, these are generally less than a metre in thickness and are characterized by fault gouge, breccia, frequent red hematite, and variable amounts of carbonate-quartz veining. However, it is believed that these are minor local features relating to a late release of pressure in the solidifying magma chamber. There is little evidence of significant displacement along late faults.

Mineralization in the Nechalacho deposit includes Light Rare Earth Elements (LREE) found principally in allanite, monazite, bastnaesite, synchysite and parisite; yttrium, HREE, niobium and tantalum found in fergusonite and aeschynite; niobium in ferrocolumbite; HREE, niobium, tantalum and zirconium in zircon; and gallium in biotite, chlorite and feldspar in albitized feldspathic rocks.

There are a number of mineral texture types within the Nechalacho deposit. These texture types manifest both at the macroscopic scale when logging drill core, and at the microscopic scale through optical petrographic microscope, QEMSCAN® and electron microprobe. Initially, the various textures were not logged as individual units due to the rapid changes in drill core. However, it has subsequently been recognized that these textures may be critical in understanding metallurgical performance in mineral processing. In addition, it is possible that these textures may play a role in recoveries during subsequent hydrometallurgical processing of mineral concentrates.

Zircon ore textures currently logged since the winter 2012 drill program include (1) fine-grained, disseminated pseudomorphs; (2) medium to coarse-grained pseudomorphs; (3) poikilitic pseudomorphs; (4) cumulate textures; and (5) wavy laminations.

These textures reflect the magmatic and hydrothermal crystallization history of the mineralization. Thus, mono-mineralic cumulate textures suggest a disturbance of the cotectic that caused the precipitation of magmatic zircono-silicates, interpreted to be primarily eudialyte. These crystals were subsequently concentrated in cumulate horizons by processes such as crystal settling.

Poikilitic intergrowths suggest in-situ crystallization of possible eudialyte, where eudialyte crystallized after feldspars or feldspathoids.

Pseudomorph textures suggest co-magmatic crystallization of rock-forming minerals and zircono-silicates.

Basal zones logged during the 2012 winter/spring field season display high variability of ore textures, commonly on the sub-metre scale. A general trend of zircono-silicate distribution could be summarized as fine-grained pseudomorphs and wavy laminations being most common near the top of the Basal Zone and poikilitic intergrowths and cumulate textures occurring primarily in the heart of the Basal Zone. The bottom contact of the Basal Zone is commonly abrupt and is underlain by unmineralized alkaline syenites. However, gradational lower contacts occur locally, characterized by intermittent bands of fine- to coarse-grained pseudomorphs interlayered with weakly or unmineralized syenite.

1.6 DEPOSIT TYPES

The mineral deposits at the Project include the Nechalacho deposit (Upper and Basal Zones), and three other separate and distinct zones, with the Nechalacho deposit bearing many of the attributes of an apogranite (Beus et al., 1962) originating as an apical or domal facies of the parental syenite and granite. The deposits are extensively metasomatized with pronounced magmatic layering and cyclic ore mineral deposition. The Nechalacho deposit essentially forms part of a layered, igneous, peralkaline intrusion.

The main chemical features of the Nechalacho deposit that contrast to these overall features are that the rare earth levels are higher than typical, uranium is not particularly high, with anomalous but modest levels of thorium, and the lack of beryllium mineralization. Beryllium is present in the North T deposit, a separate smaller deposit to the north with dissimilar geology. The R-, S- and T-Zones are small separate pegmatitic bodies to the north and northeast of the Nechalacho deposit.

The preferred genetic model is that of igneous differentiation within a closed-system with rare earth element concentration within a residual magma, aided by depression of the crystallization temperature of the magma by fluorine and possibly carbon dioxide.

1.7 EXPLORATION

The Thor Lake property has been systematically explored for several different metals at different deposits within the Property over a period of 30 years. The exploration focus has shifted as new discoveries were made, such as beryllium at the T-Zone deposit, were made, or in response to price increases for tantalum, yttrium and HREE, or for example, because of improved methods of recovery for tantalum.

Since taking over the Property in 2005, Avalon has sampled archived drill cores from the Nechalacho deposit to extend the area of known yttrium and REE mineralization. This led to the completion of a technical report by Wardrop in 2007 (Wardrop, 2007) which included a MRE and recommendations for further work, including diamond drilling.

Starting in August, 2007 and concluding in 2011, Avalon had conducted continuous drilling campaigns, except during freeze- and break-up periods. The details of these drilling campaigns are given in Section 10.

An airborne magnetic survey was completed in the winter of 2009 to aid in mapping the local geology and structures.

In addition to drilling, mapping and geophysical work, Avalon has supported four Masters' theses (two from McGill University and two in Switzerland) and two Doctoral theses (McGill University and the University of Windsor). These have contributed to the understanding of the regional and local geology

and detailed mineralogy of the Nechalacho deposit. In addition, the company has supplied logistical support to a Doctoral thesis (Carlton University) on the entire Blatchford Lake Complex.

The exploration work completed on the Nechalacho Basal Project has led to the interpretation of the geology and mineralization as provided in Section 7 and Section 8 of this report.

1.8 DRILLING

Since 1977, diamond drilling has been carried out intermittently by various operators over five separate mineralized zones at the Project. A total of 51 holes (5,648 m) had been completed on the Nechalacho deposit through 1988. As the geology was poorly understood, the drilling frequently did not penetrate the Basal Zone. Modern QA/QC practices were not followed and samples were analyzed for only four to six elements. Modern, inexpensive and reliable multi-element analytical methods were not available. Consequently, the historical drilling, in general, is not useful for the current MREs.

Avalon commenced diamond drilling on the Nechalacho deposit in July, 2007, the goal of which was to further delineate zones of REE and tantalum mineralization. The initial drilling (2007-2008) was completed largely at a spacing of approximately 150 m by 150 m. Eleven tightly spaced inclined holes were drilled to obtain a mini-bulk sample for continued metallurgical work on the REE-enriched zones. Six of the earlier holes were re-assayed to test for the full suite of REE, as was completed on the recent drilling.

Starting with 2007 and continuing throughout the Avalon drilling programs at the Nechalacho deposit, the core material collected was sampled using standard core drilling methods. Core samples and quality control materials have been submitted to independent commercial laboratories for assay analysis.

Subsequent to the publication of the last Technical Report in 2013 a further two drill programs were completed in the winter (HQ rig) and summer (PQ rig) of 2014. These programs, totalling 22 holes and 4,908 m, were mainly for the purpose of collecting further mineralized drill core for metallurgical purposes.

The Project drilling costs of 544 holes with a total length of 119,546 m, of NQ, PQ, and HQ diameter.

1.9 SAMPLE PREPARATION, ANALYSES AND SECURITY

All sample preparation, from the identification of sample intervals to bagging of drill core, was completed by Avalon employees. The subsequent preparation, such as crushing, grinding and further steps, were all completed by commercial laboratories, ALS Limited (ALS), Acme Analytical Laboratories (Vancouver) Limited (Acme) and Activation Laboratories Limited (Actlabs). For the drill programs of 2007-2008, the core splitter broke the core into smaller lengths to fit into the mechanical core splitter, split the core in half, and placed one half in a plastic sample bag with the other half placed back into its sequence in the core box to serve as a permanent record. Starting in 2009, it became standard practice when handling HQ core to initially split the core in half, then one half in quarters, with one quarter for assay, one quarter as library core and half core retained for metallurgical purposes. For core prior to 2009, limited metallurgical sampling was completed. Due to weight handling, and safety concerns, PQ core was sampled at 1 m intervals, while BTQ, HQ and NQ2 core at 2 m intervals.

Drill core samples were shipped generally by air from Thor Lake to Yellowknife except in unusual cases when high weight metallurgical batches were shipped by ice road or barge on the Great Slave Lake. The

standard shipment was 50 rice bags, or a total of 150 samples per shipment. The rice bags were zip-tied for security and were met and unloaded in Yellowknife by a representative of Discovery Mining Services (Discovery). In 2010-2011, for a limited period, Deton Cho Logistics, Yellowknife, completed the role taken at other times by Discovery. Discovery took the samples to its warehouse, inventoried all the samples, and produced a manifest which was sent electronically to the Thor Lake camp and accompanied the shipment. The samples were then taken by Discovery to the core processing facilities of initially Acme and subsequently ALS, both in Yellowknife. At this point, the laboratories took custody of the samples.

Core was sent to the preparation laboratory with specification that all core, should be crushed to 90% passing 10 mesh with a supplementary charge if necessary (see note concerning PQ core above).

Laboratories used by Avalon for preparation, as primary (for original samples), and as secondary (for assay checks) were Actlabs of Ancaster, ON, Acme in Vancouver, BC, and ALS in Vancouver, BC.

Avalon used a precedence algorithm for retaining the final assay values for the database, giving priority to the method that produced the most accurate results.

Repeat pulp analysis by the same laboratory and method, or field sample duplicates, were incorporated into a Maxwell database, and the priority ranking system is applied to retain the final value.

1.10 DATA VERIFICATION

The database used by Avalon for the resource estimate contained drill hole collar location, downhole deviation surveys, lithology, density, magnetic susceptibility, RQD, sample numbers, sample intervals, and analytical data. The database included all drilling data available at the end of the 2014 drilling program, which was the latest drilling campaign conducted at Nechalacho by Avalon.

Verifications performed by Micon included checks between database and randomly selected recent assay certificates (from the 2013 and 2014 drilling programs), confirmation of conversion factors for element-to-oxide transformations, and comparisons with historic versions of the database. Collar locations were reviewed, drill hole paths were inspected, and database validation routines were performed. No errors were identified in the data reviewed.

A site visit was conducted by Tudorel Ciuculescu, Micon's QP, on June 25, 2026, to assess the current state of the Property. Mr. Ciuculescu has previously visited the Nechalacho Rare Earth Elements Project on two other occasions, from April 25 -27, 2011 and October 9-11, 2012, as a QP for technical reports issued in 2011 and 2013 for Avalon.

The Project site was affected by the August, 2025 wildfire, with the camp, landing dock, core shack, and the core repository being destroyed in the fire. The core available currently at site is not appropriate for check sampling any longer, as the core boxes have been destroyed in the fire (Figure 12.1) and the core cannot be traced back to the corresponding drill hole, nor to its downhole location.

1.10.1 Quality Assurance/Quality Control Procedures and Results

Avalon inserted routinely into the project sample stream a variety of CRM materials, blanks, and field sample duplicates. Pulps were sent to alternative laboratories for check assaying.

Avalon monitored the assay results of its internal standards during routine analysis of drill core. Results for 15 rare earth elements and three rare metals (niobium, tantalum and zirconium) were tracked.

Batches were not failed if the samples analysed were below any economic levels (not mineralized), unless the standards results were very grossly out of the acceptable range. For mineralized material, batches were failed if several elements returned out of range values.

The mean of the standards showed good agreement between laboratories. Duplicate analyses showed low standard deviation. The drill core analyses were considered sufficiently reliable for resource estimation purposes.

1.11 MINERAL PROCESSING AND METALLURGICAL TESTING

The metallurgical recoveries used for the updated MRE are based on the testwork completed before the publication of the 2013 Feasibility Study NI 43-101 Technical Report (2013 FS). Results from metallurgical and/or mineralogical studies and flowsheet development undertaken subsequent to this have not been included in this Report.

The 2013 FS was prepared by SNC-Lavalin (SLI) on behalf of Avalon. The 2013 FS was completed in April, 2013 and the results summarized in an Avalon press release dated April 17, 2013 and in the NI43-101 Technical Report dated 31 May, 2013, prepared by Micon.

Extensive metallurgical testwork programs were completed at a number of different laboratories between 2008 and 2013. This included SGS Mineral Services, Lakefield, Ontario (SGS), XPS Industry Relevant Solutions (XPS), Sudbury, Ontario and FLSmidth (FLS), Salt Lake City, Utah. This Report only includes work used to generate final 2013 FS process design information and subsequent optimization testwork that was designed to enhance the metallurgical performance.

Cheetah Canada (Vital Metals) acquired from Avalon ownership of the minerals in, upon or under the area of the Mining Leases from surface to the depth limit of 150 metres above sea level, designated (the “Upper Zone” (UZ)) and Avalon has ownership of the minerals in, below the Upper Zone (the “Lower Zone” (LZ)). The testwork discussed in this Report summarises testwork that covers both of these zones although the results for Basal Zone mineralization are considered more representative of the mineral resources outlined in this Report.

The 15 lanthanide elements are divided into two groups. The ‘light’ rare earth elements (LREE) are those with atomic numbers 57 through 62 (lanthanum to samarium) and the ‘heavy’ rare earth elements (HREE) from 63 to 71 (europium to lutetium). Yttrium has properties more similar to the heavy lanthanides and is included within this group.

Other elements of potential economic interest include zirconium (Zr), tantalum (Ta) and Niobium (Nb).

Metallurgical analyses traced the performance of the cerium (Ce), yttrium (Y), Nb and Zr with the attention focused on the Zr as representing a valid indicator of the overall metallurgy. LREEs were tracked using Ce and La while the HREEs were tracked using Y. Mass balances were calculated using Bilmat™ (a mass balance program) to make minor adjustments to the actual assays while attributing balanced masses to each stream.

The mineral processing included comminution, magnetic separation, de-sliming, flotation, gravity separation, solid-liquid separation, hydrometallurgy, and refining.

1.12 MINERAL RESOURCE ESTIMATES

1.12.1 General Information

Avalon's geologists developed internally the geological model for Nechalacho. A block model was generated in Seequent Leapfrog Geo/EDGE for grade estimation purposes. The project database interpreted domain wireframes, and the block model was then provided to Micon.

Micon's QP reviewed and verified the drill hole database, the geological interpretation, and the block model with estimated grades. Micon adopted Avalon's block model, then the model was used to generate constraining wireframes for resource reporting. The block model was transferred to Datamine software and a minable shape optimizer (MSO) algorithm was used to produce underground mining shapes. Only the material captured in the underground mining wireframes were reported.

The resource estimate is compliant with the current CIM standards and definitions as specified by NI 43-101. The effective date of the current mineral resource estimate is July 14, 2026.

1.12.2 Database

The database for the July 14, 2026 MRE for the Nechalacho deposit contained 582 drill holes totalling 120,062 m. The database included 51 historical drill holes amounting to 5,588 m and 531 recent drill holes with a total length of 114,474 m. The estimate used samples assayed for rare metals, rare earths, and other elements, from 521 drill holes, 47 historical and 474 recent.

The 2026 drilling database was compared by Micon against previous databases and against selected sample assay certificates from drilling campaigns performed in 2013 and 2014, after the previous resource estimate. Micon's review found no significant errors in the database and Micon concluded that it was acceptable to be used as the basis for this MRE.

1.12.3 Geological Interpretation

The current geological model identifies two basal zones (Basal Zone 1 and 3) and five upper zones (Upper Zone 1, 2, 3, 4, and 6), along with a surrounding undifferentiated suite (Nechalacho Layered Suite).

The mineralized domains were modelled as sub-horizontal layers using logged lithology and a threshold of approximately 1% TREO, which represents a natural grade break observed in the deposit. Lower-grade material was included locally to maintain geological continuity. A total of seven mineralized domains were modelled. The remainder of the host intrusion was modelled as one-unit, the undifferentiated Nechalacho Layered Suite. The mineralized domains with the largest volume below the 150 m elevation are UZ-2 and BZ-1. The UZ-1 domain locally extends below 150 m.

1.12.4 Exploratory Data Analysis and Capping

Data from intercepts within the modelled domains BZ-1 and -3, UZ-1 to -4 and -6, and NLS, delineating the mineralized volumes, were used for exploratory data analysis. Assays summary statistics were reviewed and capping was applied to each element and domain, based on histograms, log probability plots, and visual examination of outliers. Assays were capped before compositing.

1.12.5 Compositing

Composites were generated for a nominal length of two metres within the mineralized domain wireframes, automatically adjusting interval lengths to avoid residuals at the end of drill holes. A minimum sample coverage of 50% was required to create a composite. Missing assays were ignored.

1.12.6 Rock Density

Specific gravity (SG) was measured on core samples taken at 5 m intervals within the hole, on samples approximately 10 cm long. Samples captured inside the modelled wireframes were reviewed to obtain average density values for each estimation domain.

Density values were estimated into the block model using the inverse distance squared (IDW²) method. Blocks that were not interpolated were assigned the average density value for each domain and the Overburden and Water were assigned default density values

1.12.7 Variography

Variography was performed for the two largest mineralized units present below the 150 m elevation, namely UZ-2 and BZ-1. The variograms were characterized by low nugget values and ranges up to approximately 200 m in the horizontal plane.

1.12.8 Block Model and Grade Estimation

A block model was created in Seequent EDGE to support the MRE. Grades were interpolated for parent blocks pertaining to the modelled domains BZ, UZ, and NLS. A maximum number of two composites per drill hole and variable anisotropy based on the mineralized domains were used. The domains BZ-1 and UZ-2 were estimated using Ordinary Kriging (OK). All other domains were interpolated using the inverse distance weighting squared (IDW²) method. The estimation was done in multiple passes.

The UZ-1 domain is mainly above the 150 m elevation threshold marking the upper boundary of Avalon's property. The rest of the modelled mineralized domains are much smaller in volume and contain only a small number of composites, with a much-reduced contribution to the mineral resources.

Individual oxide values in ppm were estimated and then summed to obtain the sum of the light (LREO), heavy (HREO) and total rare earth oxide (TREO) values of each resource block. The group of LREO comprises La₂O₃, Ce₂O₃, Pr₂O₃, Nd₂O₃ and Sm₂O₃. The group of HREO comprise Eu₂O₃, Gd₂O₃, Tb₂O₃, Dy₂O₃, Ho₂O₃, Er₂O₃, Tm₂O₃, Yb₂O₃ and Lu₂O₃, as well as Y₂O₃. The TREO value represents the sum of LREO and HREO.

A block NMR value was calculated by summing the contributions of all of the individual elements that generate revenue.

1.12.9 Reasonable Prospects for Eventual Economic Extraction

To assess the economic value of the Nechalacho Basal Deposit, Micon adopted a Net Metal Revenue (NMR) approach. The largest contributors to the revenue are neodymium (approximately 25% of the total value) and dysprosium (approximately 11%).

The NMR calculation formula is:

$$NMR(x_1, x_2, ..., x_n) = x_1 r_1 p_1 (V_1 - R_1) + x_2 r_2 p_2 (V_2 - R_2) + ... + x_n r_n p_n (V_n - R_n) - C_s / K - C_t / K$$

Where:

- x is Grade of each metal.
- r is Metallurgical recovery of each metal.
- R is Refining cost of each metal.
- p is Smelting recovery of each metal.
- V is Market price value of each metal.
- K is Metric tonnes of ore required to produce one metric tonne of concentrate.
- Cs is Smelter cost per tonne of concentrate.
- Ct is Transportation cost per tonne of concentrate.

Once all the economic assumptions were processed, NMR value was calculated for each estimated block in the model.

The formula used for calculating the block NMR value based on the estimated block grades was:

$$NMR = ([CeO_2]*0.900 + [La_2O_3]*0.433 + [Nd_2O_3]*69.915 + [Nd_2O_3]*21.894 + [Pr_6O_{11}]*78.995 + [Sm_2O_3]*3.543 + [Dy_2O_3]*201.525 + [Dy_2O_3]*137.698 + [Er_2O_3]*20.63 + [Eu_2O_3]*8.344 + [Eu_2O_3]*4.518 + [Gd_2O_3]*26.913 + [Gd_2O_3]*15.156 + [Ho_2O_3]*30.941 + [Lu_2O_3]*202.566 + [Lu_2O_3]*530.205 + [Tb_4O_7]*592.377 + [Tb_4O_7]*354.92 + [Y_2O_3]*7.539 + [Y_2O_3]*6.574 + [Tm_2O_3]*42.37 + [Yb_2O_3]*4.725 + [Nb_2O_5]*30.965 + [Ta_2O_5]*110.992 + [ZrO_2]*2.547)/1000000*1000$$

The original sub-blocked resource block model was transferred to a Datamine software package for generating optimized minable stope shapes with the Minable Stope Optimizer (MSO) module. The block model was re-blocked to a block size of 15 m by 15 m by 15 m for processing with the MSO. The resulting stope wireframes were used to report the mineral resources for the Project.

1.12.10 Classification

Mineral resources have been classified as Measured, Indicated or Inferred in accordance with the Canadian Institute of Mining, Metallurgy and Petroleum (CIM) Estimation of Mineral Resources and Mineral Reserves Best Practice Guidelines.

An initial numerical approach was used for the block model, then a manually modelled wireframes were used for final classification assignment. The drill hole spacing and grade continuity within the mineralized domains were taken into consideration. The drill hole spacings were 25 m, 50 m, and 200 m for the Measured, Indicated, and Inferred categories, respectively. Historical drill holes from the 1970s and 1980s were not used in the Classification.

The MRE for the Nechalacho Basal Project is summarized in Table 1.1, with a more detailed summary for the various elements in Table 1.2. The MRE was determined using an NMR cut-off value of US\$366.40/t with this value being the sum of mining, beneficiation, hydrometallurgy processing, G&A, and transportation costs, along with recoveries. The MRE has an effective date of July 14, 2026, and is contained within Mineable Shape Optimizer (MSO) shapes which include dilution to ensure consistency with CRIRSCO aligned definitions for reporting mineral resources.

The 2026 Nechalacho Bazal Project MRE is considered to be a reasonable representation of the mineral resources for the Project, based on the currently available data and geological knowledge. As a point of reference, the in-situ total rare earth oxide (TREO) is inventoried and reported by the intended processing method. TREO refers to the sum-total of the REOs in a deposit.

Table 1.1: Nechalacho Basal TREO Mineral Resource Statement (Effective Date July 14, 2026)

Classification	Tonnes (million t)	NMR (US\$)	TREO (%)	Nb ₂ O ₅ (%)	Ta ₂ O ₅ (%)	ZrO ₂ (%)
Measured	10.3	787.4	1.517	0.358	0.034	2.786
Indicated	48.3	776.4	1.489	0.351	0.034	2.685
Measured + Indicated	58.6	778.4	1.494	0.352	0.034	2.736
Inferred	130.6	676.2	1.306	0.338	0.030	2.433

Note: Resource Estimate notes are found below Table 1.2.

Table 1.2: Nechalacho Basal TREO Mineral Resource Statement with REO Details (Effective Date July 14, 2026)

Item/Element	Measured	Indicated	Measured + Indicated	Inferred
Tonnes (million t)	10.3	48.3	58.6	130.6
NMR (US\$)	787.4	776.4	778.4	676.2
TREO (%)	1.517	1.489	1.494	1.306
La ₂ O ₃ (%)	0.246	0.241	0.242	0.216
CeO ₂ (%)	0.573	0.561	0.563	0.510
Pr ₆ O ₁₁ (%)	0.070	0.069	0.069	0.063
Nd ₂ O ₃ (%)	0.267	0.263	0.264	0.241
Sm ₂ O ₃ (%)	0.058	0.057	0.057	0.049
Eu ₂ O ₃ (%)	0.007	0.007	0.007	0.006
Gd ₂ O ₃ (%)	0.049	0.049	0.049	0.041
Tb ₄ O ₇ (%)	0.007	0.007	0.007	0.006
Dy ₂ O ₃ (%)	0.037	0.037	0.037	0.028
Ho ₂ O ₃ (%)	0.006	0.006	0.006	0.005
Er ₂ O ₃ (%)	0.016	0.016	0.016	0.011
Tm ₂ O ₃ (%)	0.002	0.002	0.002	0.002
Yb ₂ O ₃ (%)	0.013	0.012	0.013	0.009
Lu ₂ O ₃ (%)	0.002	0.002	0.002	0.001
Y ₂ O ₃ (%)	0.162	0.159	0.159	0.117

Resource Estimate Notes:

1. The effective date of the Mineral Resource Estimate is July 14, 2026.
2. The in-situ total rare earth oxide (TREO) is inventoried and reported by the intended processing method. TREO refers to the sum-total of the REOs in the deposit. TREO includes the heavy rare earth oxides (HREO) consisting of Y₂O₃, Eu₂O₃, Gd₂O₃, Tb₄O₇, Dy₂O₃, Ho₂O₃, Er₂O₃, Tm₂O₃, Yb₂O₃ and Lu₂O₃, and light rare earth oxides (LREO) consisting of La₂O₃, CeO₂, Pr₆O₁₁, Nd₂O₃, and Sm₂O₃.
3. The MRE was determined using an NMR cut-off value of US\$366.40/t.
4. The mineral resources described above have been prepared in accordance with the current Canadian Institute of Mining, Metallurgy and Petroleum Standards and Practices.
5. The mineral resources reported were considered to be mined using an MSO shape for a Longhole mining method. The original block model was re-blocked to 15 m x 15 m x 15 m. Mineralized blocks outside of the underground mining area are not considered to be part of the MRE.

6. For the purpose of the block model and future economic studies, uranium and thorium were modelled as deleterious elements.
7. The MRE has been classified according to the accepted definitions of Measured, Indicated and Inferred Resources.
8. Mineral Resources that are not Mineral Reserves do not have demonstrated economic viability.
9. The tonnes and metal oxide contents are rounded to reflect that the numbers are an estimate and any discrepancies in the totals are due to the rounding effects.
10. Micon's QPs have not identified any legal, political, environmental, taxation, socio-economic or other factors that could materially affect the potential development of the MRE.

1.13 NMR SENSITIVITY ANALYSIS

A sensitivity analysis has been conducted on the basis of different NMR US\$/t value cut-offs inside the mineralization wireframes (UZ and BZ). For this exercise the MSO shapes were not used, as there is a very good continuity of the mineralization throughout the modelled domains, with small pockets of internal waste. All the classified blocks from the UZ and BZ domains, situated below 150 m elevation were considered. A variable cut-off NMR value was used to retain the resources above specific values.

The analysis indicated that the mineral resources were not sensitive to the cut-off values below US\$500/t, with the current estimate using a break-even cut-off value of US\$366.40/t.

1.14 INTERPRETATION AND CONCLUSIONS

Exploration by Avalon has identified a potentially large deposit of REEs at the Nechalacho Basal Project. The majority of Avalon's work predates 2013, with some 2013 and 2014 drilling which had not been completed at the time of Avalon's previous 2013 NI 43-101 Technical Report.

Avalon's updated 2026 MRE can be used as the basis for further exploration studies and further economic studies.

1.14.1 Conclusion

Through its work, Avalon has demonstrated that the Nechalacho deposit hosts a rare earth mineral deposit which warrants further investigation towards a potential production decision.

1.15 RISKS AND UNCERTAINTIES

All MREs have a degree of uncertainty or risk associated with them due to technical, environmental, permitting, legal, title, taxation, socio-economic, marketing or political factors, among others. All MREs also present their own opportunities. Table 1.3 outlines some of the Nechalacho Basal Project risks, their potential impact and possible means of mitigation, as well as some of the Nechalacho Basal Project's opportunities and potential benefits.

Table 1.3: Risks, Mitigations and Opportunities for the Nechalacho Basal Project

Risks	Description and Potential Impact	Possible Risk Mitigation
Local grade continuity issues	Poor grade forecasting.	Undertake further infill drilling to establish continuity of mineralization.
Local density variability	Misrepresentation of the in-situ tonnes, which also affects the in-situ metal content estimate.	It is recommended to develop a procedure of collecting density measurements spatially throughout the deposit at regular intervals in all rock/alteration types and implement their use in future mineralization models.
Geological Interpretation	If the geological interpretation and assumptions (geometry and continuity) used are inaccurate, then there is a potential lack of grade or continuity.	Continue infill drilling to confirm the grade continuity which will also tend to upgrade the mineral inventory to at least the Indicated category.
Metallurgical recoveries are based on limited testwork	Recovery might be lower than that which is currently being assumed or vary with rock type.	Conduct additional metallurgical tests on all rock types.
Difficulty in attracting experienced professionals	Technical work quality will be impacted and/or delayed.	Refine recruitment and retention planning and/or make use of consultants.
Conceptual mine plans in future are based on limited geotechnical testwork	Mining methods and dimensions selected might be different from what is currently being assumed.	Incorporate more comprehensive geotechnical data from drilling. Conduct additional geotechnical assessment and analysis.
Environmental or social Issues	Further studies may be delayed, and the Project may not advance due to environmental or social issues	Conduct meetings with all potential stake holders throughout the exploration and advanced development stages. Hire locals whenever possible.
Surface exploration drilling	Potential to identify additional prospects and resources.	Adding resources increases the economic value of the Project.
Potential improvement in metallurgical recoveries	Additional metallurgical testwork can be performed to determine if recovery can be improved through ore sorting, flotation or cyanidation.	Lower capital and operating costs.
Potential improvement in mining assumptions	Geotechnical analysis may determine that mining methods and dimensions can be improved.	Improved mining productivity and lower costs.
Potential additional economic minerals	All potentially economic minerals must be placed in the model such that changes in metal prices potentially allow for these to be added to the MRE.	Further metallurgical testwork to determine if any other minerals can be recovered economically, than those already identified.

1.16 RECOMMENDATIONS

1.16.1 Budget for Further Work

The budget presented in Table 1.4 summarizes the estimated costs for completing further exploration programs, metallurgical testwork, begin baseline studies, conduct social outreach programs with the various local groups and fast track further studies related to the Nechalacho Basal Project. The budget is estimated to be 10 million Canadian dollars.

Table 1.4: Nechalacho Basal Project, Recommended Budget for Further Work

Item	Budget Percentage	Budget (CD\$)	Description
Study Management and Administration	20%	2,000,000.00	Project management, quality, coordination and administration
Process Plant Design and Engineering	30%	3,000,000.00	Flowsheet development, PFD/PIDs, mechanical design, layout & equipment
Site Infrastructure Design and Engineering	25%	2,500,000.00	Site services, roads, power distribution, accommodation, water supply
Procurement and Estimation	10%	1,000,000.00	Market engagement for vendor pricing only, production of AACE Class 3 estimate
Geology and Mining	15%	1,500,000.00	Geological model, mine plan, pit designs, waste dump designs, fleet plan
Total	100%	10,000,000.00	-

1.16.2 Further Recommendations

Micon recommends further exploration and development of the Nechalacho Basal Project. It is recommended that Avalon continues with exploration at the Nechalacho deposit, as well as other REE mineralization showings on the Property. It is also recommended that Avalon continues to conduct metallurgical testwork including different processing options for the varied rock assemblages and different REE minerals at the Nechalacho Basal Project. To that end, Micon makes the following recommendations for the Nechalacho Basal Project.

1. Undertake further mapping and sampling across the mineral deposits, paying particular attention to changes in alteration and geology which may affect metallurgical responses.
2. Conduct further density sampling to see if there is any variation between the mineralized zones or geological units.
3. Complete further resource infill and expansion drilling on the Nechalacho deposit to increase the confidence of the continuity of the REE mineralization and grade. Several drill holes from the 2007-2014 drilling programs should be twinned to mitigate the loss of core in the August 2025 wildfire.
4. Continue mineral characterization including that for sulphides as well as uranium and thorium, and REE ore deportment studies to support environmental design, planning for worker and public safety, metallurgical testwork, and process design.
5. Further metallurgical testwork should be conducted on the Nechalacho deposit and other mineralized showings to see if the metallurgical recoveries are different in the various geological rock types.
6. Conduct further diamond drill testing of the secondary exploration targets at the Nechalacho Basal Project as potential secondary sources of mineralization.

2 INTRODUCTION

2.1 ISSUER

Avalon Advanced Materials Inc. (Avalon) has retained Micon International Limited (Micon) to independently review and verify the Mineral Resource Estimate (MRE) for the Nechalacho Basal Project (the Project or Property) located approximately 110 km east of Yellowknife in the Northwest Territories, Canada, and to compile a Canadian National Instrument (NI 43-101) Technical Report disclosing the results of the MRE. The Project MRE has also been disclosed in an American S-K 1300 Technical Report.

2.2 PRINCIPAL SOURCES OF INFORMATION

Micon's review of the Nechalacho Basal Project was based on published material researched by Micon, as well as data, professional opinions and unpublished material submitted by the professional staff of Avalon or its consultants. Much of these data came from reports prepared and provided by Avalon.

The descriptions of geology, mineralization and exploration used in this Report are taken from reports prepared by various organizations and companies or their contracted consultants, as well as from various government and academic publications. The conclusions of this Report use, in part, data available in published and unpublished reports supplied by the companies which have conducted exploration on the Property, and information supplied by Avalon. The information provided to Avalon was supplied by reputable companies and Micon has no reason to doubt its validity. Micon has used the information where it has been verified through their own review and discussions.

In cases where photographs, figures or tables were supplied by other individuals or Avalon, the source is referenced below that item. Figures or tables generated by Micon are generally unreferenced.

2.3 QUALIFIED PERSON SITE VISIT AND PERSONAL INSPECTION

A site visit was conducted by Tudorel Ciuculescu, Micon's QP, on June 25, 2026, to assess the current state of the Property. Mr. Ciuculescu has previously visited the Nechalacho Basal Project on two other occasions, on of April 25 – 27, 2011 and of October 9 - 11, 2012, as a QP for technical reports issued in 2011 and 2013 for Avalon.

This Report discloses technical information, the presentation of which requires Micon to derive sub-totals, totals and weighted averages that inherently involve a degree of rounding and, consequently, introduce a margin of error. Where these occur, Micon does not consider them to be material.

The conclusions and recommendations of this Report reflect Micon's best independent judgment in light of the information available to it at the time of writing.

2.4 QUALIFIED PERSONS

Table 2.1 shows Micon QPs, responsibility, and the site visits for this Report.

Table 2.1: Qualified Persons, Areas of Responsibility and Site Visits

Qualified Person	Title	Area of Responsibility	Site Visit
Tudorel Ciuculescu, P.Geo.	Principal Resource Geologist	Sections 1, 7 to 12, 14, and 23 to 27	June 25, 2026
Richard M. Gowans, P.Eng.	Principal Metallurgist	Sections 1.11, 13	None
William J. Lewis, P.Geo.	Principal Geologist	Sections 2 to 6, and 19	None

Qualified Person	Title	Area of Responsibility	Site Visit
NI 43-101 Sections not applicable to this report		Sections 15, 16, 17, 18, 20,21, 22,	

2.5 UNITS OF MEASURE AND ABBREVIATIONS

All units of measurement used in this Report are metric unless otherwise stated. Tonnages are reported as metric tonnes (t). Rare earths, rare earth oxides, rare metals, or rare metal oxides are reported in weight percent (%) or ppm. Other references to geochemical analysis are in ppm or parts per billion (ppb) as reported by the originating laboratories. Unless otherwise stated, all currency amounts and commodity prices are stated in U.S. dollars (US\$) for Canadian dollars CD\$.

Abbreviations used in this report are identified in Table 2.2. Appendix I contains a glossary of mining and other related terms that are potentially used in this report.

Table 2.2: Abbreviations and Acronyms

Term	Abbreviation / Acronym
Atomic absorption	AA
Canadian Dollars	CAD
Canadian Institute of Mining, Metallurgy and Petroleum	CIM
CIM Mineral Exploration Best Practice Guidelines	The Exploration Guidelines
Canadian National Instrument 43-101	NI 43-101
Certified reference materials	CRM or standards
Cubic metre(s)	m ³
Degree(s)	°
Degrees Celsius	°C
Detection limit	DL
Diamond drill hole	DDH
Digital Terrain Model	DTM
Fire assay	FA
Environmental Impact Statement	EISA
Geographic Information System	GIS
Global Positioning System	GPS
Gram(s)	G
Grams per cubic centimetre	g/cm ³
Grams per litre	g/L
Grams per tonne	g/t
Greater than	>
Gold	Au
Hectare(s)	Ha
Inch(es)	In
Induced polarization	IP
Inductively coupled plasma atomic emission spectrometry	ICP-AES
Instrumental neutron activation analysis	INAA
Kilogram(s)	Kg
Kilometre(s)	km
Less than	<
Little magnetic lows	Mag Lows
Loss on ignition	LOI

Term	Abbreviation / Acronym
Metre(s)	m
Metres above sea level	masl
Millimetre(s)	mm
Millimetres per year	mm/y
Million	M
Million ounces	Moz
Million years old	Ma
Minute(s)	min
Net smelter return	NSR
Not Available	NA
Not Sampled	NS
Ounce(s) (troy ounce)	Oz
Ounces per tonne	oz/t
Million years old	Ma
Parts per billion	ppb
Parts per million	ppm
Percent	%
Reverse Circulation drilling	RC
Rock quality designation	RQD
Quality assurance/quality control	QA/QC
Qualified Person(s)	QP(s)
Silver	Ag
Square metre(s)	m ²
Square kilometre(s)	km ²
Système International d'Unités	SI
Tonne(s)	t
United States dollars	US\$
Universal Transverse Mercator	UTM
Weight	Wt.
Year	Y

Source: Micon, 2026.

3 RELIANCE ON OTHER EXPERTS

The QP authors of this Technical Report state that they are qualified persons for the areas included in this Report. The QPs have relied and believe there is a reasonable basis for this reliance, upon the following other expert reports, which provided information regarding mineral rights, surface rights, and environmental status in sections of this Report as noted below.

3.1 MINERAL TENURE AND SURFACE RIGHTS

The QPs have not reviewed the mineral tenure, nor independently verified the legal status, ownership of the Project area or underlying property agreements. The QPs have fully relied upon, and disclaim responsibility for, information supplied by Avalon. This information is used in Section 4 of this report.

3.2 ROYALTIES AND INCUMBRANCES

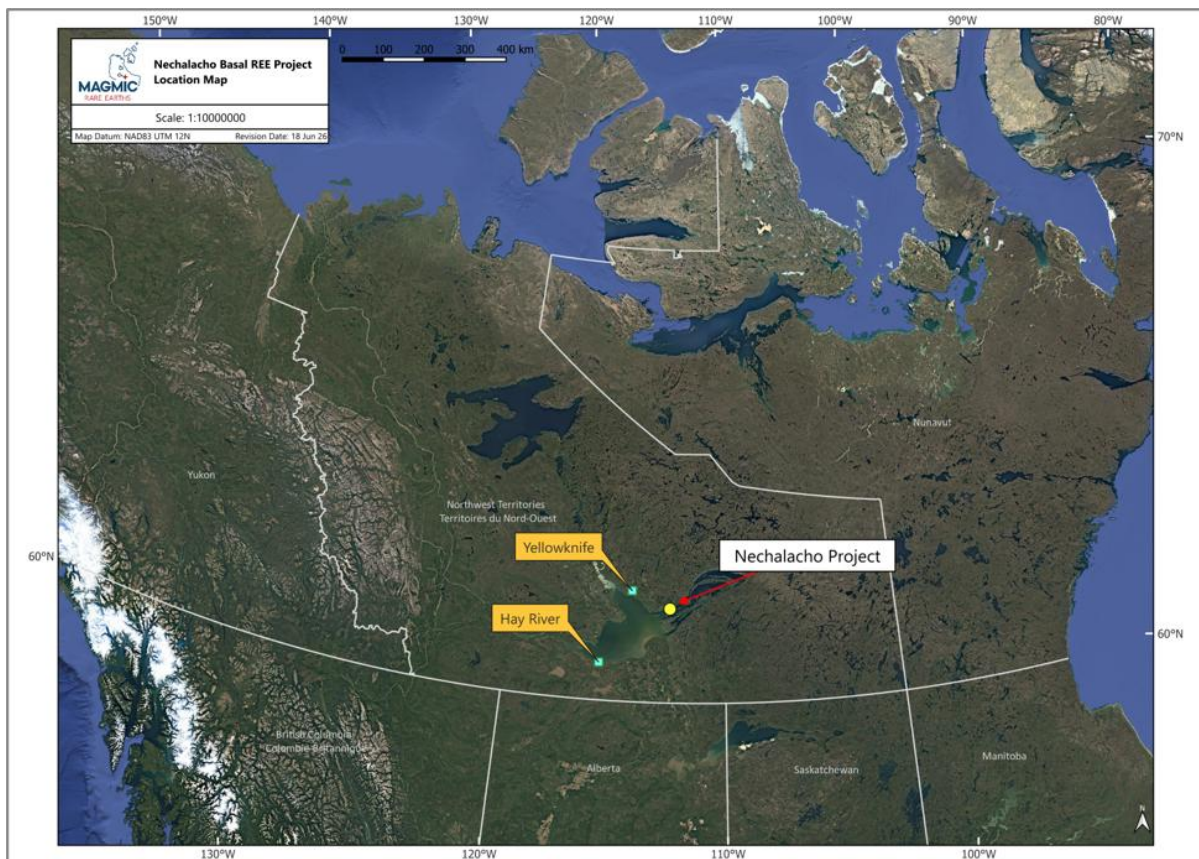
The QPs have not reviewed the royalty agreements nor independently verified the legal status of the royalties and other potential incumbrances. The QPs have fully relied upon, and disclaim responsibility for, information supplied by Avalon. This information is presented in Section 4 of this report.

4 PROPERTY DESCRIPTION AND LOCATION

4.1 LOCATION

The Nechalacho Basal Project is located at Thor Lake on the north shore of the Great Slave Lake in the Northwest Territories (NWT), Canada. The Project is approximately 110 km east of the territorial capital of Yellowknife and 5 km north of the Hearne Channel. Figure 4.1 shows the location of the Project.

Figure 4.1: Location Map for Nechalacho Basal Project



Source: Figure supplied by Avalon, June 2026.

The Project lies within the Mackenzie Mining District of the Northwest Territories and Thor Lake is shown on the Canadian National Topographic System (NTS) map sheets 851/1 and 851/2. It is located at approximately 62°06'30" N and 112°35'30" W (6,886,500 mN and 417,000 mE).

4.2 LEGAL SURVEY AND LAND TENURE

The Nechalacho Basal Project mineral leases have been legally surveyed and are recorded on a Plan of Survey, Number 69408 M.C. in the Legal Surveys Division of the Federal Department of Energy, Mines and Resources, Ottawa, now Natural Resources, Canada. The perimeter boundaries of the lease lots were surveyed as part of the leasing requirements.

The Nechalacho Basal Project contains five contiguous mineral leases (totalling 5,786.1 ha, or 14,298 acres).

Pertinent data for the mining leases are summarized in Table 4.1.

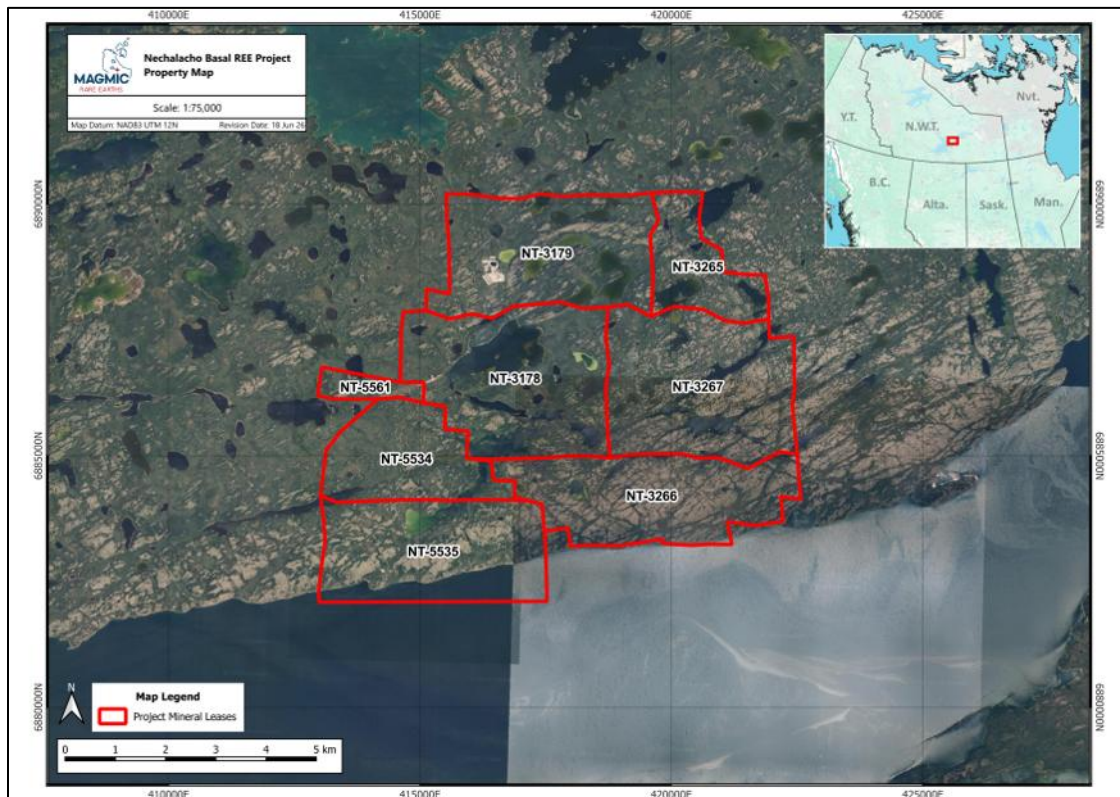
Table 4.1: Summary for the Nechalacho Basal Project Mineral Leases

Lease Number	Area (ha)	Legal Description	Effective Date	Expiration Date
3178	1,053	Lot 1001, 85 1/2	5/22/1985	5/22/2027
3179	939	Lot 1000, 85 1/2	5/22/1985	5/22/2027
3265	367	Lot 1005, 85 1/2	3/2/1987	3/2/2029
3266	850	Lot 1007, 85 1/2	3/2/1987	3/2/2029
3267	1,040	Lot 1006, 85 1/2	3/2/1987	3/2/2029
5534	550	Lot 1012 (1/2)	10/25/2018	10/24/2039
5535	894	Lot 1013 (1/2)	10/25/2018	10/24/2039
5561	93.1	Lot 1011 (1/2)	10/25/2018	10/24/2039
Total	5,786.10	-	-	-

Source: Table provided by Avalon, June 2026.

Figure 4.2 shows the Nechalacho Basal Project mineral leases and claims map.

Figure 4.2: Nechalacho Basal Project Mineral Lease Map



Source: Figure supplied by Avalon, June 2026.

The mining leases have a 21-year life, and each lease is renewable in 21-year increments. Annual payments of CD\$2.47/ha (CD\$1.00 per acre) are required to keep the leases in good standing. Avalon owns 100% of all of the leases subject to various legal agreements described in Section 4.3.

4.3 OWNERSHIP

In May, 2005, Avalon purchased from Beta Minerals Inc. (Beta) a 100% interest and full title, subject to royalties, in the Thor Lake property which hosts the Nechalacho Basal Project.

On January 30, 2019, Avalon announced that it had signed a binding Terms Sheet under which Cheetah Resources Pty Ltd. (Cheetah) acquired ownership of the near surface resources above a depth of 150 m above sea-level, principally the T-Zone and Tardiff Zones for a total consideration of CD\$5 million while Avalon retained ownership of the deeper resources in the Basal Zone (BZ) which was the subject of the 2013 Feasibility Study. Avalon will continue to manage work programs on the Property and retain its 3% NSR type royalty.

On October 30, 2019, Avalon announced that it had received the final installment payment of the CD\$5 million purchase price for the near-surface resources on the Nechalacho Basal Project from Cheetah. It was also noted in Avalon's press release that on October 22, 2019, Vital Metals Ltd. completed its acquisition of privately held Cheetah following receipt of shareholder approval earlier in the month.

On May 19, 2026, Avalon announced that it established Magmic Rare Earths Inc. (Magmic) as the dedicated subsidiary through which Avalon intends to advance the Nechalacho Basal Project. The structure is expected to provide a focused platform for project-level development, strategic partnerships, government funding, and potential third-party capital participation.

4.4 ROYALTY INTERESTS

One underlying royalty exists on the Nechalacho Basal Project and originated with Highwood Resources Ltd. (Highwood), the initial developer of the Property. Signed in 1977, the Murphy Royalty Agreement entitles J. Daniel Murphy to a 2.5% NSR royalty which applies to the entire Nechalacho Basal Project and is capped at an escalating amount indexed to the rate of inflation. Under the agreement, Avalon is permitted to purchase the royalty at the commencement of production at a fixed, inflation-adjusted price.

In July, 2012 Avalon bought out the 3% Calabras/Lutoda NSR royalty on the Nechalacho Basal Project which entitled Calabras (Canada) Ltd. and Lutoda Holding Ltd. to NSR royalties of 2% and 1%, respectively.

4.5 FIRST NATION COMMUNITIES

The Nechalacho site is located within the Akaitcho Dene asserted traditional territory and is subject to the comprehensive land claim negotiation between the Akaitcho Dene First Nations (Yellowknives Dene First Nation (Dettah), Yellowknives Dene First Nation (Ndilo), Lutsel K'e Dene First Nation and Deninu Kue First Nation) and the Federal government.

The socio-economic study area for the Nechalacho site consists of those communities that are more likely to experience effects due to their relatively close proximity to the proposed site, as well as their possible contributions to the Project workforce. On this basis, the primary study communities related to the Nechalacho site include Yellowknife, Ndilo, Dettah, Lutsel K'e and Fort Resolution.

Present non-traditional land uses near the Nechalacho site include mineral exploration, harvesting, recreation and tourism. Traditional harvesting continues to be an important part of Aboriginal cultures in the Northwest Territories.

Avalon has entered into Negotiation Agreements with the Lutsel K'e Dene First Nation (LKDFN), Yellowknives Dene First Nation (YKDFN), the Deninu Kue First Nation (DKFN), the North Slave Métis Alliance, and the NWT Métis Nation. As of February 2014, Avalon has finalized an Accommodation Agreements with the DKFN and a Participation Agreement with the NWT Métis.

4.6 PERMITS

A two-year exploration permit was originally granted to Avalon effective July 2007 by the Mackenzie Valley Land and Water Board (MVLWB) which administers land use permits.

The land use permit has been renewed since it was first granted, with the latest permit issued for a five-year term from May 27, 2025, to May 26, 2030.

Permits obtained since 2014, for the Nechalacho Basal Project are listed in Table 4.2.

Table 4.2: Permits for the Nechalacho Basal Project

Permit Type	Issued To	Key Cover	Expiry Date
Land Use Permit (Class A)	Avalon Rare Metals Inc. (2014 – original).	Pre-construction, site preparation., camp, infrastructure.	Superseded
Water Licence (Class B)	Avalon Rare Metals Inc.	Water usage and waste disposal.	Superseded
Land Use Permit	NWT Rare Earths Ltd. (Avalon and Cheetah co-joint)	Cheetah demonstration project and Basal Zone early works.	29-Nov-25
Water Licence	NWT Rare Earths Ltd. (Avalon and Cheetah co-joint)	Cheetah demonstration project and Basal Zone early works.	29-Nov-27
Land Use Permit (Renewal)	NWT Rare Earths Ltd.	Continuation of site activities.	26-May-30
Environmental Assessment	Avalon Rare Metals Inc.	Approved November 2013.	On hold

Source: Table supplied by Avalon, June 2026.

4.6.1 Permit Coverage

New Land Use Permit (2022): Issued to NWT Rare Earths Ltd., this covers new demonstration activities by Cheetah (the Cheetah Demonstration Project) and early works in the Basal Zone, a higher-grade rare-earth portion of the deposit.

New Water Licence (2025): Parallels the new land use permit in coverage and duration, specifically for water-related activities tied to early implementation programs.

Renewal Land Use Permit (2025): Extends the authorization of permitted site works through 2030, ensuring continuity of development activities under the NWT Rare Earths Ltd. entity.

The entity NWT Rare Earths Ltd. (50/50 joint venture between Avalon and Cheetah) now holds exploration permits and associated authorizations, including the more recent permits and licence renewals.

4.7 ENVIRONMENTAL LIABILITIES

Avalon has carried out reclamation of areas on the Property disturbed by previous exploration programs. Among the activities completed are the use of historic waste piles for construction of the

airstrip, refurbishment of part of the trailer camp for camp and office facilities and consumption of diesel fuel remaining in the tank farm for exploration activities.

4.8 MICON QP COMMENTS

Micon QPs are not aware of any significant factors or risks besides those discussed in this Report that may affect access, title or right or ability to perform work on the Property by Avalon or any of its contractors. It is Micon's understanding that further permitting and environmental studies would be required if the Project were to advance beyond the current exploration stage.

The Nechalacho Basal Project is currently an exploration property and has no outstanding environmental liabilities from prior mining activities. The Nechalacho Basal Project area is large enough to accommodate the necessary infrastructure to support a mining operation, should the economics of the mineral deposits be sufficient to warrant production.

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5 ACCESSIBILITY, CLIMATE, LOCAL RESOURCES, INFRASTRUCTURE AND PHYSIOGRAPHY

5.1 ACCESSIBILITY

The Nechalacho site is located approximately 110 km east of Yellowknife and 5 km north of the Hearne Channel on the East Arm of the Great Slave Lake.

There is no road access into the Nechalacho site. It is accessible by barge during the summer months and year-round by aircraft. The site has been serviced using float planes and ski planes, with helicopter support over freeze-up and break-up.

A 30.4 m wide by 305 m long airstrip provides all-year fixed-wing service to the site, if necessary. In addition, ice roads on the Great Slave Lake have been utilized to mobilize equipment to the site in winter as and when required.

5.2 CLIMATE

Air temperature at the Nechalacho site recorded displays typical seasonal fluctuations, with warm temperatures occurring from late May to August, with the coldest period occurring from December to February. The monthly average temperatures expected at site range from -26°C in January to 16°C in July. Monthly average temperatures rise above 0°C for significant periods of time in May and fall below 0°C for significant periods in October.

Average annual total precipitation at Thor Lake is approximately 275 mm. Rainfall predominates during May to October, and snowfall predominates during October to April.

Six snow courses were established throughout the Nechalacho site in March, 2009. Mean snow depths varied from 31.3 cm to 66.6 cm in the vicinity of Thor Lake. Forested areas that were generally less exposed to wind had a tendency to accumulate the thickest snowpacks.

Relative humidity is generally highest during the winter months, while summers are generally drier.

The dominant wind direction at the site is from the east-northeast during November to June. Wind directions had a tendency to be more dispersed from July to October; however, an east-northeast trend was still evident. The average hourly wind speed at 20 m above ground level is 4.54 m/s. Wind speeds at 20 m above ground are generally in the range of 2 m/s to 6 m/s, with occasional wind speeds exceeding 10 m/s.

5.3 PHYSIOGRAPHY AND VEGETATION

The Nechalacho landscape consists of a gently undulating relief that gradually decreases in elevation towards the Great Slave Lake. Elevation ranges from 235 m along the shore of Thor Lake, to around 265 m on top of the highest bedrock knobs. Elevations progressively drop to approximately 160 m along the north shore of the Great Slave Lake.

The landscape is dominated by subdued topography and fractured bedrock plains. Black spruce, jack pine, paper birch, and trembling aspen form discontinuous forested patches that are interspersed with exposed rock. Wetlands and peat plateaus commonly form around the margins of shallow lakes, as well as in wetter depressions and lowlands.

Dock facilities at camp site were destroyed in the wildfire in 2025 and will need to be rebuilt. The existing access road to the Nechalacho site from the dock, a distance of approximately 8 km will need to be upgraded. During the winter, heavy equipment and bulk materials can access the site using winter roads on the ice cover of the Great Slave Lake.

Northern Transportation Company Limited (NTCL) now known as Marine Transportation Services (MTS) operates a commercial barging service on the Great Slave Lake and serves the communities of Lutsel K'e and Fort Reliance from the Port of Hay River. Hay River is a major transportation hub for the Northwest Territories and is one of Canada's largest inland ports. Hay River also has the only rail connection in the Northwest Territories.

Most lakes in the area do not freeze to the bottom and process water will be available year-round. Freeze-up commences in late October and break-up of the majority of the lakes in the area is generally complete by late May. The Great Slave Lake freezes later and remains ice-free longer than the smaller lakes.

5.4 LOCAL RESOURCES AND INFRASTRUCTURE

Yellowknife (estimated 2026 population 23,187) and Hay River (estimated 2026 population 3,291) are two key transportation hubs in the Northwest Territories. Both communities have very good supporting infrastructure and are located in relatively close proximity to the Nechalacho site. The local economy is generally dependent upon government services, although both communities act as transit sites for mining and mineral exploration activities throughout the Northwest Territories and Nunavut.

The North Slave region has experienced significant economic growth over the last number of decades. A considerable number of residents worked directly for the major diamond mines, or with companies supplying mining goods and services. Development of new mines will further expand employment and business opportunities as the diamond mines cut back or close. Opportunities also exist to expand services in retail trade and tourism. The traditional economy also remains strong in the Northwest Territories through hunting, harvesting, and arts and crafts.

Development plans are also being considered to expand the region's hydro capacity. Other industries include tourism, transportation, manufacturing, commercial fishing, forestry, trapping and arts and crafts.

The Thor Lake project is situated in the Akaitcho Territory, an area that is subject to a comprehensive land claim negotiation involving communities belonging to the Yellowknives Dene, Lutsel K'e Dene and the Deninu Kue First Nations. The Yellowknives Dene consists of two communities, known as Ndilo and Dettah, each having over 250 residents. Ndilo is located on Latham Island in the northern part of the City of Yellowknife. Dettah, accessible by road, is located southeast of Yellowknife, across Yellowknife Bay. The Yellowknives Dene assert that the Project lies within their traditional territory known as the Chief Drygeese Territory.

The community of Lutsel K'e is located on Christie Bay on the East Arm of the Great Slave Lake and is accessible by air or boat. It has a population of over 250. Fort Resolution is located on the southeast coast of the main body of the Great Slave Lake in Resolution Bay. The Deninu Kue First Nation is based in Fort Resolution and has a population of over 500. The community is serviced by road from Hay River and by air.

The town of Hay River, located on the south shore of the Great Slave Lake where the Hay River enters the lake, extends south from the lake along the west bank of the river. The largest Aboriginal community in the Hay River area is the Katlodeeche First Nation, often referred to as the Hay River Reserve, which is located on the east bank of the Hay River across from the town. Hay River is accessible by air, rail and by using Highway 3 from Edmonton, Alberta.

Both the north and south sides of the Great Slave Lake are occupied by two groups of Métis. The North Slave Métis Alliance (NSMA) is located in Yellowknife, while the Northwest Territory Métis Nation is located in Fort Smith (and represents the communities of Fort Smith Métis, Fort Resolution Métis and Hay River Métis).

Yellowknife uses diesel and hydroelectric facilities to generate its power, and this is the closest source of power to the Nechalacho Basal Project. However, there is no transmission line and the generating capacity is limited.

Water is available at Thor Lake from any one of the surrounding lakes.

5.5 MICON QP COMMENTS

The land package at the Nechalacho Basal Project is sufficiently large that location of the necessary infrastructure to conduct mining can be easily accommodated. In addition, a significant portion of the the workforce and suppliers will be sourced from Yellowknife.

6 HISTORY

6.1 GENERAL EXPLORATION HISTORY FOR THE PROJECT

The Nechalacho Basal Project area was first mapped by J.F. Henderson and A.W. Joliffe of the Geological Survey of Canada (GSC) in 1937 and 1938. The first staking activity at the Project dates from July, 1970 when the Odin 1-4 claims were staked for uranium by K.D. Hannigan. Shortly after, the Odin claims were optioned to Giant Yellowknife Mines Ltd. and, in 1970, were acquired by Bluemount Minerals Ltd.

In 1971, the GSC outlined a radioactive anomaly over the Project area. A. Davidson of the GSC initiated mapping of the Blatchford Lake intrusive complex. It subsequently became clear that this radiometric anomaly was largely due to elevated thorium levels in the T-Zone within the Project area.

In 1976, Highwood Resources Ltd. (Highwood) discovered niobium and tantalum on the Project. From 1976 to 1979, exploration programs included drilling, geological mapping, sampling and trenching on the Lake, Fluorite, R-, S- and T-Zones. Drilling of 22 holes was completed, seven on the Lake Zone. This work resulted in the discovery of significant concentrations of niobium, tantalum, yttrium and Rare Earth Elements (REEs). Recognizing a large potential resource at the Project, Placer Development Ltd. (Placer) optioned the Project from Highwood in March, 1980 to further investigate the tantalum and related mineralization. The exploration included drilling 21 holes between 1980 and 1981. Preliminary metallurgical scoping work was also conducted, but Placer relinquished its option in April, 1982.

From 1983 to 1985, the majority of the work on the Project was concentrated on the T-Zone and included geochemical surveys, beryllometer surveys, surface mapping, significant drilling, surface and underground bulk sampling, metallurgical testing and a detailed evaluation of the Project by Unocal Canada. However, seven holes were also drilled in the Lake Zone (later renamed the Nechalacho deposit) to test for high grade tantalum-niobium mineralization. In August, 1986, the Property was joint ventured with Hecla Mining Company of Canada Ltd. (Hecla). However, in 1990, Hecla withdrew from the project. In 1990, control of Highwood passed to Conwest Exploration Company Ltd. (Conwest) and the Project remained dormant until 1996. Through subsequent ownership changes, Highwood became controlled by Royal Oak Mines Ltd. (Royal Oak).

Royal Oak's subsequent bankruptcy in 1999 resulted in the acquisition of the control block of Highwood shares by Dynatec Corporation (Dynatec). In 2000, Highwood initiated metallurgical, marketing and environmental reviews by Dynatec. Through 2001 to 2004, Navigator Exploration Corp. optioned the Property and conducted additional metallurgical research on the possibility of producing a tantalum concentrate but dropped the Property when tantalum prices fell. Meanwhile, Beta Minerals Inc. (Beta) acquired Highwood's interest in the Property in November, 2002 under a plan of arrangement with Dynatec. No work was conducted by Beta and, in May, 2005, Avalon purchased from Beta a 100% interest and full title, subject to royalties, in the Project.

6.2 AVALON EXPLORATION PROGRAMS SINCE 2005

In 2005, Avalon conducted extensive re-sampling of archived Lake Zone (Nechalacho Basal Project) drill core to further assess the yttrium and Heavy Rare Earth Elements (HREE) resources on the Property. In 2006, Wardrop was retained to conduct a preliminary economic evaluation of the Thor Lake deposits (Wardrop, 2006). In 2007 and 2008, Avalon commenced further drilling of the Lake Zone. This led to a

second technical report on the Property by Wardrop (Wardrop, 2009). In 2010, Scott Wilson RPA completed a prefeasibility study on the Project (Scott Wilson RPA, 2010). Avalon continued to drill the Nechalacho Basal Project in exploration campaigns in 2010 to 2014. In 2011 Avalon published a Technical Report on the Project (Avalon, 2011), followed by an updated Technical Report in 2013 (Avalon, 2013).

Subsequent to the completion of the previous NI 43-101 Technical Report in April, 2013, two further drill programs were completed in winter (HQ rig) and summer (PQ rig), 2014. These programs, totalling 22 holes and 4,908 m, were mainly for the purpose of collecting further mineralized drill core for metallurgical purposes. The geological drill database was updated but no new resources were estimated.

7 GEOLOGICAL SETTING, MINERALIZATION AND DEPOSIT TYPE

7.1 REGIONAL AND PROJECT GEOLOGICAL SETTING

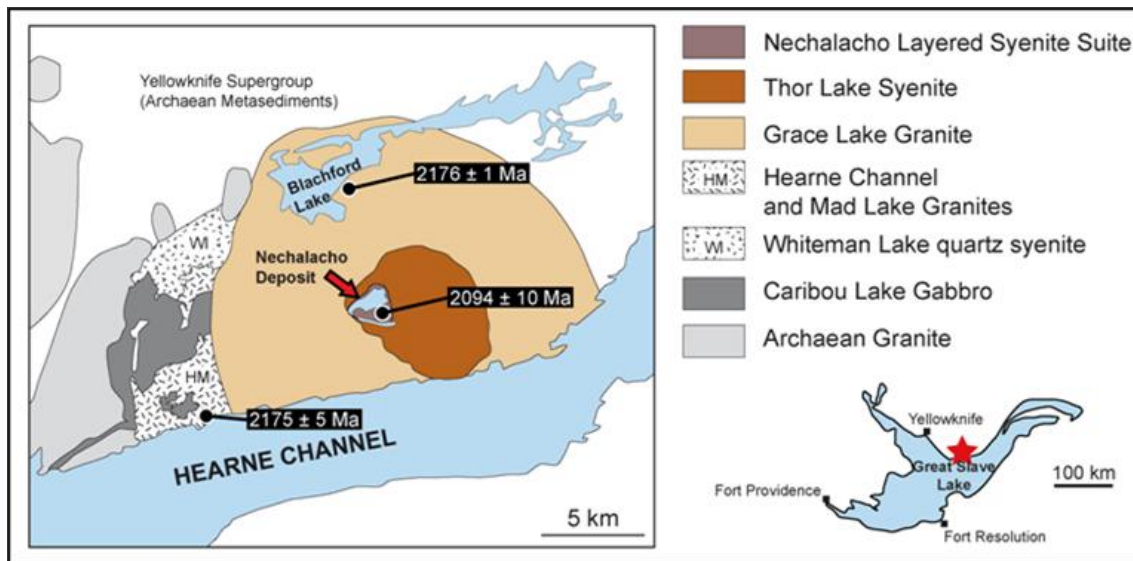
The following section is summarized from Trueman et al. (1988), LeCouteur (2002), Pedersen et al. (2007), and supplemented with observations made by Avalon geologists during the drill programs of 2007 to 2010. In addition, research at McGill University (Emma Sheard, M.Sc. thesis, 2011; personal communications: Volker Moeller, Ph.D. thesis; Kent McWilliams, M.Sc. thesis) and University of Windsor (Yonggang Feng, Ph.D. thesis) has advanced the understanding of the local geology of the Nechalacho deposit.

A map of the regional geology is shown in Figure 7.1 and a Nechalacho deposit geological map is provided in Figure 7.2. A stratigraphic column showing the igneous stratigraphy of the Nechalacho layered system is provided in Figure 7.3.

The various Thor Lake mineral deposits occur within the Aphebian Blatchford Lake Complex (BLC), which intruded Archean Yellowknife Supergroup metasedimentary rocks of the southern Slave geologic province. The BLC has an alkaline character and intrusive phases vary successively from early pyroxenite and gabbro through to leuco-ferrodiorite, quartz syenite and granite, to peralkaline granite and a late syenite (Davidson, 1982). There appear to be successive intrusive centres with an earlier western centre truncated by a larger centre that consists of the Grace Lake Granite and the Thor Lake Syenite. Nepheline syenite intruded the Thor Lake Syenite and hosts the Nechalacho deposit. This unit was recognized in drilling by Avalon during 2007 to 2010. Outcrops of the nepheline syenite within the area of the Nechalacho deposit display strong hydrothermal alteration and, consequently, the unit was not originally mapped as distinct from the Thor Lake Syenite.

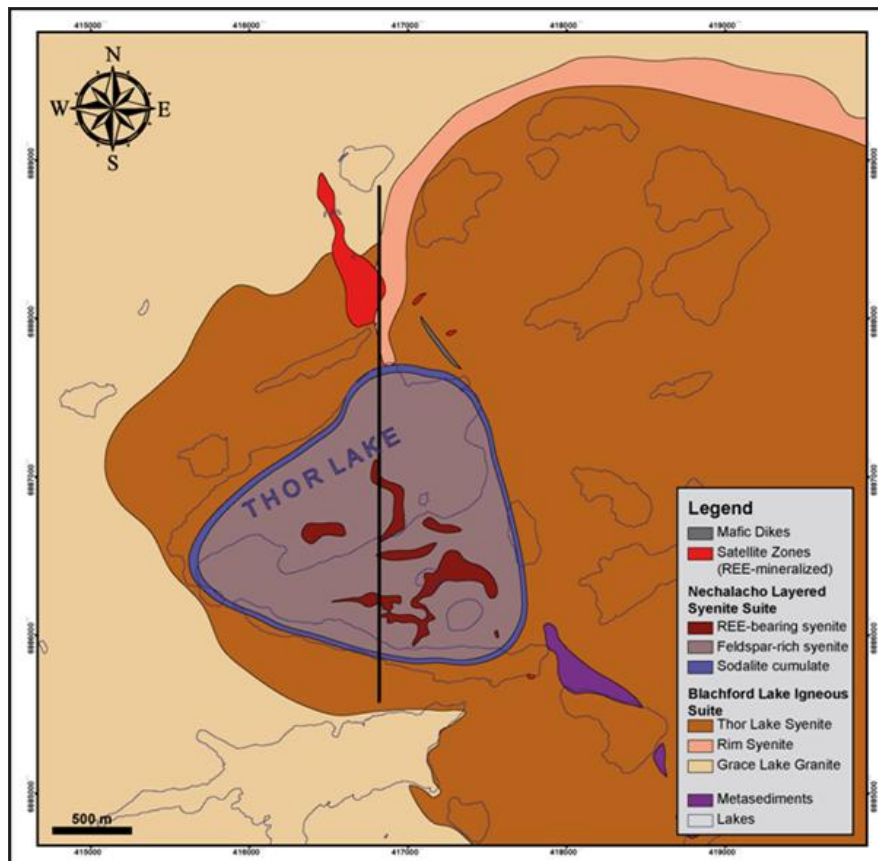
Davidson (1978) subdivided the BLC into six texturally and compositionally distinct plutonic units known as the Caribou Lake Gabbro, the Whiteman Lake Quartz Syenite, the Hearne Channel Granite, the Mad Lake Granite, the Grace Lake Granite and the Thor Lake Syenite. Based on exposed cross-cutting relationships of dykes and the main contacts, Davidson recognized a sequence of five intrusive events. The rocks of the last intrusive event, being compositionally and spatially distinct, are subdivided by Davidson into the Grace Lake Granite and the Thor Lake Syenite. Although these two units are defined as separate entities, there are no known cross-cutting relationships and they are likely time-equivalent and only distinguished by varying quartz contents and the degree of silica saturation. The two sub-units likely reflect a single early intrusive magma pulse which preceded a second related pulse of nepheline sodalite-bearing peralkaline magma. Until 2010, the hydrothermally altered apical portion of this nepheline syenite was believed to be exposed only under and between Thor and Long Lakes. Previously, it was described as altered Thor Lake Syenite. However, the nepheline syenite unit has been encountered in drilling north of Thor Lake, and under Cressy Lake, thus establishing that it is more extensive than originally believed. Drilling of the Nechalacho deposit has also shown that the same nepheline-sodalite peralkaline syenite that underlies the Thor Lake Syenite is, in fact, a distinct intrusion. The nepheline syenite is now referred to as the “Nechalacho Layered Suite”.

Figure 7.1: Regional Geology, Blachford Lake Complex



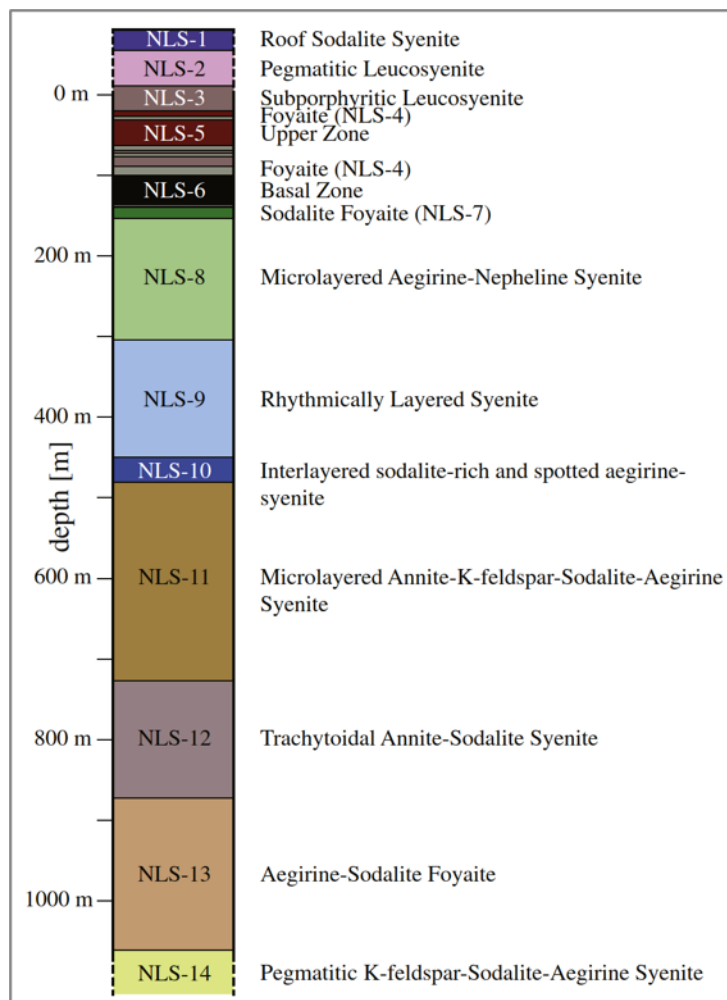
Source: Möller V., William-Jones, A. E. (2016).

Figure 7.2: Nechalacho Basal Project Geological Map



Source: Möller V., 2012, McGill University, unpublished map.

Figure 7.2: Igneous Stratigraphy of the Nechalacho Layered Suite



Source: Möller, V., Williams-Jones, A.E. (2016).

Age-dating of the BLC supports the view that all of the intrusions are related since the main eastern and western intrusive centres have comparable ages. The Hearne Channel Granite has been dated at $2,175 \pm 5$ Ma (million of years ago) while the Whiteman Lake Syenite is dated at $2,185 \pm 5$ Ma (Bowring et al., 1984) and the Grace Lake Granite is dated at $2,176 \pm 1.3$ Ma (Sinclair and Richardson, 1994).

Henderson (1985) reports that small dioritic plugs, which have been assigned to the Compton Lake Intrusive Suite, cross-cut the Grace Lake Granite. As well, diabase dykes of the 1,200 Ma Mackenzie swarm and the 2,000 Ma Hearne dyke swarm cut most of the members of the BLC.

Most of the Thor Lake Property is underlain by the Thor Lake Syenite and Nechalacho Layered Suite within the central part of the Grace Lake Granite. The T-Zone deposits cross-cut both rock types whereas the Nechalacho deposit is confined to the area of the host in the underlying Nechalacho Nepheline Syenite.

The Grace Lake Granite is a coarse-grained, massive, equigranular, riebeckite-perthite granite with about 25% interstitial quartz. Near the contact between the Grace Lake Granite with the Thor Lake

Syenite the two units are texturally similar and the contact appears to be gradational over a few metres. Because of their textural similarity and gradational contact relations, Davidson suggested that both rock types are derived from the same magma.

The Thor Lake Syenite is completely enclosed by the Grace Lake Granite. The most distinctive sub-unit is a fayalite-pyroxene mafic syenite which locally has a steep dip and is located close to the margin of the main amphibole syenite and the Grace Lake Granite. It forms a distinct semi-circular ridge, locally termed the rim syenite, which can be traced for a distance of around 8 km and has the appearance of a ring dyke, most prominent on the east side of the Thor Lake body. The rim syenite is clearly identifiable on the airborne magnetic map.

The nepheline-sodalite syenite hosting the Nechalacho deposit, here termed the Nechalacho Layered Suite, has the following key distinctive features which contrast it to the Thor Lake Syenite and Grace Lake Granite:

- It has a distinct chemical composition with under-saturation in quartz as shown by the presence of nepheline and sodalite as primary rock-forming minerals.
- It displays cumulate layering.
- It contains agpaitic zircon-silicates (including trace eudialyte and pseudomorphs after eudialyte).
- It is the host to the Nechalacho zirconium-niobium-tantalum-rare earth element mineralization.

The Nechalacho Layered Suite, both mineralized and unmineralized, is only exposed at surface in a small portion of the Thor Lake Syenite between the Long and Thor Lakes. The Nechalacho Layered Suite dips underneath the Thor Lake syenite in all directions. This is supported by drilling north of Thor Lake, within and close to Cressy Lake and also by drilling south of Long Lake. Also, the Nechalacho mineralization occurs in the top, or apex, of the Nechalacho Nepheline Syenite.

The Nechalacho Layered Suite consists of a layered series of rocks with decreasing hydrothermal alteration to depth. A consistent, downward magmatic progression is noted from the hanging wall sodalite cumulates, through the coarse-grained or pegmatitic nepheline aegirine syenites (which are locally enriched in zircon-silicates), to foyaitic syenite within a broad zone of altered "pseudomorphs-after-eudialyte" cumulates (referred to as the Upper and Basal Zones). This upper sequence is also intensely altered by various sodium and iron hydrothermal fluids. Pre-existing zircon-silicates are completely replaced by zircon, allanite, bastnaesite, fergusonite and other minerals. Beneath the Basal Zone cumulates, mineralization decreases rapidly, but alteration decreases more gradually, with relict primary mineralogy and textures increasingly preserved. Aegirine- and nepheline-bearing syenites and foyaitic syenites progress downward to sodalite foyaites and naujaite. Drilling has not extended beyond this sodalite lithology to date. Minerals related to agpaitic magmatism identified from this lower unaltered sequence include eudialyte, catapleite, analcime and, possibly, mosandrite.

7.2 REGIONAL AND PROPERTY STRUCTURES

The BLC was emplaced in a setting that has been postulated to be initially extensional with a triple junction rift consisting of structures oriented at azimuths of 060° to 070°, 040°, and 330°. These structures are readily seen on large-scale topographic and magnetic maps but their presence can be detected at the outcrop scale and within the distribution of the structurally influenced mineralized zones (R-, S-, and T-Zones). The 060° to 070° and the 040° structures represent orientations of the failed “East Arm Aulacogen” now occupied by the Hearne Channel in the vicinity of the Nechalacho deposit (Hoffman, 1980). The presence of younger, Aphebian-age, metasedimentary and metavolcanic rocks of the Great Slave Supergroup to the south of Hearne Channel demonstrates that the two structures represent extensional fractures bordering a basin that was subsequently filled with sedimentary and volcanic rocks.

Later phases of tectonic movement were principally compressional and relate to closure of the rift, over-thrusting, nappe emplacement and recumbent folding in the East Arm, and collision of the Great Bear Magmatic terrain. Younger (Proterozoic) metasedimentary and metavolcanic rocks south of Thor Lake were deposited in the failed arm of the triple junction rift, and their position now represents the location of this feature.

7.2.1 Diabase Dykes

Two ages of diabase dyke swarms are present, known as the Mackenzie and the Hearne. The Mackenzie dykes are dated at 1.27 Ga (billions of years ago), have a north-northeast strike orientation and are part of the largest dyke swarm on earth. Although there are Mackenzie dykes in the general vicinity of Thor Lake none are known to cut the Nechalacho deposit.

The Hearne dykes are dated at 1.902 Ga and trend east-northeast. Diabase dykes locally cut the Nechalacho deposit and these are interpreted as Hearne-age dykes. In previous resources models, the dykes were not well constrained as drill intercepts were infrequent due to the near vertical nature of the dykes and the mainly vertical drilling. However, specific drilling has recently focused on improving dyke definition and, between vertical drilling that has gone down the interior of dykes and angle holes specifically targeting the dykes, has resulted in greatly improved knowledge of their geometry. The steep nature of these intrusives is clear with steep dips to both the south and north. Diabase dyke emplacement appears to have been quite passive, exhibiting undulating and anastomosing lateral morphology. Thicknesses range from less than 1 m up to approximately 15 m. At present, there is no evidence that the Hearne dykes are emplaced in fault structures that have experienced significant displacement.

The Hearne dykes appear to be somewhat clustered within the Nechalacho deposit, with a band of dykes through the centre of the deposit, but only intersecting the mine plan areas in the northwest of the mineral reserve zone.

Two principal diabase dykes occur in the West Long Lake mine plan, with several subsidiary or off-shoot dykes occurring erratically. These subsidiary dykes often appear to be anastomosing, and can begin or terminate without warning, both laterally and vertically. It is possible that at least some dykes will be blind, in that drilling may have overshot the apical portion of a deeper dyke.

7.2.2 Structures and Tectonics

It is interpreted that the Nechalacho Basal Project contains a virtually undeformed deposit where most of the features observed were generated by magmatic and hydrothermal processes. In the least altered portions of the deposit, delicate primary textures are well preserved and no penetrative tectonic or metamorphic fabric is observed.

The distribution of most of the rock units and the mineralization generally follow a sub-horizontal pattern that can be traced for several hundreds of metres. However, the sub-horizontal pattern is interpreted to be locally disturbed by changes in the elevation of up to 40 m. These changes in elevation may occur erratically or along linear trends. As noted above, the deposit is also cut by late diabase dykes, which are part of the east-northeast-trending Hearne dyke swarm. Avalon's geologists have interpreted the changes in elevation of the mineralization as largely due to events during the magmatic stages of the nepheline syenite formation.

7.2.3 Late Tectonic Faults

Faults are present, these are generally less than a metre in thickness and are characterized by fault gouge, breccia, frequent red hematite, and variable amounts of carbonate-quartz veining. However, it is believed that these are minor local features relating to a late release of pressure in the solidifying magma chamber. There is little evidence of significant displacement along late faults.

7.3 MINERALIZATION

Mineralization in the Nechalacho deposit includes Light Rare Earth Elements (LREE) found principally in allanite, monazite, bastnaesite, synchysite and parisite; yttrium, HREE, niobium and tantalum found in fergusonite and aeschynite; niobium in ferrocolumbite; HREE, niobium, tantalum and zirconium in zircon; and gallium in biotite, chlorite and feldspar in albitized feldspathic rocks.

There are some trends in chemical and mineralogical characteristics in the Nechalacho deposit that have both geological and metallurgical significance. These trends are most apparent in vertical zoning of the deposit as follows:

- The proportion of HREE to LREE gradually increases from top to bottom of the deposit. The proportion of HREE within the Total Rare Earth Elements (TREE) at the top of the deposit may be 6% and at the bottom of the deposit it may exceed 30%.
- The amount of certain minerals increases towards the bottom, specifically as the HREE content increases the amount of fergusonite also increases.
- Bastnaesite shows a bipolar distribution, where it correlates with HREE in being present at the lowest parts of the deposit, but also occurs locally at surface in exceptionally high grades.
- Mineralogical studies (Sheard, M.Sc. thesis, McGill University; Möller, Ph.D. thesis, McGill University) have shown that the textures and chemistry of zircon minerals, in general, increases in complexity from top to bottom.
- Some five types of eudialyte cumulate textures have been identified, which show imperfect vertical zoning, with "cumulate" textures being more common towards the bottom of the Basal Zone and texturally destructive "wavy banded zircon" textures more common in the upper

parts of the Basal Zone and in the Upper Zones. These textures are a result of variable hydrothermal alteration intensity

- Liberation data from QEMSCAN® studies (SGS Mineral Services, SGS-M, 2012, unpublished data) have shown that liberation decreases downwards in the deposit (that is at specific grain sizes) and the proportion of free and liberated zircon decreases downwards.

These trends are discussed in more detail in the following sections.

7.3.1 Trends of REE with Depth

The Nechalacho deposit alteration system varies between 80 m (L08-65) and 190 m (L08 127) in vertical thickness, with the alteration typically starting at the surface. The complete alteration system is enriched to varying degrees in REE, zircon, niobium and tantalum, relative to unaltered syenite, with average values over the whole alteration package of approximately 0.75% to 1.0% TREO. Within this alteration envelope, there are sub-horizontal zones of increased alteration accompanied by increased REE enrichment alternating with less enriched REE zones. Within the more intensely altered zones, the original textures and mineralogy of the host rock are no longer apparent.

These zones of increased alteration, which can vary in thickness from a few metres to tens of metres, can frequently contain TREO grades in the range of 2% and higher. The lowermost band, referred to here as the Basal Zone, contains the highest proportion of HREO. Overall, the HREO proportion of the TREO within the 80 m to 190 m thick alteration system is typically between 7% and 15%. However within the Basal Zone this proportion can exceed 30%.

In general, the HREE relative to the LREE show a distinct vertical zonation with increasing HREE to depth. This is not always consistent in individual drill holes, but when averaged over a number of holes, the pattern becomes clear as illustrated in Figure 7.4 and Figure 7.5.

Figure 7.3: TREO, HREO, HREO/TREO Against Depth in 20-m Depth Slices

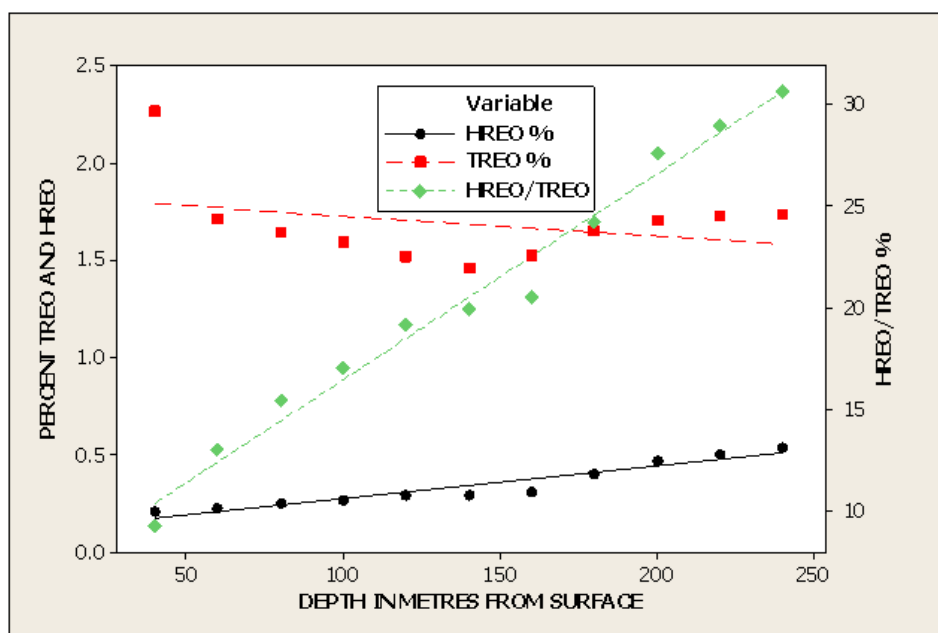
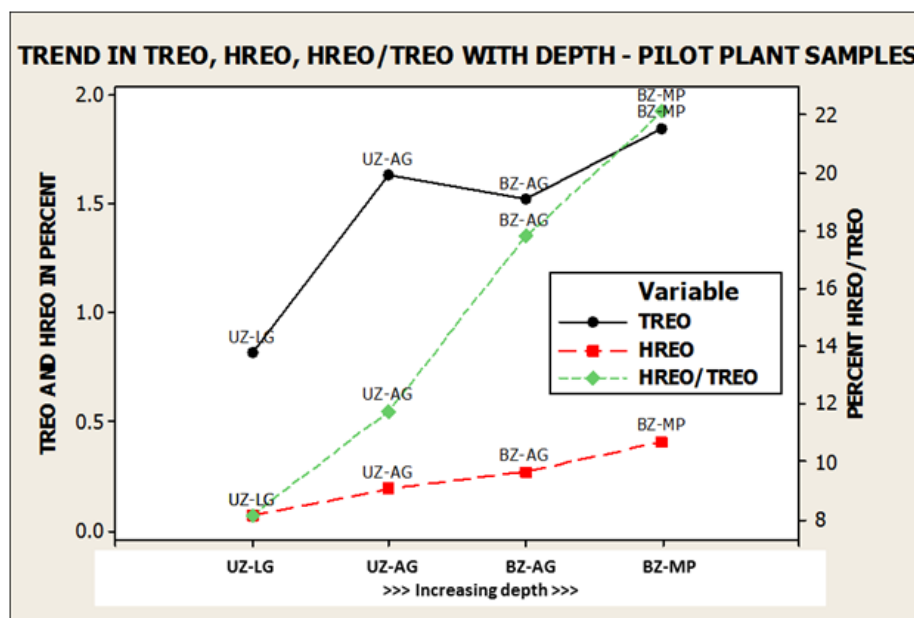


Figure 7.4: Trends in TREO, HREO, HREO/TREO Against Depth



This pattern of increasing HREE to depth is clearly important to the economics of any potential mine, as the HREE have higher average prices than the LREE.

Although gallium is anomalous in the intrusive relative to typical granites, it is not contained in the same minerals as the REE, and is in fact mainly in aluminosilicates such as chlorite, biotite and feldspar. As a result, the gallium actually varies inversely to the REE and is lower in REE- and zircon-enriched rocks than in the less mineralized rocks.

7.3.2 Mineral Textures in the Mineralization

The mineralogy of the Nechalacho deposit has been studied by SGS-M, XPS and McGill University utilizing optical microscopes, scanning electron microprobe analysis and QEMSCAN® equipment.

The formulae of the key economic minerals in the Nechalacho deposit are summarized in Table 7.1

Table 7.1: Economic Minerals Present at the Nechalacho Basal Project

Light Rare Earth-Bearing Minerals		
Monazite-(Ce)	$(\text{REE}, \text{Th})\text{PO}_4$	-
Allanite-(Ce)	$\text{Ca}(\text{REE}, \text{Ca})\text{Al}_2(\text{Fe}_2^+, \text{Fe}_3^+)(\text{SiO}_4)(\text{SiO}_2\text{O}_7)\text{O}(\text{OH})$	-
Bastnaesite-(Ce)	$\text{REE}(\text{CO}_3)\text{F}$	-
Synchisite/Parisite-(Ce)	$\text{Ca}(\text{REE})_2(\text{CO}_3)_3\text{F}_2$	-
Heavy Rare Earth-Bearing Minerals		
Zircon	$\text{Zr}(\text{HREE})\text{SiO}_4$	Also contains Nb, Ta
Fergusonite-(Y)	$\text{Y}(\text{HREE})(\text{Nb}, \text{Ta})\text{O}_4$	-
Other Potential Ore Minerals		
Columbite	$(\text{Nb}, \text{Ta})_2\text{O}_6$	-

It has become apparent that there are a number of mineral texture types within the Nechalacho deposit. These texture types manifest both at the macroscopic scale when logging drill core, and at the microscopic scale through optical petrographic microscope, QEMSCAN® and electron microprobe. Initially, the various textures were not logged as individual units due to the rapid changes in drill core. However, it has subsequently been recognized that these textures may be critical in understanding metallurgical performance in mineral processing. In addition, it is possible that these textures may play a role in recoveries during subsequent hydrometallurgical processing of mineral concentrates.

When logging the drill core in the field, zircon textures are clearly visible, but other REE-bearing minerals are not often apparent due to the fine-grained nature of the rocks. The most commonly identified mineral in the core is bastnaesite, due to its usual brick red colour in the Nechalacho deposit, though QEMSCAN® indicates that it is frequently not the dominant LREE-bearing mineral. As a result, logging in the field tends to focus on the textures of zircon.

Zircon ore textures currently logged since the winter 2012 drill program include (1) fine-grained, disseminated pseudomorphs; (2) medium to coarse-grained pseudomorphs; (3) poikilitic pseudomorphs; (4) cumulate textures; and (5) wavy laminations.

These textures reflect the magmatic and hydrothermal crystallization history of the mineralization. Thus, mono-mineralic cumulate textures suggest a disturbance of the cotectic that caused the precipitation of magmatic zircono-silicates, interpreted to be primarily eudialyte. These crystals were subsequently concentrated in cumulate horizons by processes such as crystal settling.

Poikilitic intergrowths suggest in-situ crystallization of possible eudialyte, where eudialyte crystallized after feldspars or feldspathoids.

Pseudomorph textures suggest co-magmatic crystallization of rock-forming minerals and zircono-silicates.

Basal zones logged during the 2012 winter/spring field season display high variability of ore textures, commonly on the sub-metre scale. A general trend of zircono-silicate distribution could be summarized as fine-grained pseudomorphs and wavy laminations being most common near the top of the Basal Zone and poikilitic intergrowths and cumulate textures occurring primarily in the heart of the Basal Zone. The bottom contact of the Basal Zone is commonly abrupt and is underlain by unmineralized alkaline syenites. However, gradational lower contacts occur locally, characterized by intermittent bands of fine- to coarse-grained pseudomorphs interlayered with weakly or unmineralized syenite.

7.3.3 Uranium and Thorium Distribution

Uranium (U_3O_8) and thorium (ThO_2) have been estimated in the block model for the updated 2026 MRE for the Basal Zone. Uranium and thorium are not considered economic elements within the minerals of the Nechalacho deposit but are considered to be deleterious elements whose concentrations will need to be contained below background concentrations such that they do not contaminate the environment during any potential future mining phases at the Project. Thorium appears to increase slightly with REE grade.

The uranium content varies throughout the Nechalacho deposit with no significant correlation with REEs. Higher-grade zones occur in the Basal and Upper Zones and are most likely lens-shaped but may be modified by post-mineralization alteration. Cross-sections show little connection between

high-uranium assays. Thorium correlates modestly with phosphate and the LREEs with lens-shaped distribution in both the Upper and Basal Zones.

7.3.4 Mineralogical Trends with Depth

Several composite drill core samples were assembled for metallurgical tests purposes, for low (LG) and average (AG) grades, and from Upper Zone (UZ) and Basal Zone (BZ). The composite samples were submitted for QEMSCAN analyses.

The UZ-LG is an Upper Zone composite of low grade (around 1% Total Rare Earth Oxides (TREO)) that illustrates the mineral composition of low High Rare Earth Oxide (HREO) bearing mineralization as seen by the low fergusonite content and the relatively low zircon content.

The UZ-AG is an Upper Zone composite with average TREO grade but low HREO, illustrated by the typical zircon content of 4.1%, Light Rare Earth Oxide (LREO) minerals totalling 7.7% of the rock, but the low content of fergusonite, the HREO bearing mineral.

The BZ-AG is a composite of the upper half the Basal Zone, showing similar zircon and overall REE mineral content to the UZ-AG, but with a higher fergusonite content, reflecting the higher HREO in the Basal Zone.

The BZ-MP is a composite of the bottom half of the Basal Zone, showing overall higher zircon, LREO mineral and fergusonite content, reflecting the higher grade and higher HREO/TREO of the lower parts of the Basal Zone.

Among the LREO bearing minerals, there is a clear trend from 70% allanite + monazite and 30% synchisite + bastnaesite at the upper parts of the deposit to 50% allanite + monazite with 50% synchisite + bastnaesite in the lower parts of the deposit.

For the non-ore minerals, the QEMSCAN® demonstrates that the feldspar content decreases with depth, but iron oxides, biotite and carbonates increase with depth.

8 DEPOSIT TYPES

The mineral deposits at the Project include the Nechalacho deposit (Upper and Basal Zones), and the separate and distinct R-, S- and T-Zones, with the Nechalacho deposit bearing many of the attributes of an apogranite (Beus et al., 1962) originating as an apical or domal facies of the parental syenite and granite. The deposits are extensively metasomatized with pronounced magmatic layering and cyclic ore mineral deposition. The Nechalacho deposit essentially forms part of a layered, igneous, peralkaline intrusion.

According to Richardson and Birkett (1995) other comparable rare metal deposits associated with peralkaline rocks include:

- Strange Lake, Canada (zircon, yttrium, beryllium, niobium, rare earth elements).
- Mann, Canada (beryllium, niobium).
- Illimausaq, Greenland (zircon, yttrium, REE, niobium, uranium, beryllium).
- Motzfeldt, Greenland (niobium, tantalum, zircon).
- Lovozero, Russia (niobium, zircon, tantalum, REE).
- Brockman, Australia (zircon, yttrium, niobium, tantalum).

Richardson and Birkett (1995) further comment that some of the characteristics of this type of deposit are:

- Mineralizing processes are associated with peralkaline intrusions and the latter are generally specific phases of multiple-intrusion complexes.
- Elements of economic interest include tantalum, zircon, niobium, beryllium, uranium, thorium, REE, and yttrium, commonly with more than one of these elements in a deposit. Volatiles such as fluorine and carbon dioxide are typically elevated.
- End members may be magmatic or metasomatic although deposits may show the influence of both processes. Alteration in magmatic types is often deuteric and local while alteration in metasomatic types is generally more extensive.
- This type of deposit is typically large, but low grade. Grades for niobium, tantalum, beryllium, yttrium and REE are generally less than 1%, while the grade for zircon is typically between 1% and 5%.
- These deposits display a variety of rare metal minerals including oxides, silicates, calcium phosphates and calcium fluoro-carbonates. Niobium and tantalum mineralization is typically carried in pyrochlore and less commonly in columbite.

The main chemical features of the Nechalacho deposit that contrast to these overall features are that the rare earth levels are higher than typical, uranium is not particularly high, with anomalous but modest levels of thorium, and the lack of beryllium mineralization. Beryllium is present in the North T deposit, a separate smaller deposit to the north with dissimilar geology. The R-, S- and T-Zones are small separate pegmatitic bodies to the north and northeast of the Nechalacho deposit.

The preferred genetic model is that of igneous differentiation within a closed-system with rare earth element concentration within a residual magma, aided by depression of the crystallization temperature of the magma by fluorine and possibly carbon dioxide.

9 EXPLORATION

9.1 AVALON EXPLORATION PROGRAMS

The following description of exploration on the Thor Lake property has been extracted from the May, 2013 Technical Report prepared by Micon (Micon, 2013).

The Thor Lake property has been systematically explored for several different metals at different deposits within the Property over a period of 30 years. The exploration focus has shifted as new discoveries were made, such as beryllium at the T-Zone deposit, were made, or in response to price increases for tantalum, yttrium and HREE, or for example, because of improved methods of recovery for tantalum.

Since taking over the Property in 2005, Avalon has sampled archived drill cores from the Nechalacho deposit to extend the area of known yttrium and REE mineralization. This led to the completion of a technical report by Wardrop in 2007 (Wardrop, 2007) which included a MRE and recommendations for further work, including diamond drilling.

Starting in August, 2007 and concluding in 2011, Avalon had conducted continuous drilling campaigns, except during freeze- and break-up periods. The details of these drilling campaigns are given in Section 10.

An airborne magnetic survey was completed in the winter of 2009 to aid in mapping the local geology and structures.

In addition to drilling, mapping and geophysical work, Avalon has supported four Masters' theses (two from McGill University and two in Switzerland) and two Doctoral theses (McGill University and the University of Windsor). These have contributed to the understanding of the regional and local geology and detailed mineralogy of the Nechalacho deposit. In addition, the company has supplied logistical support to a Doctoral thesis (Carlton University) on the entire Blatchford Lake Complex.

The exploration work completed on the Nechalacho Basal Project has led to the interpretation of the geology and mineralization as provided in Section 7 and Section 8 of this report.

9.2 FUTURE EXPLORATION POTENTIAL

The southern and eastern limits of the deposit are reasonably well defined, although additional drilling to the east may bring modest increase in tonnage. The western and northern edges of the deposit are not well defined. Increasing the drilling density in these areas hold potential for expanding the resources.

The grade of TREO and the proportion of HREO within the deposit vary from place to place. The Nechalacho Basal Zone morphology displays basins or depressions, with marked increase in HREO accumulation.

10 DRILLING

10.1 HISTORICAL DRILLING

The following description of drilling programs prior to 2011 at the Project has been partly extracted from the 2011 RPA Technical Report, to which the reader is referred to for more detail.

Since 1977, diamond drilling has been carried out intermittently by various operators over five separate mineralized zones at the Project. A total of 51 holes (5,648 m) had been completed on the Nechalacho deposit through 1988. As the geology was poorly understood, the drilling frequently did not penetrate the Basal Zone (BZ). Modern QA/QC practices were not followed and samples were analyzed for only four to six elements. Modern, inexpensive and reliable multi-element analytical methods were not available. Consequently, the historical drilling, in general, is not useful for the current MREs.

10.2 AVALON DRILLING PROGRAMS

Avalon commenced diamond drilling on the Nechalacho deposit in July, 2007, the goal of which was to further delineate zones of REE and tantalum mineralization. The initial drilling (2007-2008) was completed largely at a spacing of approximately 150 m by 150 m. Eleven tightly spaced inclined holes (L08-099 to L08-109) were drilled to obtain a mini-bulk sample for continued metallurgical work on the REE-enriched zones. Six of the earlier holes were re-assayed to test for the full suite of REE, as was completed on the recent drilling.

From February, 2009, the drill spacing was reduced and this resulted in intercepts at approximately 50 m centres. The drilling focused on the southeastern part of the deposit where the BZ has higher TREE grades but, also, higher HREE grades, along with thicker intercepts.

As the mineralized zone is sub-horizontal, and many of the drill holes are vertical, the drilled widths approximate true widths for vertical holes. For angled holes, the true width varies with the angle of the hole.

In January, 2010, one drill was converted to larger PQ core in order to obtain larger weights of core for metallurgical testwork purposes.

Core from both the historical drilling and the Avalon programs is stored at the Thor Lake site. Archived core was re-boxed as necessary. Core pulps and rejects are stored in a secure warehouse in Yellowknife and at site.

Starting with 2007 and continuing throughout the Avalon drilling programs at the Nechalacho deposit, the core material collected was sampled using standard core drilling methods. Core samples and quality control materials have been submitted to independent commercial laboratories for assay analysis.

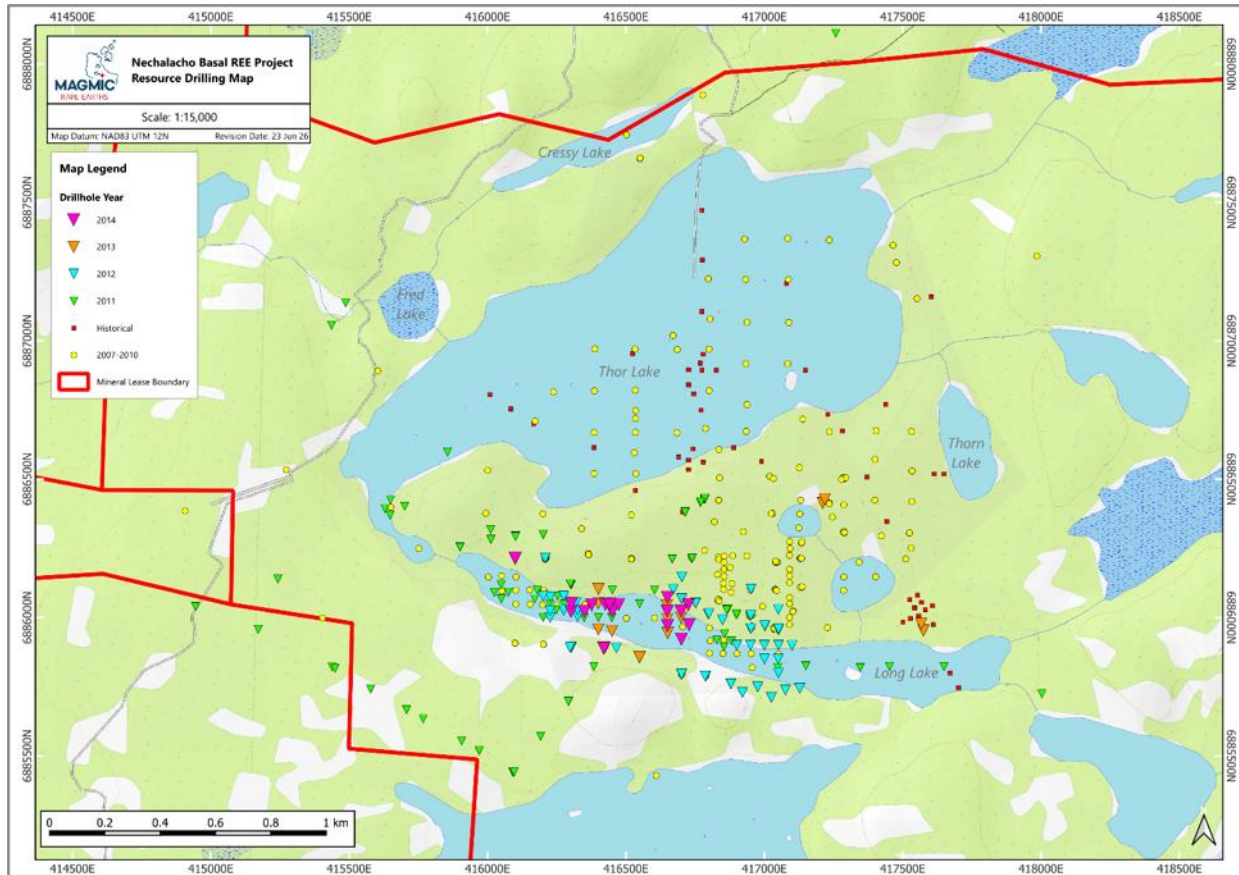
Avalon's drilling operations were supervised by J.C. Pedersen, P.Geo., and Avalon's Vice-President, Exploration, Bill Mercer, Ph.D., P.Geo. (Ontario), P.Geol. (Northwest Territories), monitored the QA/QC and provided overall direction on the Project.

Subsequent to the publication of the last Technical Report in 2013 a further two drill programs were completed in the winter (HQ rig) and summer (PQ rig) of 2014. These programs, totalling 22 holes and 4,908 m, were mainly for the purpose of collecting further mineralized drill core for metallurgical

purposes. The geological drill database has been updated, but no new resource was estimated prior to the one contained in this Report.

Figure 10.1 provides the location of all drill holes in relation to the outline of the Nechalacho deposit.

Figure 10.1: Diamond Drill Hole Location Map



Source: Avalon, June, 2026.

Core sizes range from a BTW diameter for the initial 2007 drill program to NQ2 in the winter/summer 2008 program, NQ2 or HQ in the 2009-2010 programs, and HQ and PQ in the 2010 and subsequent programs (Table 9.1). Note that Avalon has not specified the split between HQ and PQ for the 2013 and 2014 drilling.

Table 10.1: Project Drilling Programs

Year	Hole Diameter	No. Drill Holes ¹	Metres (m)
Pre-2007	Not specified	51	5,588
2007	BTW	13	2,440
	Total	13	2,440
2008	NQ2	72	14,259
	Total	72	14,259
2009	HQ	43	8,794
	NQ	26	5,477
	Total	69	14,271
2010	HQ	86	24,147
	PQ	20	3,754
	Total	106	27,901
2011	HQ	44	11,057
	NQ	21	3,924
	PQ	46	10,865
	Total	111	25,846
2012	HQ	73	18,076
	PQ	14	3,277
	Total	87	21,353
2013	Total	13	2,977
2014	Total	22	4,911
Avalon		493	113,958
Grand Total		544	119,546

¹ Not including abandoned holes.

10.2.1 CORE Logging and Core Recovery

The geological, geophysical, geotechnical, and assay data are entered into a database. Until the end of 2011, a custom designed database and managed by a consultant, with regular back-ups off-site. Since the beginning of 2012, the drill hole database has been rebuilt into DataShed of Maxwell Geoservices and is maintained by Avalon geologists. The geologists at site can access the drill database to review previous drill results.

Due to the strong hydrothermal alteration of all lithologies, identifying specific precursor lithologies has proven quite difficult, particularly in the early drill programs. Early lithological coding tended to incorporate hydrothermal alteration, commonly making it difficult to correlate units between drill holes. As more information became available from deeper drilling and specific textures and lithologies were compared to other unaltered, alkaline deposits elsewhere, such as Illimausaq in Greenland, a new lithological code was produced using, as a basis, the recognizable precursor lithologies. This has greatly advanced the understanding of the lithology, mineralogy, and to a lesser degree the petro-genesis of the deposit.

The REE-bearing minerals in the Nechalacho deposit are generally not visible with the naked eye due to their disseminated and fine-grained nature. The dominant minerals identified easily are zircon and (infrequently) traces of bastnaesite although visual grade estimates of bastnaesite are rarely possible. To map the relative grades in the core, Avalon utilizes a Thermo-Scientific Niton® XLP-522K handheld analyzer to assist the geologist during core logging. The Niton® energy-dispersive X-ray fluorescence (EDXRF) analyzers, commonly known as XRF analyzers, are able to quickly and non-destructively determine the elemental composition of the drill core.

A number of elements may be analyzed simultaneously by measuring the characteristic fluorescence X-rays emitted by a sample. EDXRF analyzers determine the content of a sample by measuring the spectrum of the characteristic X-rays emitted by the different elements in the sample when it is illuminated by X-rays, in the case of the XLP-522K, from a small, sealed capsule of radioactive material.

Due to variations in analysis conditions such as the physical surface of the sample, the dampness of the sample, and the small window for analysis, the readings for individual elements cannot be considered as quantitative and representative of long core lengths. However, the readings can assist the geologist to identify mineralized sections and determine whether these sections are relatively higher or lower in HREEs.

Core recoveries are generally high at the Nechalacho deposit, due to the exceptionally competent nature of the rock, with an average of 97% in the mineralization, with no bias in the sampling due to incomplete sample recovery. Also, there is no apparent bias in results between various core sizes suggesting that there is no issue with respect to a nugget effect on sampling. As a result, the authors believe that there are no drilling, sampling, or recovery factors that could materially affect the accuracy or reliability of the results.

A comprehensive core logging and sampling protocol was established at the beginning of the July 2007 drilling program. This protocol has been strictly applied for all of the subsequent drilling programs. A comprehensive geotechnical logging protocol was introduced at the start of the summer 2009 drill program.

Core was placed in standard wooden core boxes at the drill by the driller helper, with a wooden marker placed at the end of each core run marking the metreage from the surface. Throughout the BTW-NQ programs drill rods were imperial lengths of 10 ft (3.048 m), and core markers were written in feet on one side of the wooden block, and using a metric conversion chart, written in metres on the opposite side of the block. The HQ drilling initially used both imperial and metric rods, so markers were in both feet and metres to ensure proper measurement. Imperial rods were used exclusively in the latter part of the 2009 drill program.

After inspection by the geologist at the drill, the boxes were closed with wooden lids and taken to the core logging facility at the camp by snowmobile in the winter and by boat and all-terrain vehicle in the summer. At the camp, the boxes were opened by the geologist on outdoor racks. In good weather, logging and other geotechnical measurements were completed outside; in poor weather and in winter, core was processed in a heated core shack.

Core was initially measured to determine recoveries and marked incrementally every metre. This marking served as a guide for magnetic susceptibility, rock quality designation (RQD), and density measurements. Magnetic susceptibility was measured every metre with a hand-held "KT-10 magnetic

susceptibility meter". Density was measured every 5 m by weighing a section of drill core in air and then weighing by submersing the sample in water and comparing the difference between dry and submersed weight. A typical core sample for density measurement averages 10 cm in length.

Core was generally very clean when brought to camp and required no washing except for occasional sprays of water when mud was present. The geologist marked out major rock units and completed a written description for the entire core sequence. Frequent readings, using a Thermo-Scientific Niton® XLP-522K handheld analyzer, act as a guide to areas of mineralization and to the general chemistry of a specific interval. The final task was to mark out with a china marker specific sample intervals for the length of the entire drill hole.

After all tests and core observations were completed, and prior to splitting, the core was photographed outdoors using a handheld digital camera. Meterage and hole numbers were marked so as to be visible in all photos. Core was generally photographed in groups of six boxes. Core photographs were stored on the camp computer, in addition to an external hard drive.

As indicated above, starting in the 2009 summer drill program, drill core was also logged for geotechnical characteristics. Some of the holes were logged from top to bottom, while others were logged above, below, and within the Basal Zone, to determine rock quality characteristics of both the mineralized zones and the country rocks. Efforts were made to select holes with varying orientations to provide comprehensive orientation characteristics of planar structural features.

Geotechnical logging, comprising RQD, was performed for each run. The geotechnical logging was completed on core logging sheets and entered electronically into a custom-designed Excel spreadsheet provided by KPL. A total of 385 holes were logged in whole or in part. Holes which were partially logged included the Basal Zone and a minimum 10 m interval above and below.

When the core had been logged and photographed, it was stored in core racks outside the core splitting tent, from which they were then brought into the core shack to be split and sampled.

10.2.2 Core Sampling Method and Approach

On average, and except for PQ drilling, assay samples were 2 m long except where, in the geologist's opinion, it was advisable to follow lithological boundaries. In 2010, when PQ drilling commenced at the Project, the sample interval was reduced to typically 1 m due to health and safety concerns with the weight of PQ core. A 1-m sample of PQ core weighs around 18 kg.

Due to the long widths of mineralization within the Basal Zone, averaging over 20 m thick, even spaced sampling was not considered a significant factor in resource estimation. Consequently, individual samples can vary in length when encountering lithological changes, as efforts were made not to split across well-defined lithological boundaries. A list was made of all sample intervals as a record and also a guide to the core splitting technicians.

The exception to the above procedures was when PQ core was being handled. For mineralized zones, PQ core was submitted to the independent laboratory for crushing of whole core to 6 mesh (approximately 3.3 mm, a size suitable for metallurgical testing). The details are given in Section 1.7. Unmineralized intervals of PQ core were sawn with around one third of the PQ core sent for assay (typically about 5 kg) and the remainder boxed on site.

11 SAMPLE PREPARATION, ASSAYING AND ANALYTICAL PROCEDURES

11.1 AVALON SAMPLE PREPARATION

All sample preparation, from the identification of sample intervals to bagging of drill core, was completed by Avalon employees. The subsequent preparation, such as crushing, grinding and further steps, were all completed by commercial laboratories, ALS Limited (ALS), Acme Analytical Laboratories (Vancouver) Limited (Acme) and Activation Laboratories Limited (Actlabs). For the drill programs of 2007-2008, the core splitter broke the core into smaller lengths to fit into the mechanical core splitter, split the core in half, and placed one half in a plastic sample bag with the other half placed back into its sequence in the core box to serve as a permanent record. Starting in 2009, it became standard practice when handling HQ core to initially split the core in half, then one half in quarters, with one quarter for assay, one quarter as library core and half core retained for metallurgical purposes. For core prior to 2009, limited metallurgical sampling was completed.

While the majority of the sample splitting has been with mechanical core splitter to produce a half core for a sample, some core has also been sawn and quartered when required for metallurgical testing or standard preparation; however, this method was abandoned due to slow production.

As noted above, an exception to the above procedures was initiated when drilling with PQ core. Due to the larger size and weight, PQ core creates special problems for handling and sampling. Due to weight handling, and safety concerns, it was decided to sample PQ core at 1 m intervals, not 2 m, as is used for BTQ, HQ and NQ2 core.

Due to the inability to split PQ core with a mechanical splitter, it was decided at first to saw the core using an electric core saw. As a result, a core saw was custom prepared for PQ core. However, it was quickly discovered that the productivity was too slow and could not keep up with core production. As a result, a change in procedures occurred with the decision to crush whole core from mineralized zones. It was considered, as sufficient library drill core from 2007 to 2012 was on hand, that preserving PQ core for due diligence purposes was not necessary. The procedure followed for mineralized PQ core was as follows:

- Bag 1 m intervals of whole core in camp and ship to ALS in Yellowknife. Each 1 m weighed around 18 kg.
- At ALS the complete core was crushed to 6 mesh (around 3.3 mm) and about 2 kg was split off using a rotary splitter. The larger portion, approximately 16 kg, was bagged as a metallurgical sample and given the same sample number as the original sample.
- The smaller portion, 2 kg, was then crushed to 10 mesh and, from that point on, followed the normal assay procedure.

The rationale behind this approach is that 6 mesh samples are suited to metallurgical processing whereas finer grain sizes (10 mesh) would not be suited to metallurgical processing. Also, the split-off section of 2 kg is very similar to quarter HQ core, or half NQ core, and so is just as representative as these samples. For unmineralized PQ core, sawing was utilized in order to reduce sample size and lower cost. In this case, about one-third of the core was sawn off for a representative sample and two-thirds retained as library samples.

The sample interval was marked on a sample tag in a three-part sample book and a tag with the corresponding sample number was placed in the sample bag. The sample bag was also marked with the corresponding sample number using a felt marker. The bag was then either stapled or zip-tied closed and placed in a rice bag with two other samples. Most rice bags contained three samples to keep weight to a manageable level. The rice bag was then marked on the outside with the corresponding sample numbers contained within, and a second number identified the rice bag itself. A sample shipment form was then completed, generally in increments of 50 rice bags, which constituted a single shipment.

The sample form was enclosed in an appropriately marked rice bag, with a duplicate paper copy kept in camp, and also kept on electronic file.

Internally developed standards were inserted routinely. Blanks, composed of split drill core of unaltered and unveined diabase dyke intersected in drilling beneath Thor Lake, were inserted every 40th sample.

Avalon has developed a number of standards for the Thor Lake project to date. These have been as follows:

- In 2007, three standards were developed utilizing historic drill core, with three grade ranges designated “Low”, “Medium” and “High”. The standards were subject to a Round Robin analysis in a number of laboratories where certified values were established.
- In 2009 a second standard, designated STD-04_09, was prepared, this time from current drill core, and subject to Round Robin analysis for certified values.
- In 2010, two further standards were developed, being STD-229 and STD-236, and again subject to Round Robin analysis for certified values.

Drill core samples were shipped generally by air from Thor Lake to Yellowknife except in unusual cases when high weight metallurgical batches were shipped by ice road or barge on the Great Slave Lake. The standard shipment was 50 rice bags, or a total of 150 samples per shipment. The rice bags were zip-tied for security, and were met and unloaded in Yellowknife by a representative of Discovery Mining Services (Discovery). In 2010-2011, for a limited period, Deton Cho Logistics, Yellowknife, completed the role taken at other times by Discovery. Discovery took the samples to its warehouse, inventoried all the samples, and produced a manifest which was sent electronically to the Thor Lake camp and accompanied the shipment. The samples were then taken by Discovery to the core processing facilities of initially Acme and subsequently ALS, both in Yellowknife. At this point, the laboratories took custody of the samples.

Core was sent to the preparation laboratory with specification that all core, should be crushed to 90% passing 10 mesh with a supplementary charge if necessary (see note concerning PQ core above). In the first program in 2007, two 250 g pulps were prepared from each sample, one for the primary laboratory, and one to be shipped to Avalon and used for the check analysis. As noted, for samples from drill holes completed in 2007, every sample was duplicated and sent to a secondary laboratory for check analyses. Subsequent to this, approximately every tenth pulp was sent for duplicate analysis in the secondary laboratory. Standards were inserted in the duplicate sample stream by Avalon employees prior to shipping to the secondary laboratory.

All remaining drill core was stored on site at Thor Lake. Core was racked at the exploration camp, and additional storage facilities have been utilized at the former Highwood mine site buildings at the T-Zone. Historical core, particularly T-Zone core, is stored at the mine site, while Nechalacho deposit core is stored at both the T-Zone mine site and the camp for the most recent core.

Since December, 2009, Avalon has rented a storage facility at the Yellowknife airport, and laboratories are requested to return all pulps and rejects to Avalon. The material is stored in that location, and a computer database holds the sample numbers and types. In addition, samples destined for metallurgical testing, including pilot plant testing, are stored in the Yellowknife facility.

11.2 ANALYTICAL PROCEDURES

Any assay results obtained prior to 2007 (holes 1 to 51) are referred to as the “older holes”. These did not have internal QA/QC and were analyzed for a limited set of elements; however, six of the old holes were re-assayed in 2008 for the complete suite of elements.

Avalon has changed the laboratories it used for analysis over time. Table 11.1 summarizes the laboratories used by Avalon for analysis.

Table 11.1: Laboratories Used by Avalon

Program	Preparation Laboratory	Primary Laboratory	Secondary Laboratory	Notes
2007	Actlabs	Actlabs	Acme	All samples double analysed
2008	Acme	Acme	ALS	Every 10th sample to secondary
2009 – 2015	ALS	ALS	Acme	Every 10th sample to secondary

For the first year of drilling by Avalon (2007), the primary laboratory was Actlabs of Ancaster, Ontario, and the secondary laboratory was Acme in Vancouver, British Columbia. Samples were shipped to the Actlabs facility in Ancaster for preparation, and a duplicate pulp was submitted to Acme in Vancouver for complete check analysis. The Actlabs procedures used are Codes 4B, 4B2-STD, 4B2-RESEARCH, 4LITHO, and 4LITHORESEARCH.

The Actlabs method involved lithium metaborate/tetraborate fusion inductively coupled plasma (ICP) Whole Rock package Code 4B and a trace element inductively coupled plasma mass spectrometry (ICP-MS) package Code 4B2. The two packages are combined for Code 4LITHO. The fusion process ensures total metals particularly for elements like REE in resistate phases (this may not be the case for acid digestions, particularly for heavy rare earths and other elements contained in refractory minerals like zircon, sphene, monazite, chromite, gahnite and several other phases). If refractory minerals are not digested, a bias may occur for certain REE and high field strength elements with standard acid digestions. The trace element package using ICP-MS (Codes 4B2-STD or 4B2-RESEARCH) on the fusion solution provides research quality data whether using standard or research detection limits. Note that europium determinations are semi-quantitative in samples having extremely high barium concentrations (greater than 1%). This package is intended primarily for unmineralized samples. Mineralized samples can be analyzed, but the results will be semi-quantitative for the chalcophile elements (Ag, As, Bi, Co, Cu, Mo, Ni, Pb, Sb, Sn, W, and Zn).

For the 2008 winter and summer programs, the preparation laboratory was the Acme facility in Yellowknife and the primary analytical laboratory was the Acme facility in Vancouver. A split of every tenth sample reject was sent to ALS in Vancouver for check analyses. All core was analyzed by Acme

using two analytical packages: Group 4A and Group 4B. ALS analyzed the samples with the MS81 method.

Acme's Group 4A is a whole rock characterization package comprising four separate analytical tests. Total abundances of the major oxides and several minor elements are reported using a 0.1 g sample analyzed by ICP-emission spectrometry following a lithium metaborate/tetraborate fusion and dilute nitric digestion. Loss on ignition is by weight difference after ignition at 1,000°C.

Acme's Group 4B is a Total Trace Elements by ICP-MS. This package comprises two separate analyses. Rare earth and refractory elements are determined by ICP-MS following a lithium metaborate/tetraborate fusion and nitric acid digestion of a 0.1 g sample (same decomposition as Group 4A). In addition, a separate 0.5 g split is digested in aqua regia and analyzed by ICP-MS to report the precious and base metals.

For 2008, secondary samples, comprising roughly every tenth reject sample supplied by Acme, were shipped to ALS, where the samples were analyzed by the package MS81. This is a combination of lithium metaborate/ICP atomic emission spectrometry (ICP-AES) for whole rock values, lithium borate/ICP-MS for refractory mineral values and other elements, and aqua regia/ICP-MS for volatile elements.

Starting with the winter 2009 drilling campaign, all samples were prepared at the ALS preparation facility in Yellowknife, and a subsample shipped and analyzed at the ALS laboratory in Vancouver by lithium metaborate/tetraborate fusion and dilute nitric acid digestion, followed by whole rock and 45 element multi-element ICP analysis (ALS sample method ME-MS81d). All samples contained within intercepts above the 1.6% cut-off criteria and any additional samples exceeding analytical limits, or of geological significance, were re-run using a similar ALS method ME-MS81h for higher concentration levels. ME-MS81h is a similar method but with greater dilution in the analytical procedure. Every tenth sample had a duplicate pulp prepared which, with inserted standards and blanks, was sent to Acme in Vancouver for check analyses. Results were monitored for key elements, and in cases of QA/QC issues, re-analysis was requested. The key elements that were monitored were those that have greatest financial impact on the Project and typically would be neodymium, europium, terbium, dysprosium and niobium.

High values that were over the limits for niobium and zirconium were routinely re-run with ALS XRF method "XRF10" which gives upper limits of 10% for Nb and 50% for Zr.

Statistics of samples submitted to ALS and Acme during the period January, 2011 to January, 2015 are shown in Table 11.2. The ratio of samples at ALS to Acme does not follow the protocol of 10:1 due to the delay in submission of the duplicates to Acme during the specific period.

Table 11.2: Statistics of Sample Submission between January, 2011 and January, 2015

Laboratories	ACME_VAN	ALS_VAN
No. of Batches	13	256
No. of DH Samples	nil	19,347
No. of QC Samples	1,867	4,203
No. of Standard Samples	212	2,476

The data in Tabel 11.2 gives a ratio of a standard per 8 samples with ALS and 9 samples with Acme. Blanks are considered as “standards” in these statistics.

Values were reported by the laboratories in element parts per million (ppm), transformed to oxide ppm by Avalon geologists and then both element and oxide ppm values were imported into the database.

As assay results became available from the laboratories, Avalon consultants incorporated them into a database. Assay results of drill core, certified reference materials, and blank samples were merged into a master sheet according to a set of rules that establish the precedence of various types of assay methods. The master sheet is an Access database and various macros were used for database update and maintenance.

Starting with 2008 and current at the time of writing this Report, Avalon used the following precedence algorithm:

- MS81h values for REE, Nb, Zr and Ta take precedence over MS81 values.
- MS81h values for Ta take precedence over XRF values.
- ALS XRF values for Nb and Zr take precedence over MS81h values.
- ALS XRF results take precedence over Actlabs XRF results.

Repeat pulp analysis by the same laboratory and method, or field sample duplicates, were incorporated into the Maxwell database and which datapoint is utilized depends on a priority ranking system.

In the opinion of Micon’s QP the sample analyses are sufficiently reliable for mineral resource estimation purposes.

11.3 SPECIFIC GRAVITY MEASUREMENT

Specific gravity (SG) is measured on core samples taken at 5 m intervals within the hole. Each sample is approximately 10 cm long. Breaking the drill core (if necessary) only occurs after other tests that require undisturbed core (such as photography and geotechnical analysis) have been completed.

The density method is as follows:

- Weigh the sample in air.
- Weigh the sample suspended in water.

A Mettler Toledo PL3001-S electronic scale was used for weighing in air. This scale has an accuracy of one decimal place (± 0.1 g).

A small metal can is suspended beneath the balance, set up on a table with a hole for the suspension of the basket, was used to weigh the sample in water (the Mettler balance has a hook underneath for SG measurement purposes). The balance was zeroed with the can hanging in a large container of water.

The calculation of the SG is as follows:

$$\text{SG of sample} = \text{weight of sample in air} / \text{weight of sample in water}.$$

SG measurements made at the Nechalacho site on the drill core, according to lithology, are summarized in Table 11.3.

Table 11.3: Statistics of Specific Gravity by Lithology

Lithology	Description	Count	Average SG	SD	Minimum	Maximum
43	Sodalite aegerine amphibole pegmatite	1	2.66	-	2.66	2.66
45	Foyaite III	38	2.7	0.05	2.59	2.84
47	Layered biotite sodalite albite syenite	27	2.72	0.14	2.59	3
48	Biotite sodalite aegerine syenite	36	2.66	0.11	2.43	2.98
49	Spotted aegerine amphibole syenite	12	2.66	0.09	2.48	2.82
60	Layered sodic syenites	1,272	2.78	0.12	1.07	3.52
61	K-feldspar pegmatite	73	2.7	0.12	2.48	3.23
63	Foyaite II	1,198	2.79	0.1	2.44	3.41
65	Heterogenous syenite	1,402	2.79	0.11	2.3	3.4
67	Zircono-silicate cumulate	1,175	2.9	0.16	2.26	3.8
69	Heterogenous zircono-silicate syenite	2,881	2.87	0.16	1.91	4.07
70	Trachoidal microsyenite (altered)	107	2.79	0.13	2.58	3.71
75	Foyaite I	937	2.76	0.11	2.09	3.47
78	K-feldspar nepheline syenite (altered)	7,159	2.7	0.12	2.13	3.95
79	Sodalite cumulate (altered)	957	2.75	0.1	2.21	3.64
84	Thor Lake syenite	1,056	2.71	0.08	2.42	3.58
85	Grace Lake granite	966	2.68	0.06	2.11	3.22
90	Diabase	190	2.9	0.07	2.67	3.22
97	Breccia	54	2.72	0.07	2.54	2.91
99	Highly altered rock, precursor unknown	140	2.71	0.15	2.21	3.47
Total		19,681	2.76	0.14	1.07	4.07

In 2010, 32 samples of drill core were submitted to ALS for an independent check of the SG values. In 2012, a further 10 samples of drill core were submitted for an independent check of SG. The same samples were measured at the Thor Lake camp site before shipment to ALS. ALS completed both water-only and wax-coated measurements on the core.

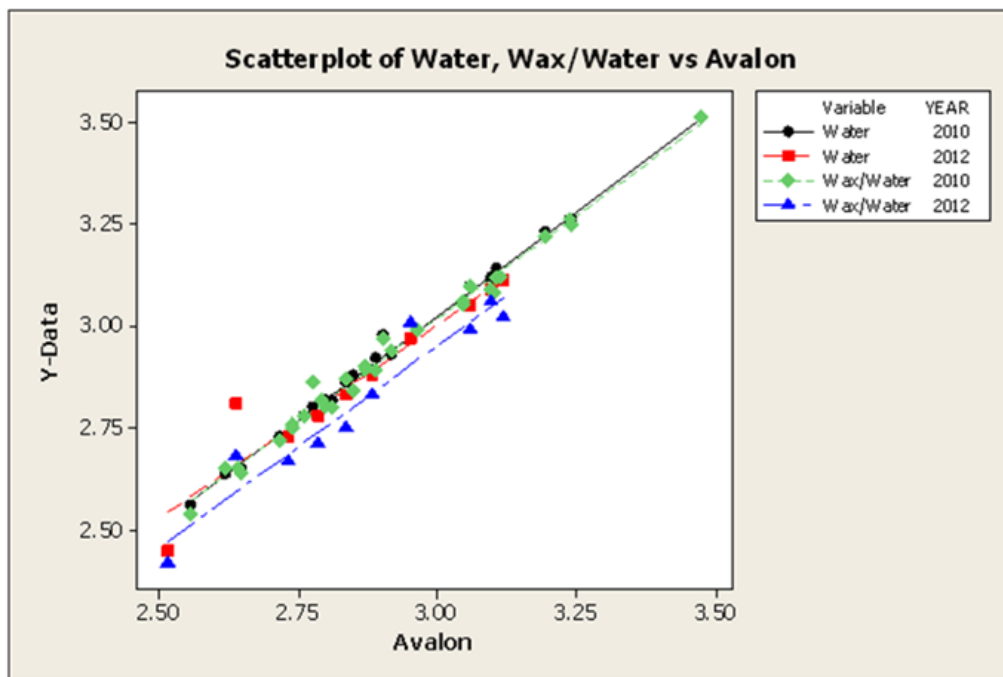
The statistics are summarized in Table 11.4. Figure 11.1 displays scatter plots of SG measurements determined by ALS and Avalon.

Table 11.4: Comparative Statistics of Specific Gravity Measurements Performed by ALS and Avalon

Variable	Mean	Standard Deviation	Median
ALS Water	2.9264	0.2132	2.89
ALS Wax/Water	2.909	0.2175	2.89
Avalon	2.9076	0.2089	2.8775

Note: Standard Deviation in SG Units.

Figure 11.1: Scatter Plots of ALS and Avalon SG Measurement



A two-sample t-test of the differences between the measurements (firstly ALS water-only against Avalon and, secondly, ALS wax against Avalon) gave a p-values of 0.69 and 0.98 respectively, indicating no significant difference at the 99% confidence level. As can be seen, the difference between Avalon and ALS mean measurements are in the third decimal place and for the median in the second decimal place, which is considered insignificant as the difference is of the order of 1%. Thus, the field density measurement system was concluded to be reliable by RPA and Avalon.

The general solid nature of the Nechalacho Nepheline Syenite rock is illustrated by the fact that the difference between SG measured with and without wax coating averages only 1%. Vuggy permeable rock would give a larger difference between the two methods.

Micon's QP considers that the data are reliable and suitable for use in mineral resource estimation.

12 DATA VERIFICATION

12.1 GENERAL INFORMATION

The database used by Avalon for the resource estimate contained drill hole collar location, downhole deviation surveys, lithology, density, magnetic susceptibility, RQD, sample numbers, sample intervals, and analytical data. The database included all drilling data available at the end of the 2014 drilling program, which was the latest drilling campaign conducted at Nechalacho by Avalon.

Various software solutions were used by Avalon for data acquisition and management. A number of steps have been taken to ensure the accuracy and validity of the database through the years. As various milestones were achieved during the development of the project, multiple stages of comparisons between versions of the database were performed. Cross-referencing was routinely completed over time to help validate the values of economic interest in the assay table by comparison with original assay certificate input tables, as well as various comparisons between sample duplicates, check samples, and comparison between laboratory results.

Verifications performed by Micon included checks between database and randomly selected recent assay certificates (from the 2013 and 2014 drilling programs), confirmation of conversion factors for element-to-oxide transformations, and comparisons with historic versions of the database. Collar locations were reviewed, drill hole paths were inspected, and database validation routines were performed. No errors were identified in the data reviewed.

Scatter plots were performed for pairs of rare metal, LREE, and HREE pairs of elements. Collar locations of drill holes were compared with older printed records and GPS survey files. Downhole deviation surveys were visually inspected, and spot checks were completed for drill hole azimuths and dips.

12.2 SITE VISIT

A site visit was conducted by Tudorel Ciuculescu, Micon's QP, on June 25, 2026, to assess the current state of the Property. Mr. Ciuculescu has previously visited the Nechalacho Rare Earth Elements Project on two other occasions, from April 25 -27, 2011 and October 9-11, 2012, as a QP for technical reports issued in 2011 and 2013 for Avalon.

During the June 2026 site visit, Mr. Ciuculescu met at the Project with Burl Joseph, Nechalacho Basal Project Director, and J.C. Pedersen, P.Geo.

The Project site was affected by the August, 2025 wildfire, with the camp, landing dock, core shack, and the core repository being destroyed in the fire. Several drilling pads and drill hole collar markers for 2010-2014 drilling were identified and their position recorded with a handheld GPS. No samples were collected during this site visit, as the presence of mineralization has been previously confirmed by independent sampling.

The core available currently at site is not appropriate for check sampling any longer, as the core boxes have been destroyed in the fire (Figure 12.1) and the core cannot be traced back to the corresponding drill hole, nor to its downhole location.

Figure 12.1: Core Piles after August 2025 Wildfire



Source: Photograph taken during the Micon site visit in 2026.

On a previous site visit to the Nechalacho Basal Project, in April 2011, Mr. Ciuculescu collected eight core samples from six diamond drill holes from the 2010 drill program. Six of the samples were from the Basal Zone, and two from the Upper Zone. The core samples consisted of the second half core or quartered core retained by Avalon. The samples were processed at SGS Canada Laboratories, Don Mills, Toronto, using the IMS95A and the IMS91B analytical packages. The presence of mineralization was confirmed, and the assay results were similar to the original samples.

12.3 QUALITY ASSURANCE/QUALITY CONTROL PROCEDURES AND RESULTS

Avalon inserted routinely into the project sample stream a variety of CRM materials, blanks, and field sample duplicates. Pulps were sent to alternative laboratories for check assaying.

A detailed description of the QA/QC procedures, control sample insertion and performance for the 2007-2012 drilling programs were presented in the 2013 NI 43-101 Feasibility Technical Report.

Samples generated in the 2013-2014 drilling campaigns followed the same QA/QC procedures as in the previous programs. The samples were sent to ALS Vancouver for assaying using the MS81. Higher grade samples are processed with MS81h. Niobium and Zircon-rich samples were also assayed by ME-XRF10 and ME-XRF30 methods. Check assays were sent to ACME Vancouver.

12.3.1 QA/QC samples - September, 2012 to January, 2015

The control samples inserted into the sample stream from drill holes completed since September 2012 were presented in Table 12.1. Quality control procedures used in previous campaigns were continued through 2014. Overall results were satisfactory. New rare earth element standard samples at various grades have been certified for use starting in 2013.

Table 12.1: Samples and QA/QC Material Submitted between September, 2012 and January, 2015

Laboratories	ACME_VAN	ALS_VAN
No. of Batches	5	41
No. of DH Samples	nil	2,439
No. of QC Samples	363	514
No. of Standard Samples	169	1,311

Results were monitored for each of the elements with potential contribution to the project revenue. The results for Neodymium (from REO group) and Niobium (from rare metals group) are presented. Analyses of CRM, blank, and duplicate sample assays for these two elements are shown in the following tables and graphs.

12.3.1.1 CRMs Niobium – Method FS_ICPMSH

Table 12.2 presents the CRMs and the number of samples analyzed with the FS_ICPMSH assay method. Figures 12.2 to 12.6 show the performance of the CRMs after removing outlier Nb values

Table 12.2: Niobium CRM assays – Method FS-ICPMSH

Std Code	Nb Standard(s)				No. of Samples	Calculated Values			
	Method	Exp Method	Exp Value	Exp SD		Mean Nb	SD	CV	Mean Bias
STD-04_09	FS_ICPMSH	-	-	-	2	4,290	14.1421	0.0033	-
STD-229	FS_ICPMSH	MA_ICPMS	2,664	140.5	17	2,703.529	161.4753	0.0597	1.48%
STD-236	FS_ICPMSH	MA_ICPMS	2,922	113.5	62	3,064.839	131.258	0.0428	4.89%
STD-BZ0412	FS_ICPMSH	MA_ICPMS	2,353.22	68.8	56	2,409.286	95.3626	0.0396	2.38%
STD-LG0412	FS_ICPMSH	MA_ICPMS	984.5	16.7	23	1,029.913	34.8346	0.0338	4.61%

Figure 12.2: Nb by FS_ICPMSh - Standard STD-04_09

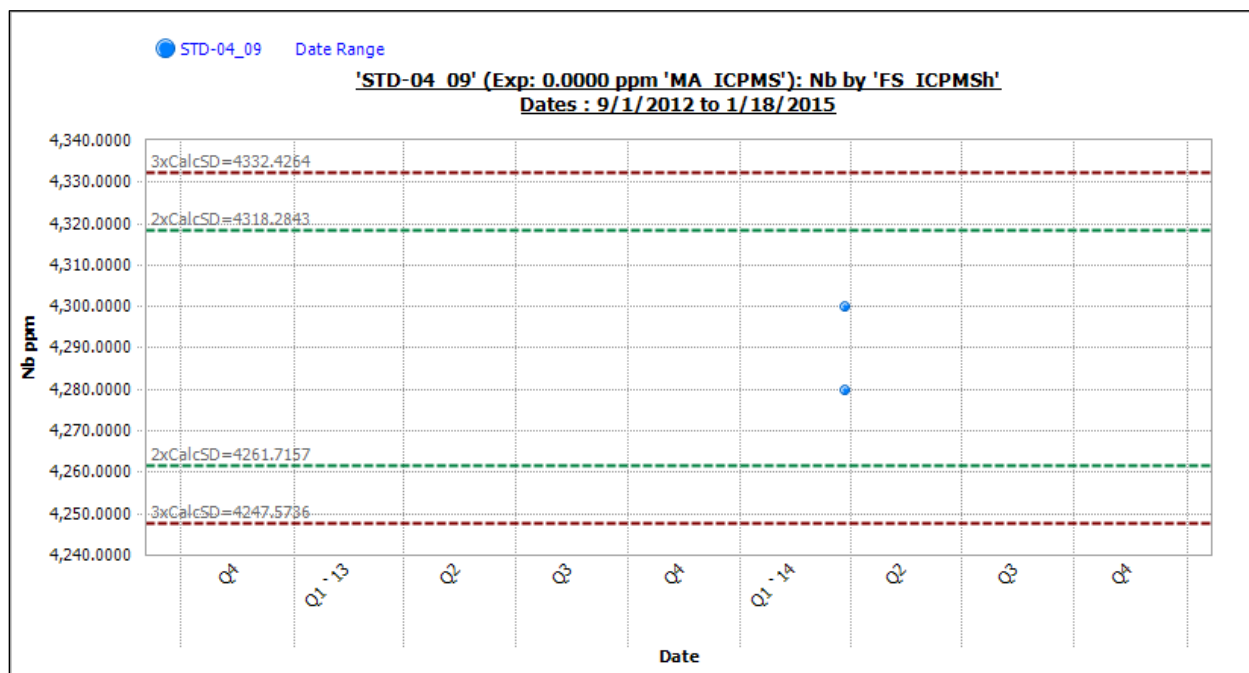
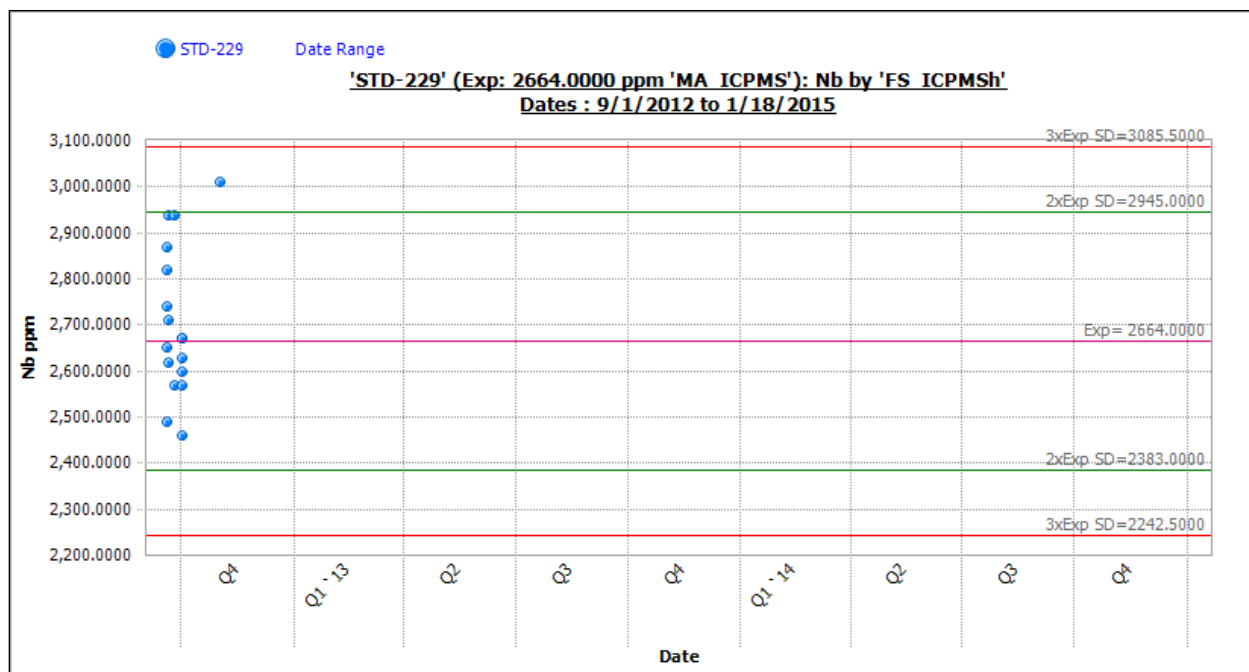
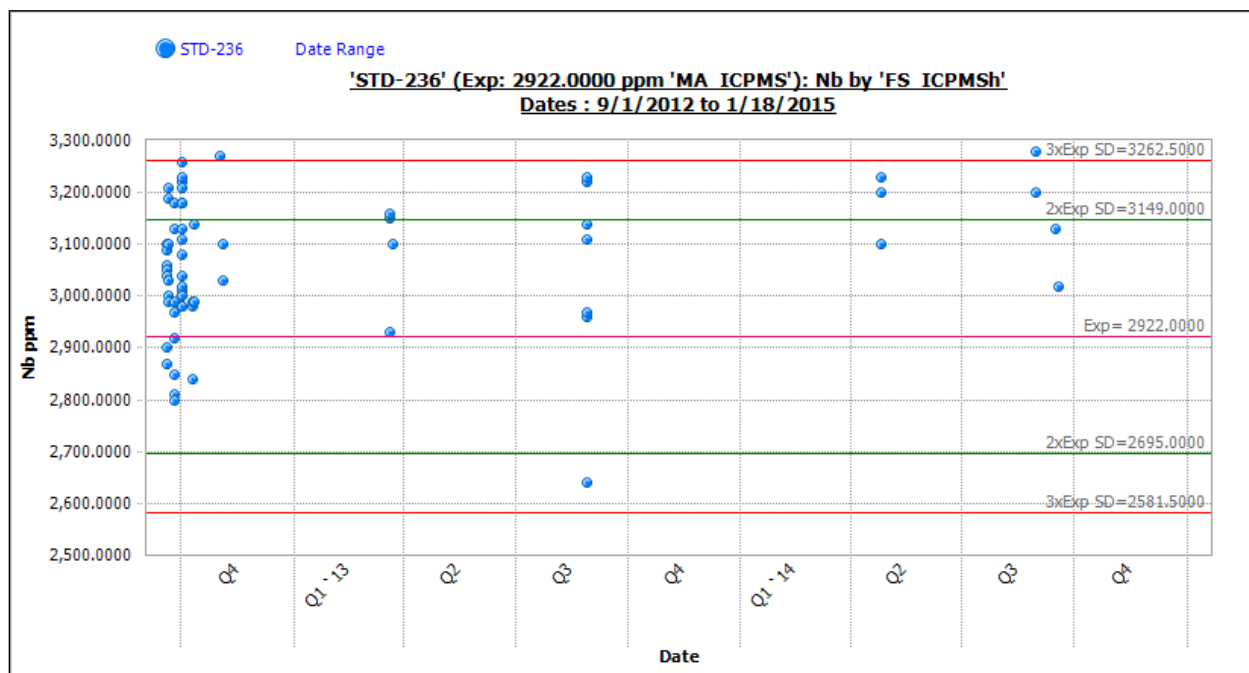


Figure 12.3: Nb by FS_ICPMSh - Standard STD-229



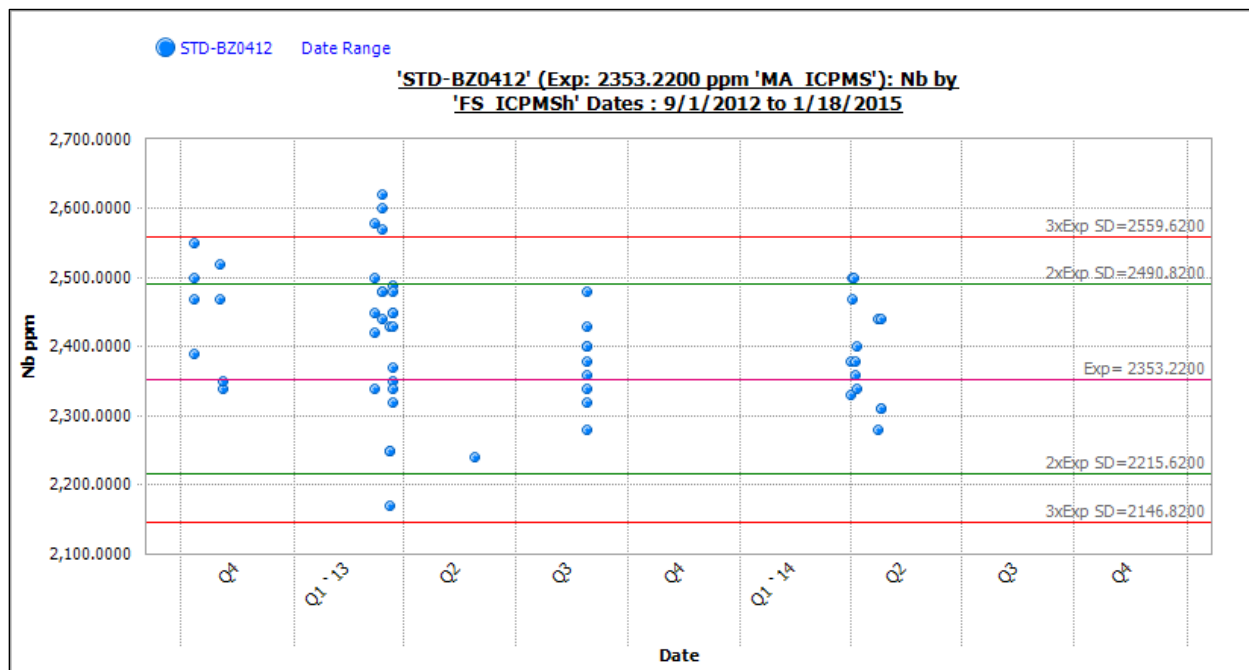
Note: 14 outlier values removed

Figure 12.4: Nb by FS_ICPMSH - Standard STD-236



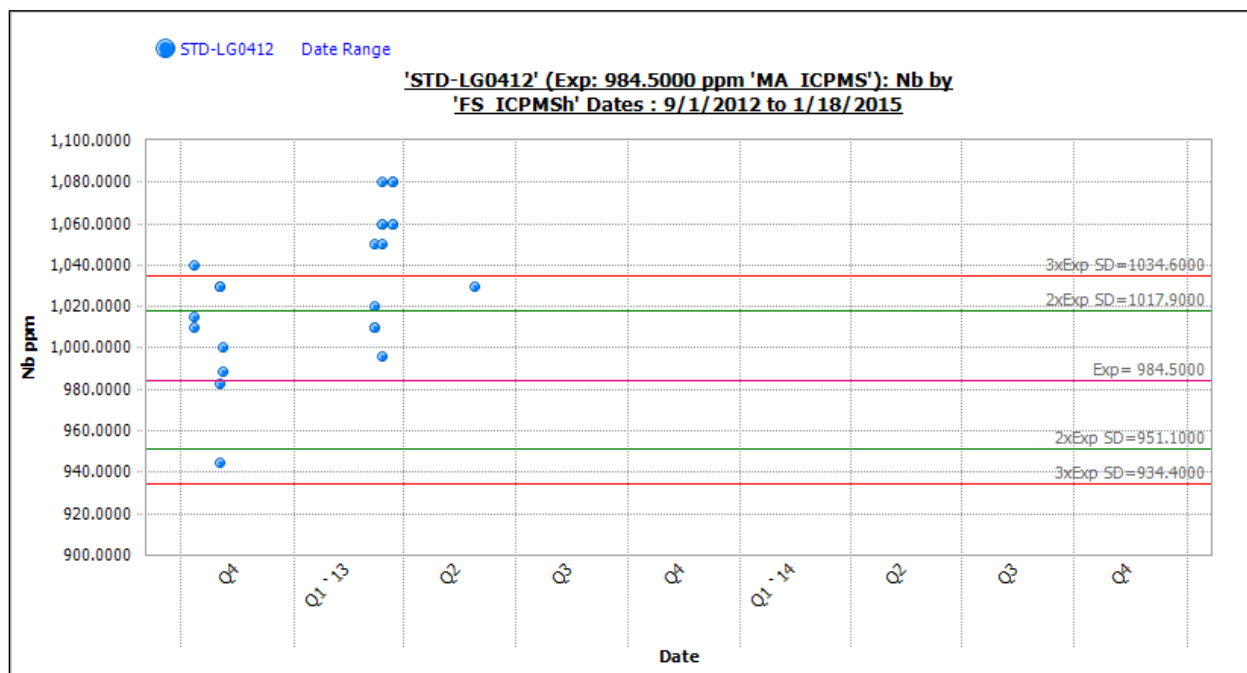
Note: 2 outlier values removed

Figure 12.5: Nb by FS_ICPMSH - Standard STD-BZ0412



Note: 5 outlier values removed

Figure 12.6: Nb by FS_ICPMS - Standard STD-LG0412



Note: 11 outlier values removed

12.3.1.2 CRMs Niobium – Method XRFFS

Table 12.3 presents the CRMs and the number of samples analysed with the XRFFS assay method. Figures 12.7 to 12.11 show the performance of the CRMs after removing outlier Nb values

Table 12.3: Niobium CRM assays – Method XRFFS

Std Code	Nb Standard(s)				No. of Samples	Mean Nb	Calculated Values		
	Method	Exp Method	Exp Value	Exp SD			SD	CV	Mean Bias
STD-04_09	XRFFS	-	-	-	2	0.43	0	0	-
STD-229	XRFFS	XRFFS	0.2967	0.0142	2	0.28	0	0	-5.63%
STD-236	XRFFS	XRFFS	0.3249	0.0115	6	0.325	0.0197	0.0608	0.03%
STD-BZ0412	XRFFS	XRFFS	0.2269	0.0109	17	0.2441	0.01	0.0411	7.59%
STD-LG0412	XRFFS	XRFFS	0.095	0.003	10	0.095	0.0053	0.0555	0.04%

Figure 12.7: Nb by XRFFS - Standard STD-04_09

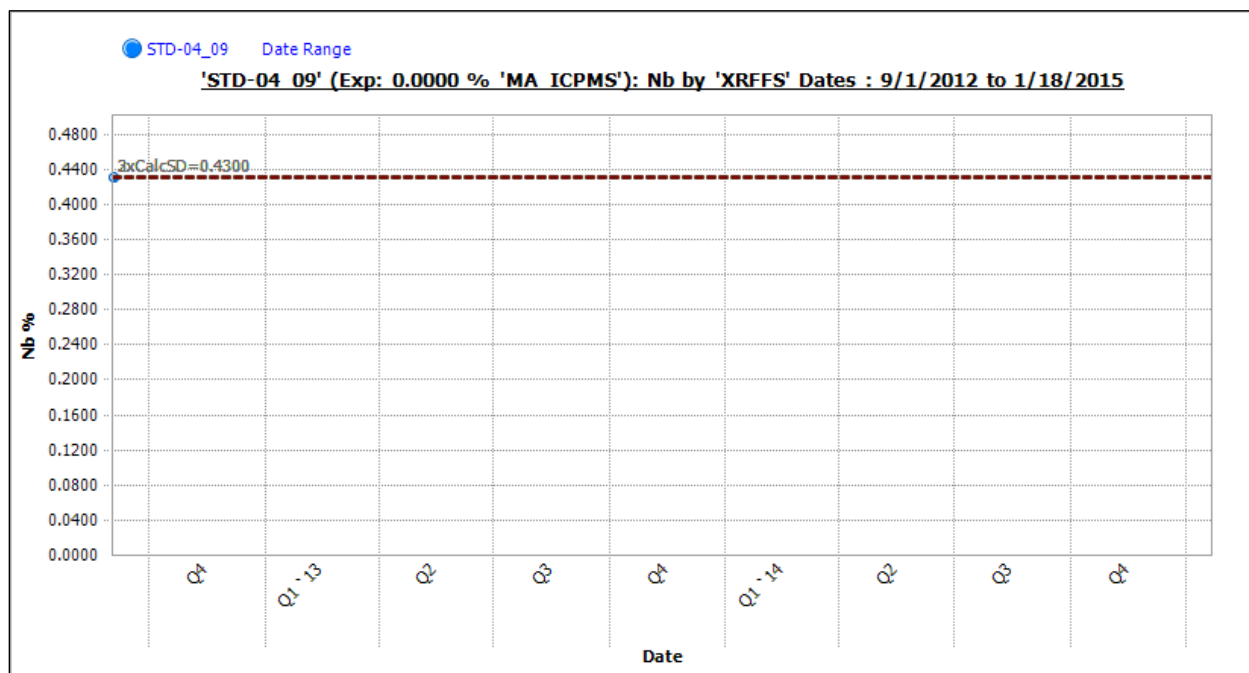


Figure 12.8: Nb by XRFFS - Standard STD-229

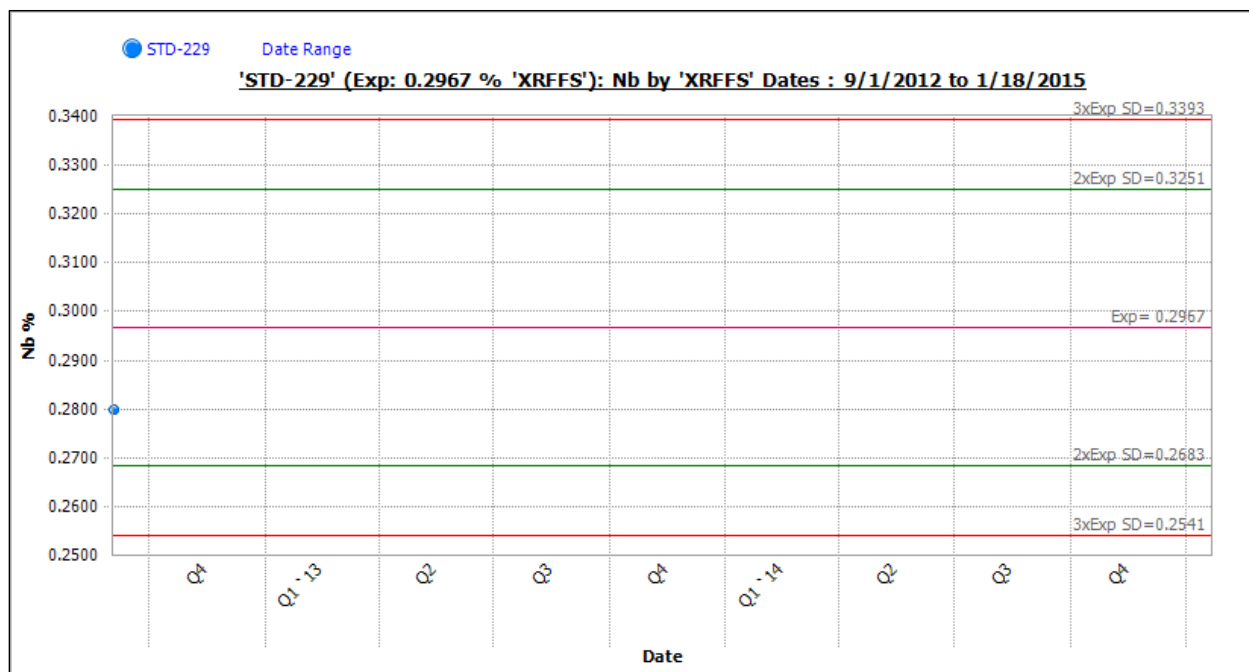


Figure 12.9: Nb by XRFFS - Standard STD-236

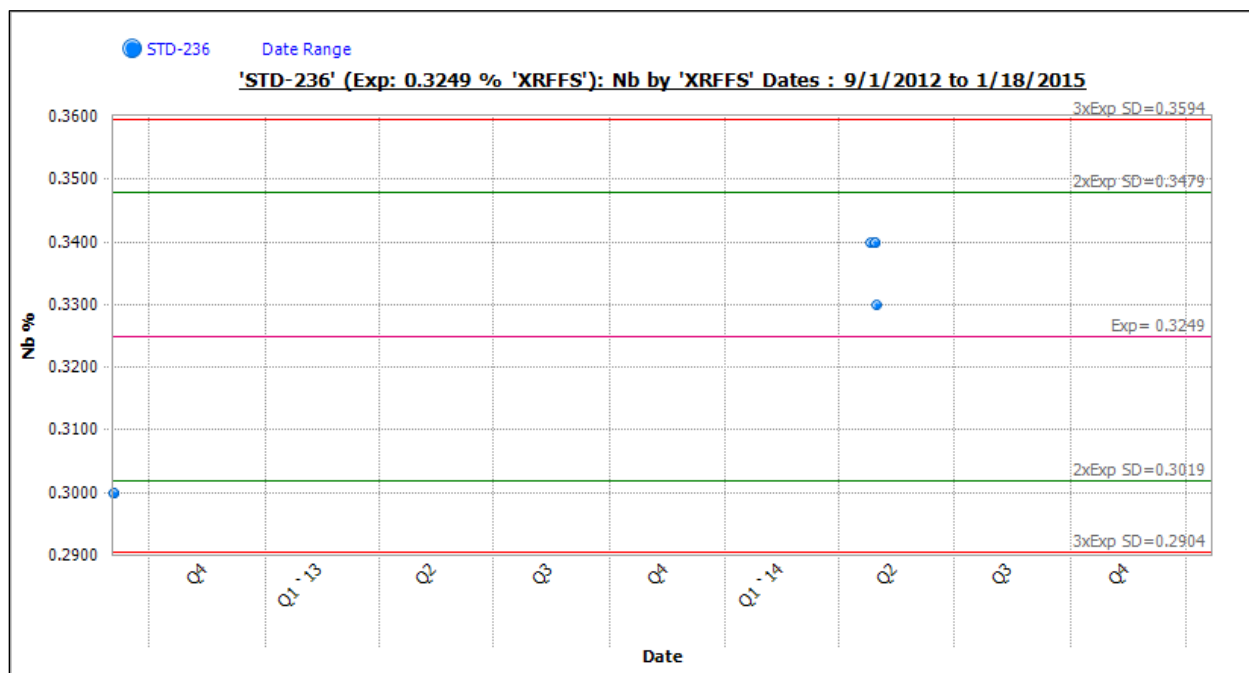
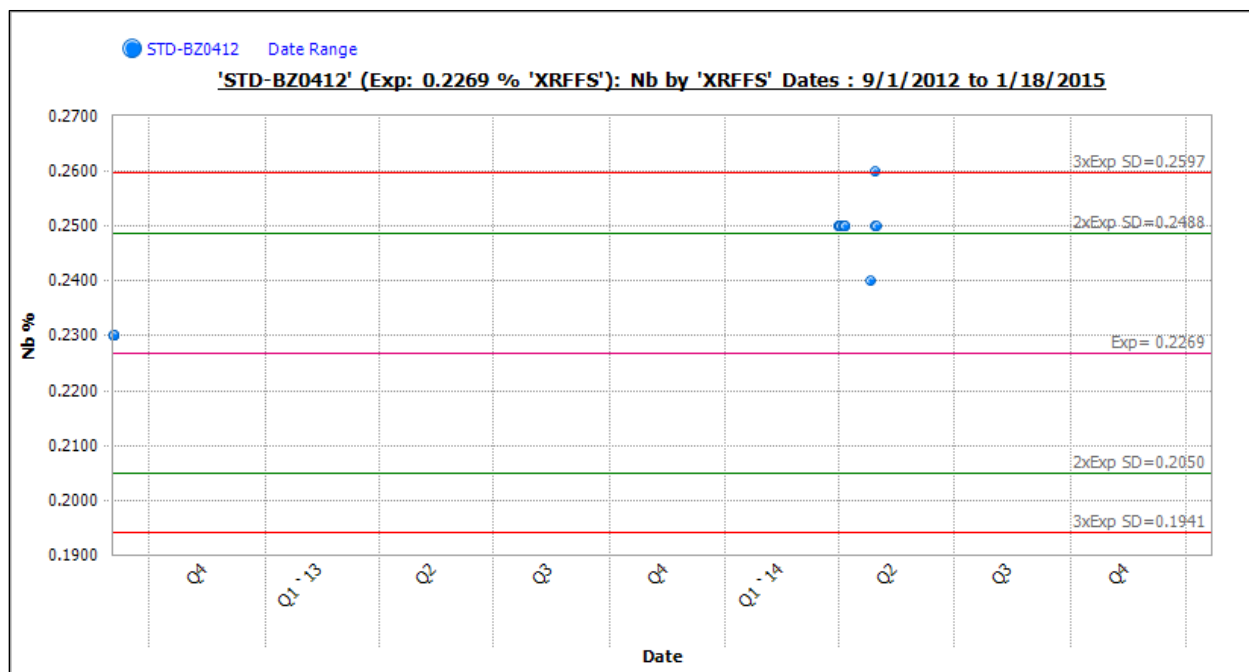
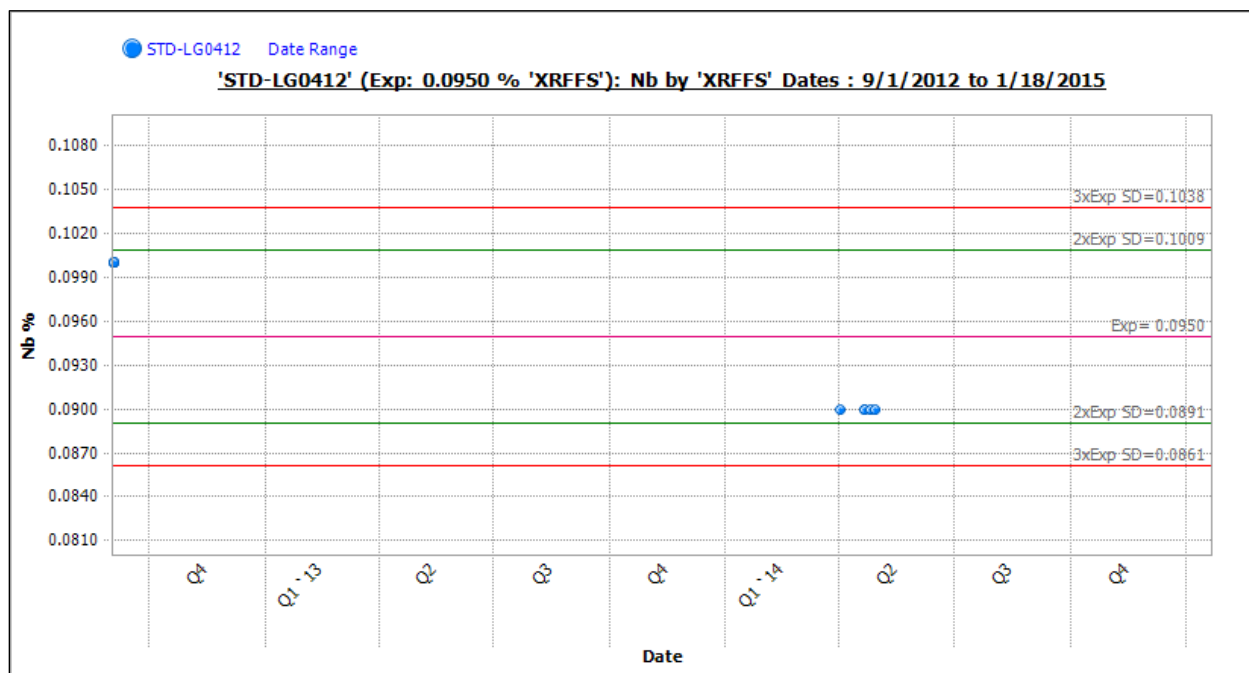


Figure 12.10: Nb by XRFFS - Standard STD-BZ0412



Note: 1 outlier value removed

Figure 12.11: Nb by XRFFS - Standard STD-LG0412



12.3.1.3 CRMs Neodymium – Method FS_ICPMS

Table 12.4 presents the CRMs and the number of samples analyzed with the FS_ICPMS assay method. Figures 12.12 to 12.14 show the performance of the CRMs after removing outlier Nd values

Table 12.4: Neodymium CRM assays – Method FS-ICPMS

Std Code	Nd Standards				No. of Samples	Mean Nd	Calculated Values		
	Method	Exp Method	Exp Value	Exp SD			SD	CV	Mean Bias
STD-04_09	FS_ICPMS	-	-	-	4	5315	329.4946	0.062	-
STD-229	FS_ICPMS	MA_ICPMS	2340	117.5	2	2145	21.2132	0.0099	-8.33%
STD-236	FS_ICPMS	MA_ICPMS	2586	118	13	2648.46	147.2439	0.0556	2.42%

Figure 12.12: Nd by FS-ICPMS - Standard STD-04_09

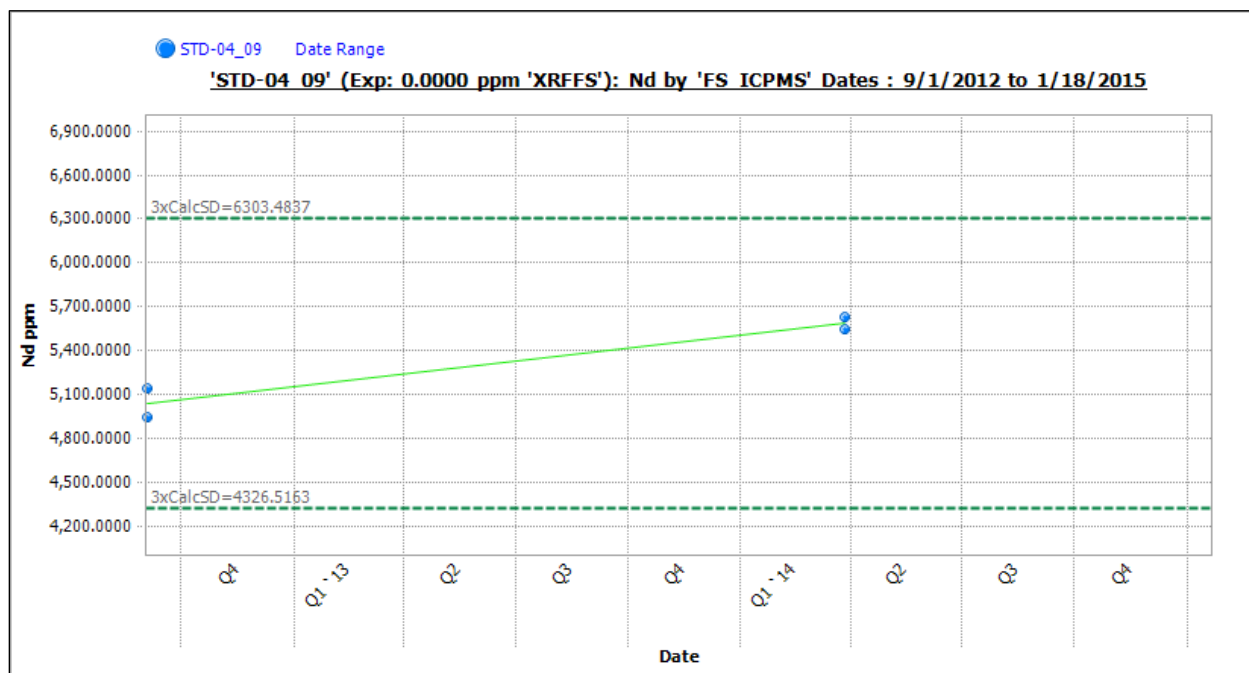


Figure 12.13: Nd by FS-ICPMS - Standard STD-229

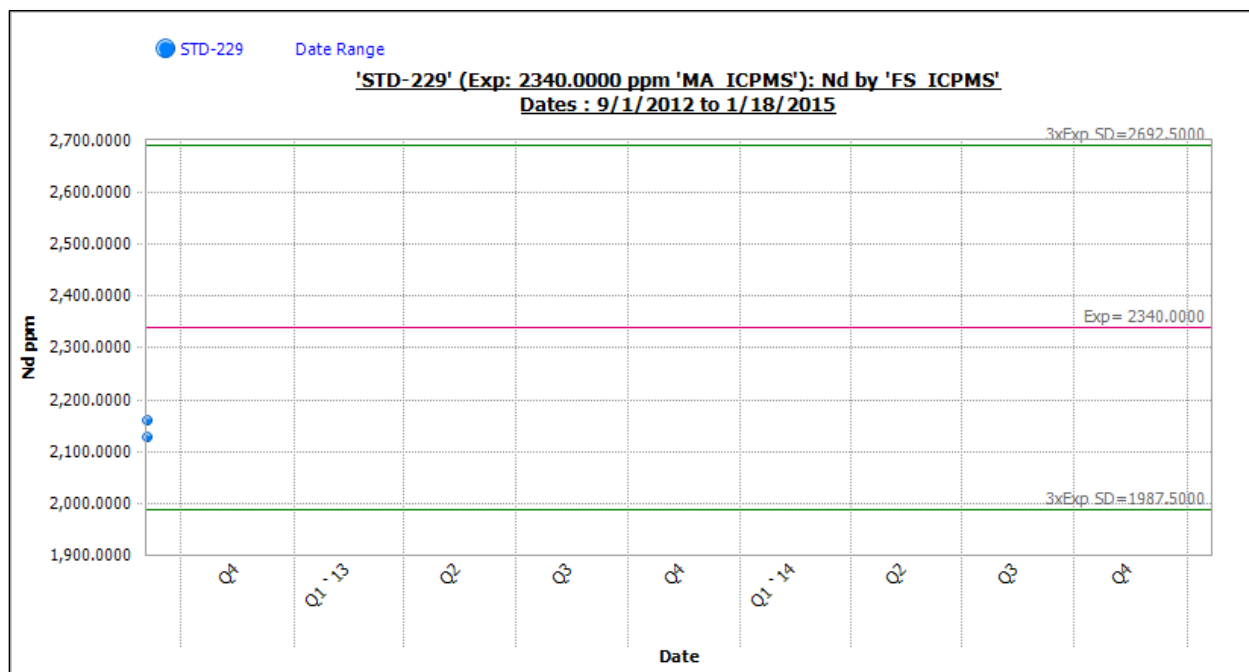
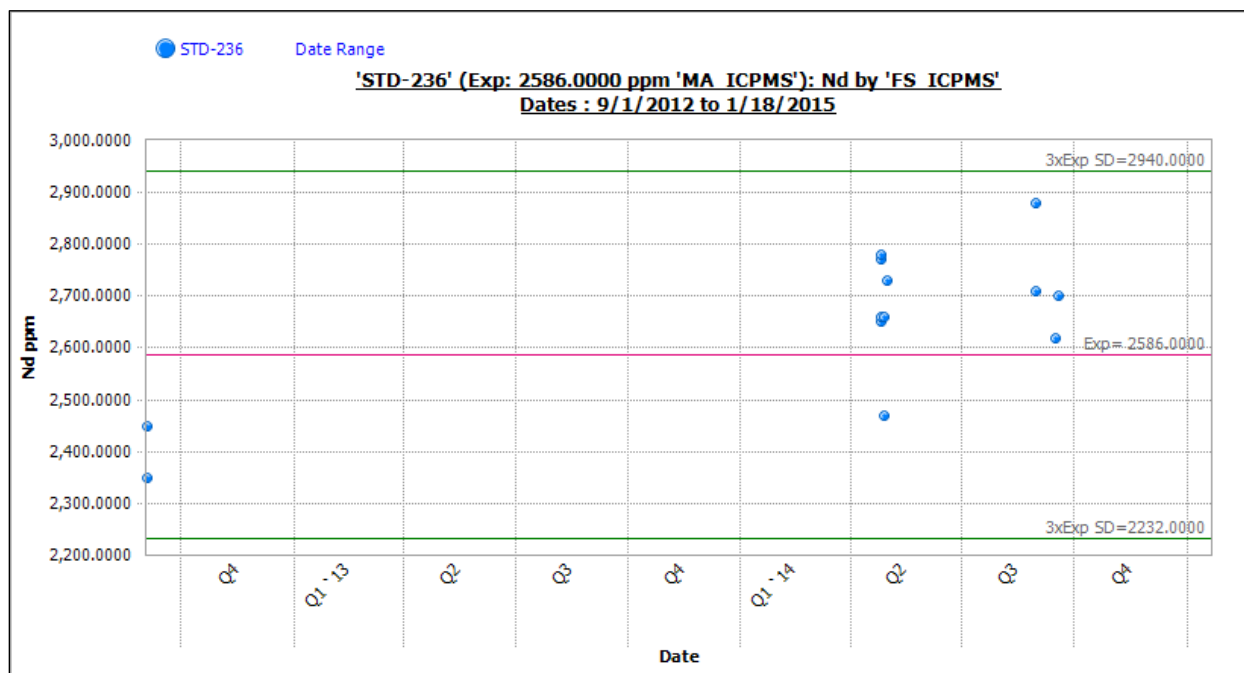


Figure 12.14: Nd by FS-ICPMS - Standard STD-236



12.3.1.4 CRMs Neodymium – Method FS_ICPMSh

Table 12.5 presents the CRMs and the number of samples analyzed with the FS_ICPMSh assay method. Figures 12.15 to 12.19 show the performance of the CRMs after removing outlier Nd values.

Table 12.5: Neodymium CRM assays – Method FS_ICPMSh

Nd Standard(s)					No. of Samples	Calculated Values			
Std Code	Method	Exp Method	Exp Value	Exp SD		Mean Nd	SD	CV	Mean Bias
STD-04_09	FS_ICPMSh	-	-	-	2	5270	42.43	0.0081	-
STD-229	FS_ICPMSh	MA_ICPMS	2340	117.5	31	2401.94	89.83	0.0374	2.65%
STD-236	FS_ICPMSh	MA_ICPMS	2586	118	61	2672.3	100.74	0.0377	3.34%
STD-BZ0412	FS_ICPMSh	MA_ICPMS	2045.3	101.07	55	2203.64	70.8	0.0321	7.74%
STD-LG0412	FS_ICPMSh	MA_ICPMS	984.03	50.85	23	1061.3	33.24	0.0313	7.85%

Figure 12.15: Nd by FS-ICPMS - Standard STD-04_09

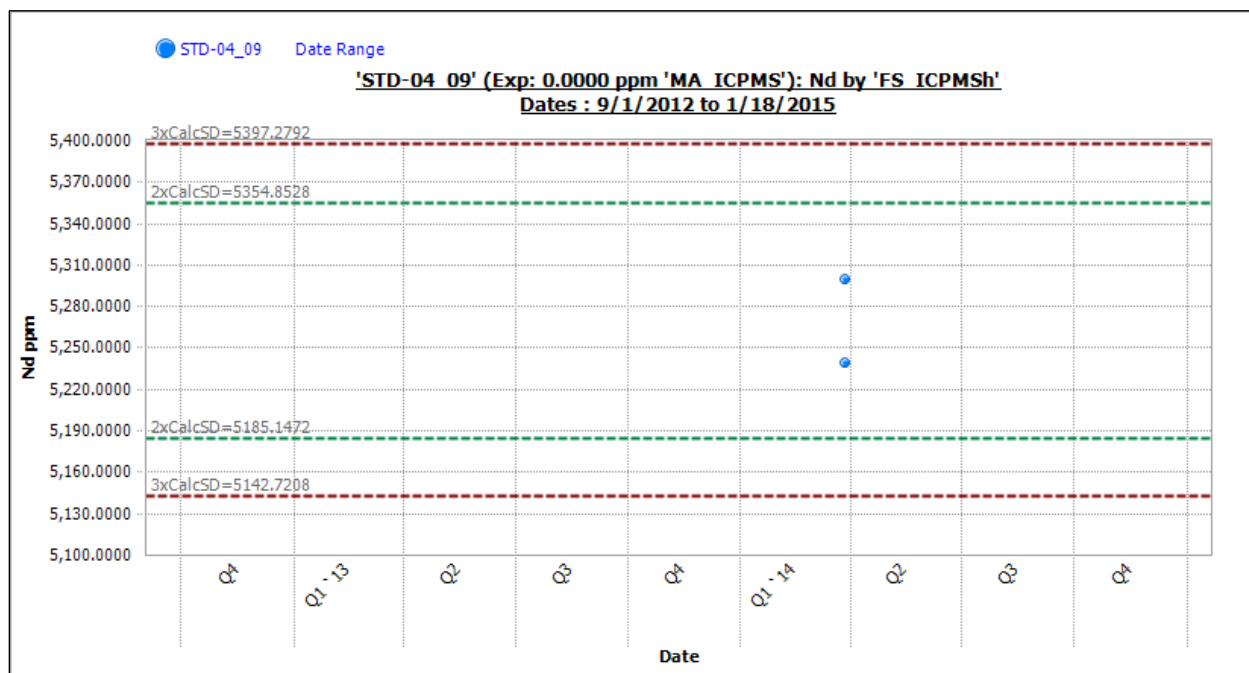


Figure 12.16: Nd by FS-ICPMS - Standard STD-229

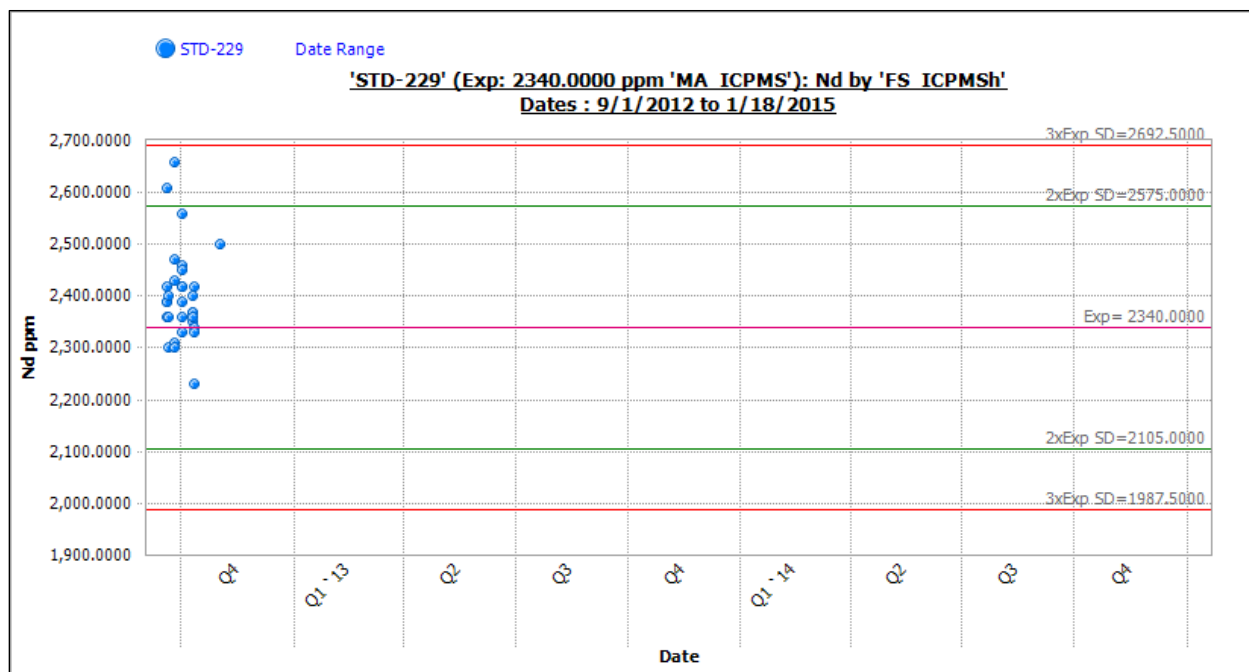
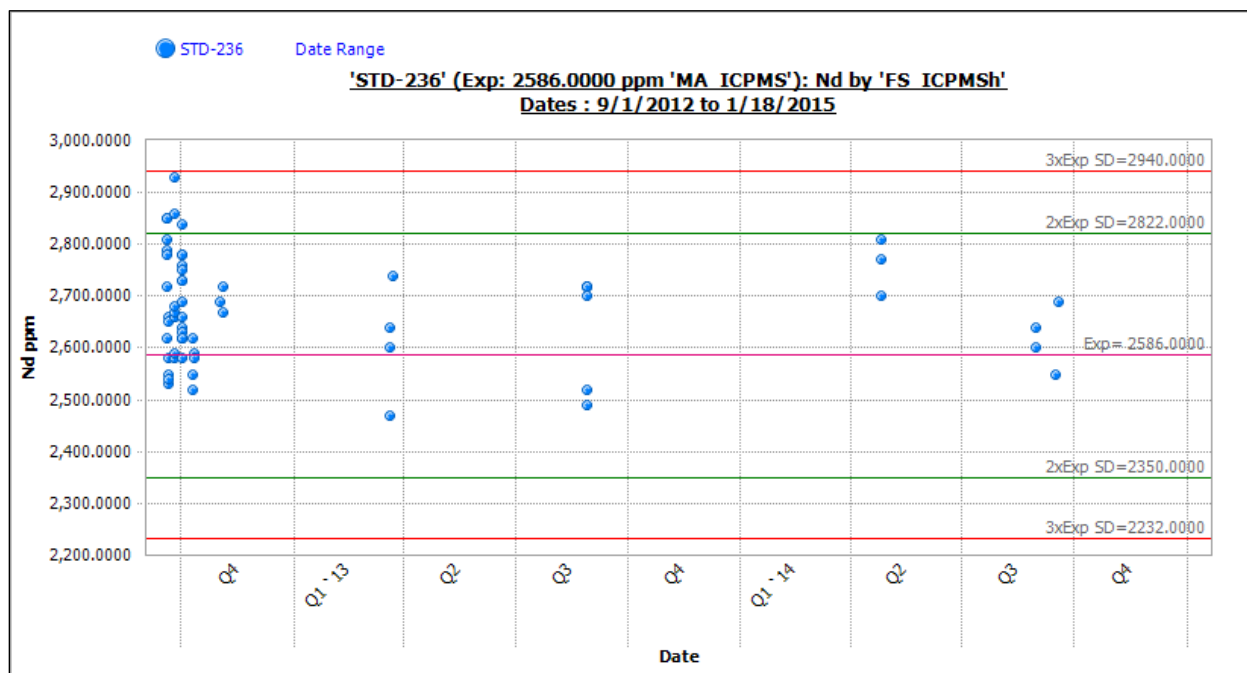
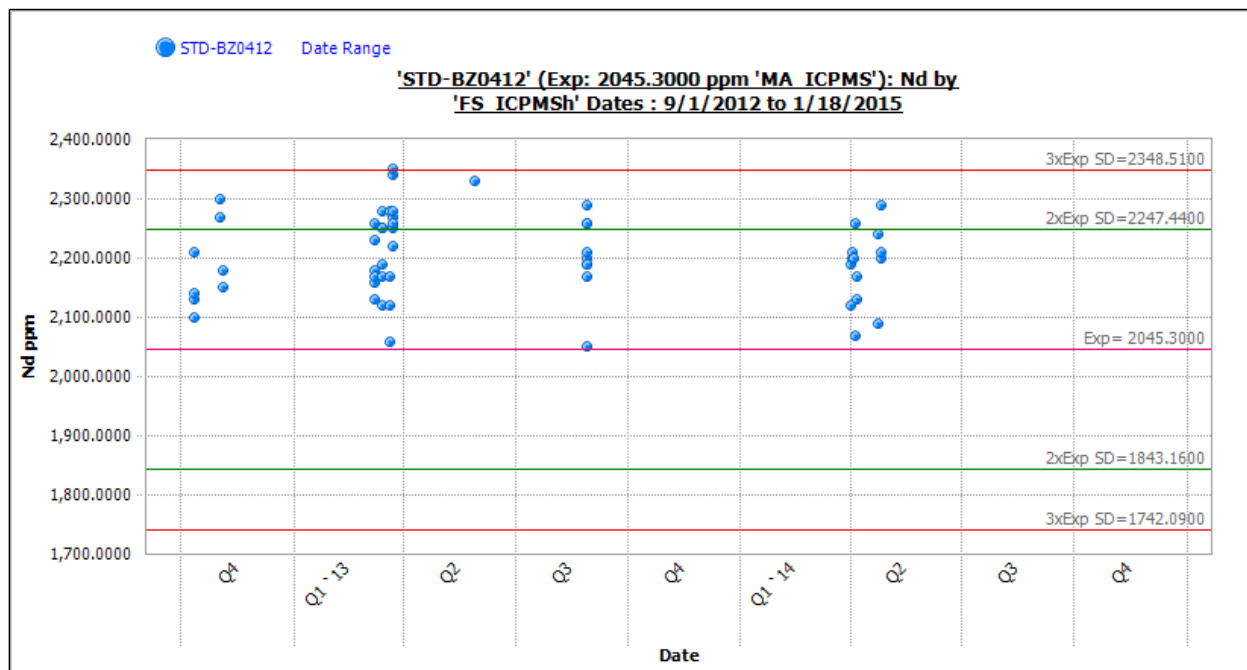


Figure 12.17: Nd by FS-ICPMS - Standard STD-236



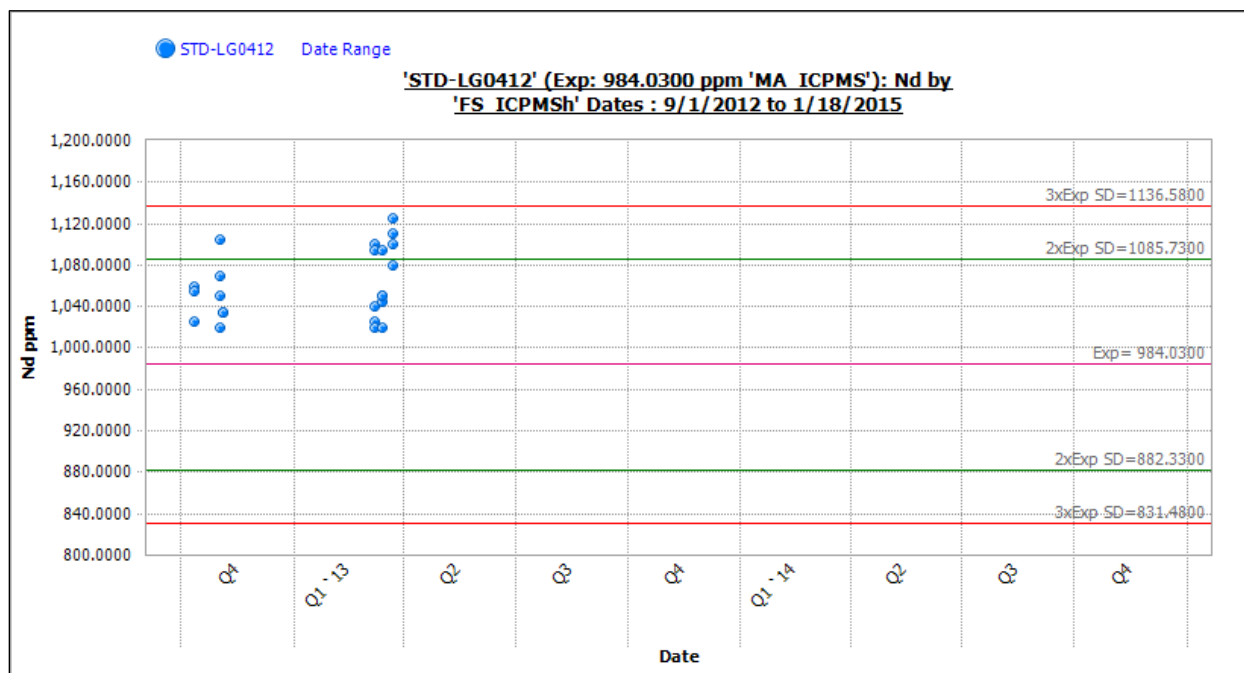
Note: 1 outlier value removed

Figure 12.18: Nd by FS-ICPMS - Standard STD-BZ0412



Note: 3 outlier values removed

Figure 12.19: Nd by FS-ICPMS - Standard STD-LG0412



Note: 1 outlier value removed

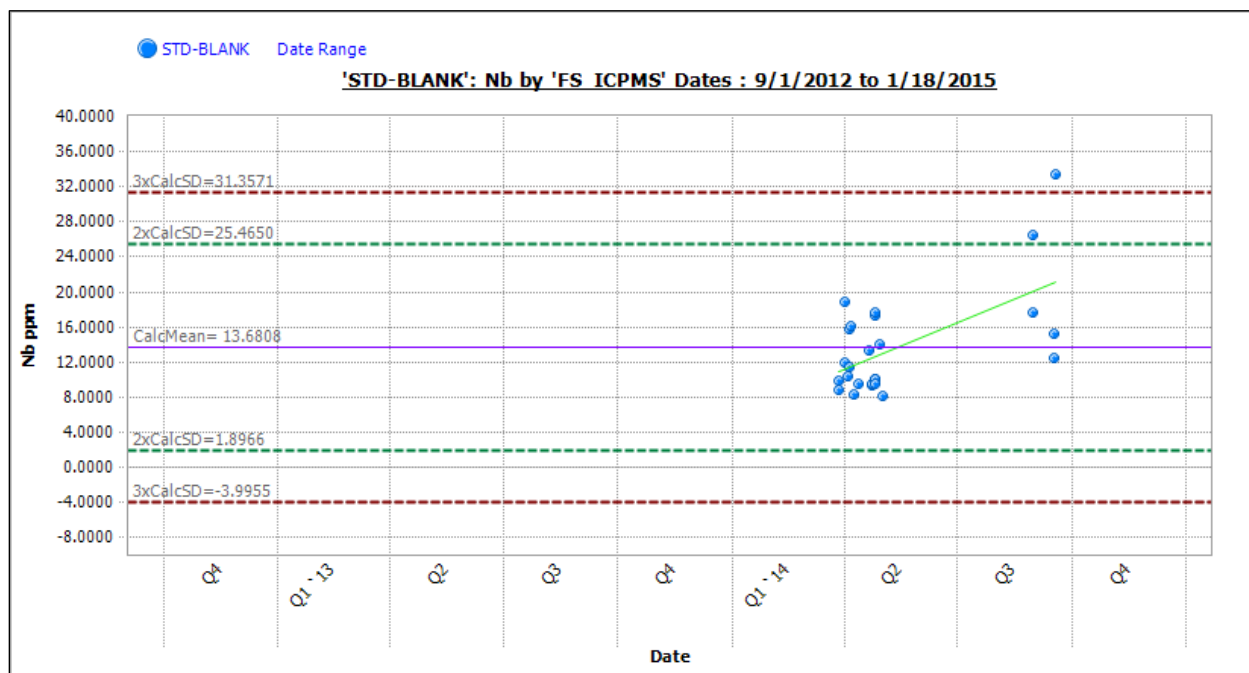
12.3.1.5 Blank Niobium – Method FS_ICPMS

Table 12.6 presents the Blanks and the number of samples analyzed with the FS_ICPMS assay method. Figure 12.20 shows the performance of the Blanks.

Table 12.6: Niobium Blank Assays – Method FS_ICPMS

Std Code	Nb Standard(s)			No. of Samples	Calculated Values			
	Method	Exp Method	Exp Value		Mean Nb	SD	CV	Mean Bias
STD-BLANK	FS_ICPMS	-	-	26	13.6808	5.8921	0.4307	-

Figure 12.20: Nb by FS_ICPMS – Blank



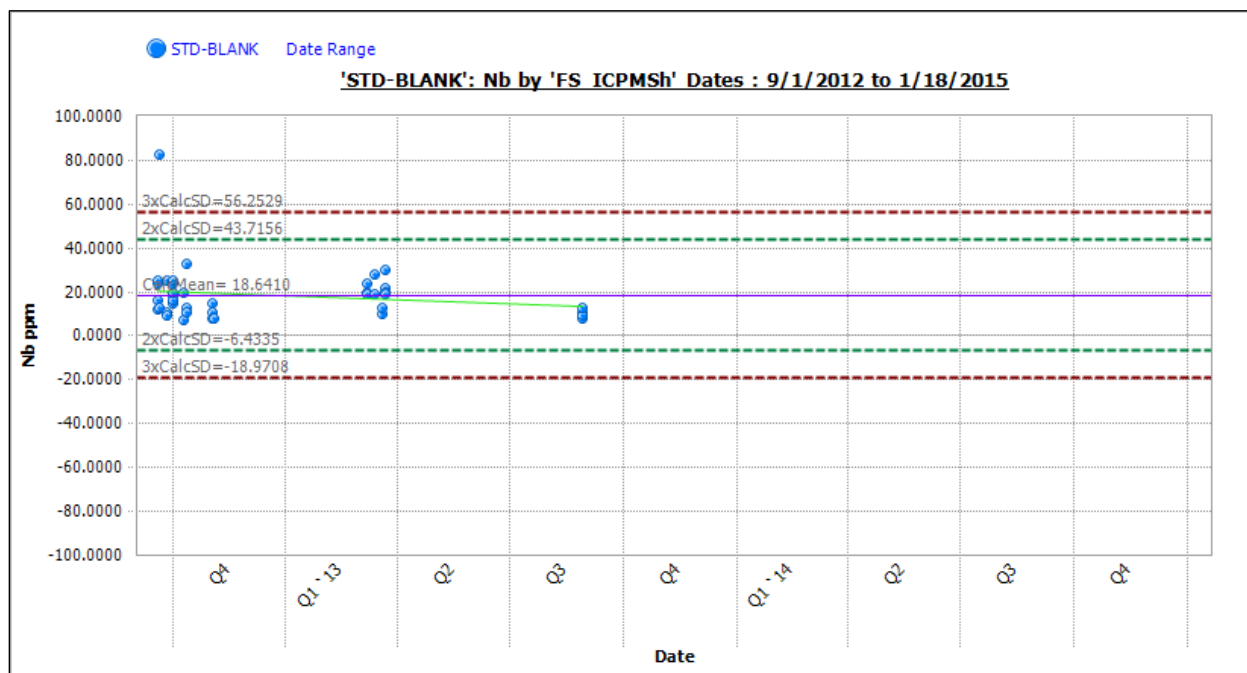
12.3.1.6 Blank Niobium – Method FS_ICPMS

Table 12.7 presents the Blanks and the number of samples analyzed with the FS_ICPMS assay method. Figure 12.21 shows the performance of the Blanks.

Table 12.7: Niobium Blank assays – Method FS_ICPMS

Std Code	Nb Standard(s)				No. of Samples	Calculated Values			
	Method	Exp Method	Exp Value	Exp SD		Mean Nb	SD	CV	Mean Bias
STD-BLANK	FS_ICPMS	-	-	-	39	18.641	12.5373	0.6726	-

Figure 12.21: Nb by FS_ICPMSH – Blank



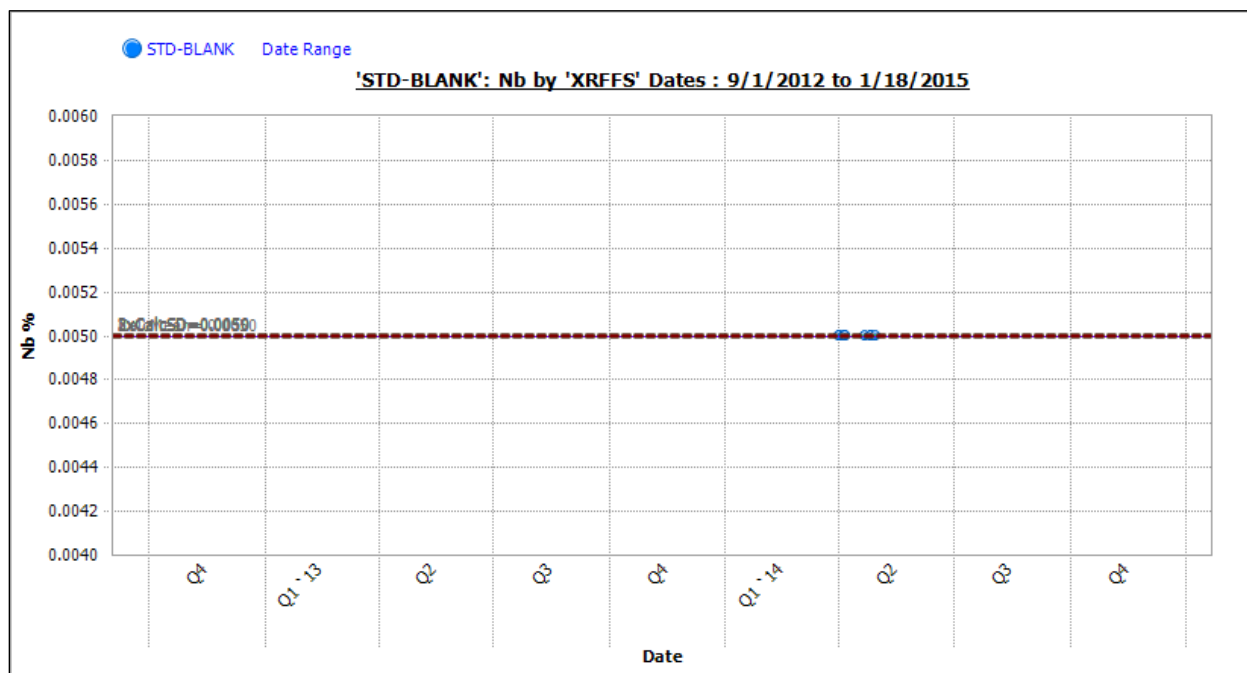
12.3.1.7 Blank Niobium – Method XRFFS

Table 12.8 presents the Blanks and the number of samples analyzed with the XRFFS assay method. Figure 12.22 shows the performance of the Blanks.

Table 12.8: Niobium Blank assays – Method XRFFS

Nb Standard(s)					No. of	Calculated Values			
Std Code	Method	Exp Method	Exp Value	Exp SD	Samples	Mean Nb	SD	CV	Mean Bias
STD-BLANK	XRFFS	-	-	-	10	0.005	0	0	-

Figure 12.22: Nb by XRFFS – Blank



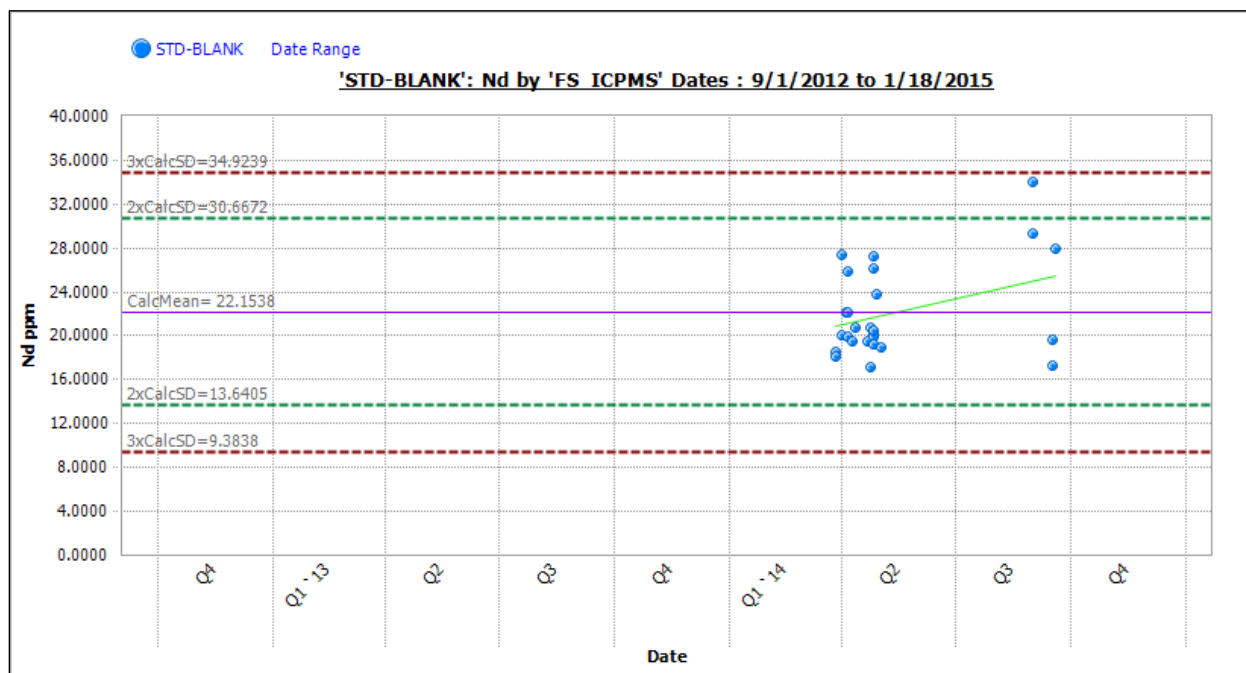
12.3.1.8 Blank Neodymium – Method FS_ICPMS

Table 12.9 presents the Blanks and the number of samples analyzed with the FS_ICPMS assay method. Figure 12.23 shows the performance of the Blanks.

Table 12.9: Neodymium Blank assays – Method FS_ICPMS

Std Code	Method	Nd Standard(s)			No. of Samples	Calculated Values			
		Exp Method	Exp Value	Exp SD		Mean Nd	SD	CV	Mean Bias
STD-BLANK	FS_ICPMS	-	-	-	26	22.1538	4.2567	0.1921	-

Figure 12.23: Nd by FS_ICPMS – Blank



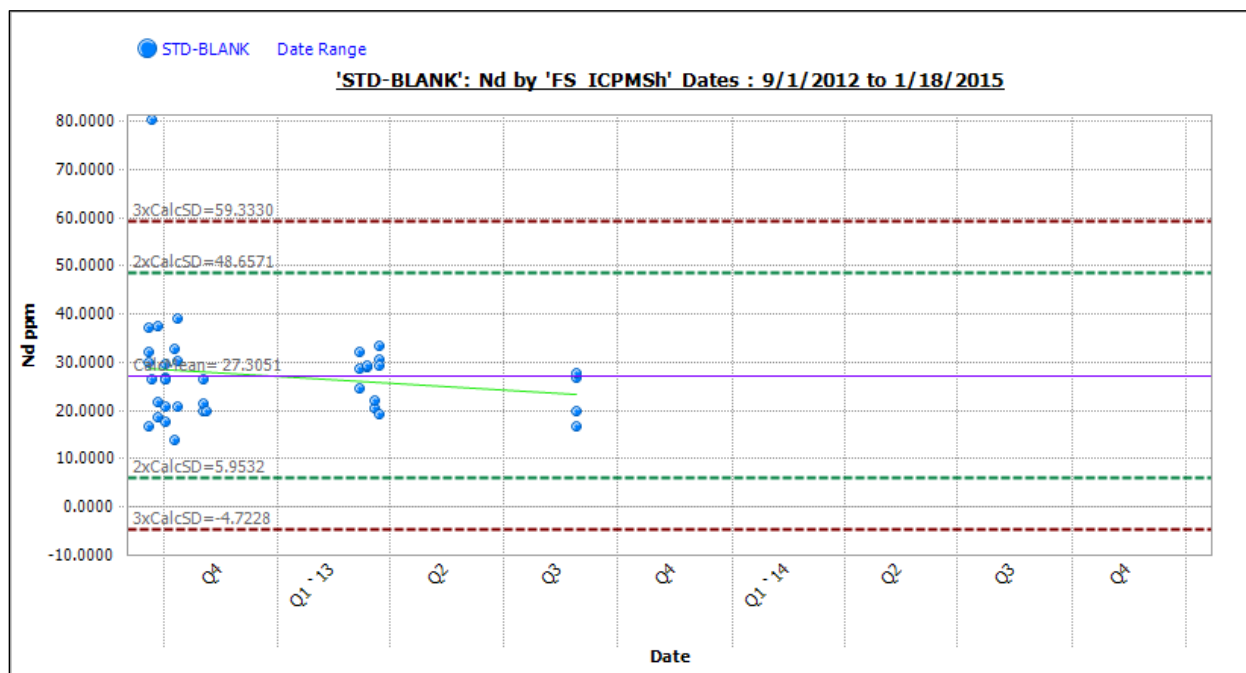
12.3.1.9 Blank Neodymium – Method FS_ICPMSh

Table 12.10 presents the Blanks and the number of samples analyzed with the FS_ICPMSh assay method. Figure 12.24 shows the performance of the Blanks.

Table 12.10: Neodymium Blank assays – Method FS_ICPMSh

Std Code	Nd Standard(s)				No. of Samples	Calculated Values			
	Method	Exp Method	Exp Value	Exp SD		Mean Nd	SD	CV	Mean Bias
STD-BLANK	FS_ICPMSh	-	-	-	39	27.3051	10.676	0.391	-

Figure 12.24: Nd by FS_ICPMSH – Blank



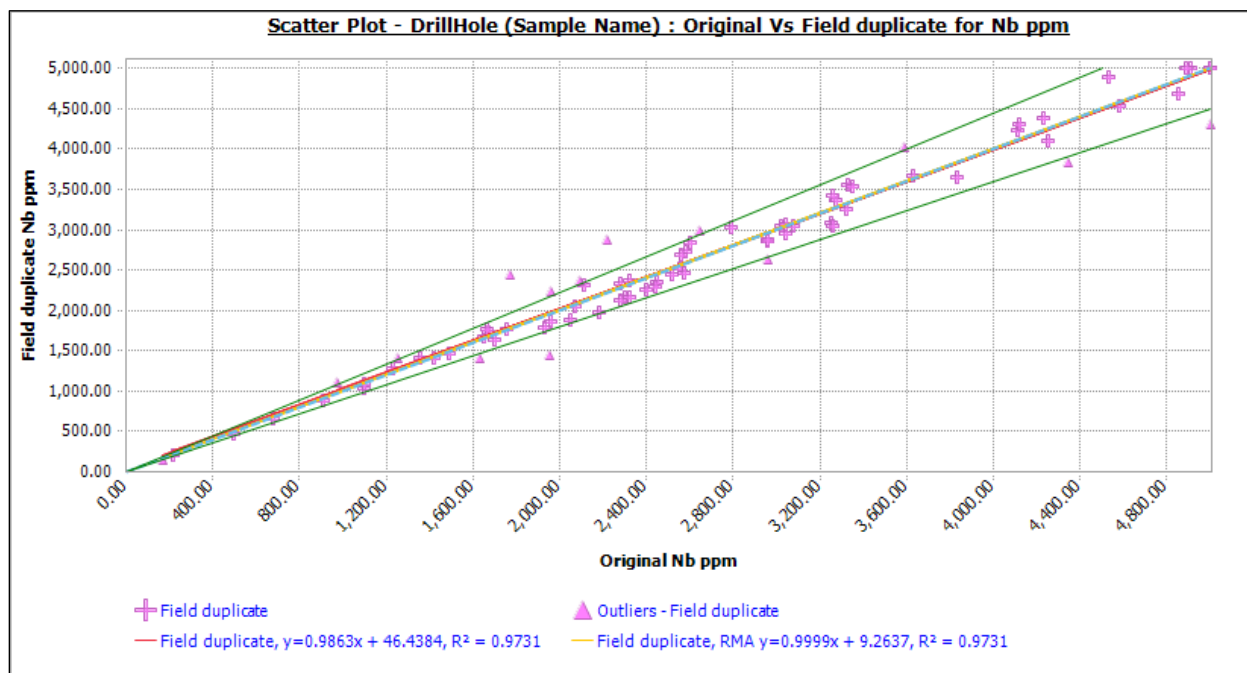
12.3.1.10 Field Duplicate Niobium – Method FS_ICPMSH

Table 12.11 presents the original and field duplicate samples analyzed with the FS_ICPMSH assay method. Figure 12.25 shows the scatter plot of the sample pairs.

Table 12.11: Niobium Field Duplicate assays – Method FS_ICPMSH

No. of Samples	Mean Nb1	Mean Nb2	SD Nb1	SD Nb2	CV Nb1	CV Nb2	sRPD (mean)
80	2741.26	2750.15	1275.69	1275.52	0.47	0.46	-0.04

Figure 12.25: Niobium Field Duplicate Scatter Plot by FS_ICPMSh



Note: 14 pairs removed

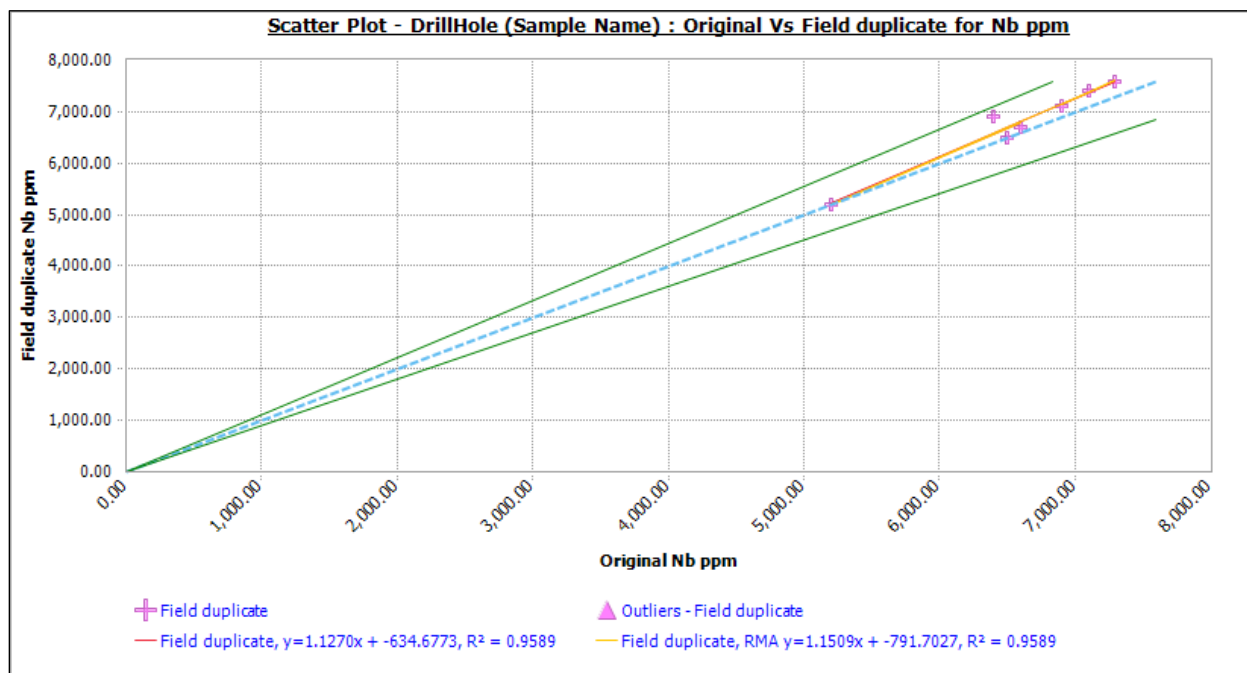
12.3.1.11 Field Duplicate Niobium – Method XRFFS

Table 12.12 presents the original and field duplicate samples analyzed with the XRFFS assay method. Figure 12.26 shows the scatter plot of the sample pairs.

Table 12.12: Niobium Field Duplicate assays – Method XRFFS

No. of Samples	Mean Nb1	Mean Nb2	SD Nb1	SD Nb2	CV Nb1	CV Nb2	sRPHD (mean)
7	6571.43	6771.43	636.32	732.34	0.1	0.11	-1.43

Figure 12.26: Niobium Field Duplicate Scatter Plot by XRFFS



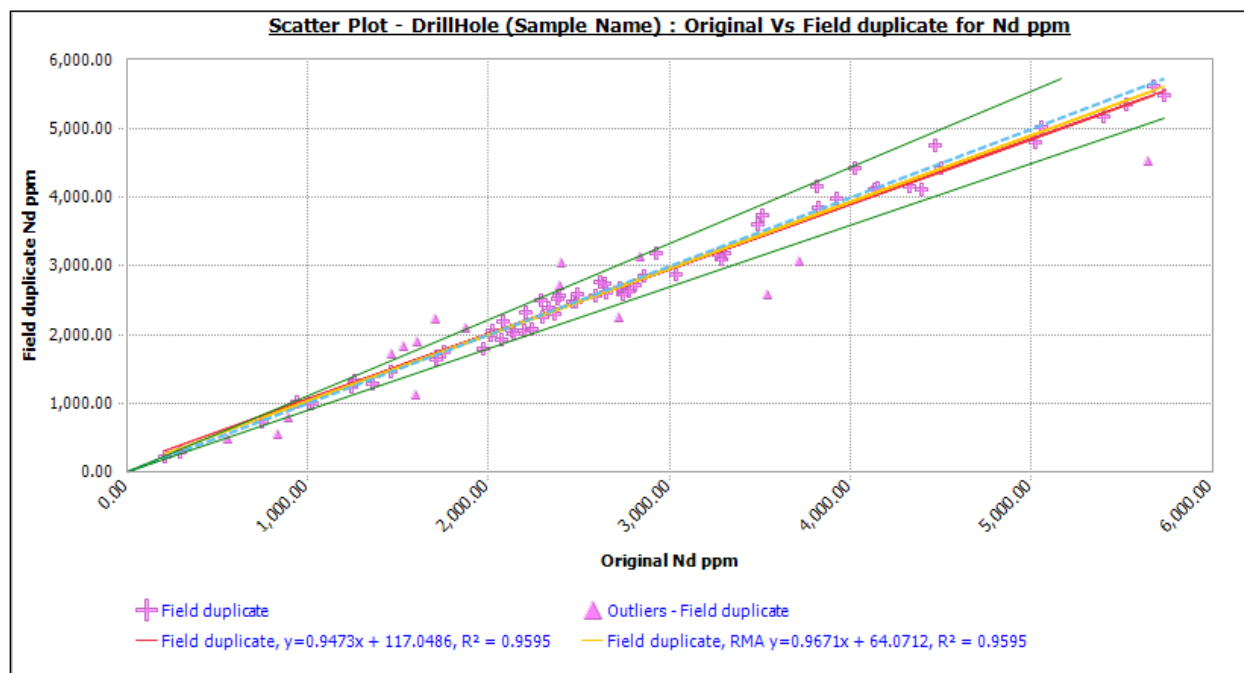
12.3.1.12 Field Duplicate Neodymium – Method FS_ICPMSH

Table 12.13 presents the original and field duplicate samples analyzed with the FS_ICPMSH assay method. Figure 12.27 shows the scatter plot of the sample pairs.

Table 12.13: Neodymium Field Duplicate assays – Method FS_ICPMSH

No. of Samples	Mean Nb1	Mean Nb2	SD Nb1	SD Nb2	CV Nb1	CV Nb2	sRPHD (mean)
81	2674.63	2650.6	1302.43	1259.53	0.49	0.48	0.48

Figure 12.27: Neodymium Field Duplicate Scatter Plot by FS_ICPMSh



Note: 16 pairs removed

12.3.2 QA/QC Monitoring

Avalon monitors the results of its internal standards during routine analysis of drill core. Due to the large number of elements involved, being 15 rare earth elements and three rare metals (niobium, tantalum and zirconium), it would be impractical to apply a normal logic table of failures where an analysis batch is failed on the basis of issues with one element. In addition, all core is analysed and so about two-thirds of the samples that have chemical data are not significant in terms of the economics of the deposit. As a result, Avalon followed the following procedure for assessing analytical data:

- Batches were not failed if the samples analysed were clearly far below any economic levels (not mineralized), unless the standards results were very grossly out of the acceptable range.
- The results of the standards were reviewed to see how many elements were out of the acceptable range as recommended in the standard certification, and if four elements were out of range (greater than three standard deviations), but two high and two low, and the remaining 14 elements were in range, the batch was accepted.
- If five or more elements were out of the acceptable range (greater than three standard deviations), and all in the same direction, either biased all high or all low, then the batch was re-analysed.
- The focus on evaluating the performance with respect to individual elements focused on those contributing the highest value to the deposit – neodymium, dysprosium, europium, terbium, and niobium.

There were a few cases of blanks being out of the acceptable range. However, on close examination of the results, these were almost invariably clearly associated with sample switching, and it was clear that a mineralized sample and the blank had been switched. A few cases of standards being switched with core samples were also identified.

There was a noticeable reduction in the number of cases of standards being out of range in the case of ALS method MS81h compared to MS81.

The overall conclusions of the QA/QC work completed to date are as follows:

- Standard deviations of duplicate analyses on standards indicate that the precision of the laboratories is satisfactory, both for ALS and Acme.
- Duplicate analyses of standards and the duplicate reject analyses indicate that there is little systematic bias between ALS and Acme.
- ALS and Acme indicate means for the four standards utilized by Avalon within 5% of the accepted values for most rare earth elements, niobium and tantalum. Zirconium shows more deviation, with ALS MS81h and Acme Method 4A/4B being higher, as are the XRF analyses completed at ALS.
- Although there may be systematic differences between ALS and Acme for individual rare earths, in general, the TREE and HREE indicate that this difference is about 1% for TREE and 1.5% for HREE.
- Given the general agreement between laboratories on the mean of the standards, and the low standard deviation of duplicate analyses, Avalon considers that the standards are acceptable for QA/QC monitoring of the drill core analyses.
- The drill core analyses are considered sufficiently reliable for resource estimation purposes, with the caveat that analyses for zirconium require further investigation to establish the cause of the difference between the various methods.

12.4 MICON COMMENTS

Micon's QP considers that the current database is acceptable to use for mineral resource estimation purposes.

13 MINERAL PROCESSING AND METALLURGICAL TESTING

13.1 INTRODUCTION

The metallurgical recoveries used for the updated MRE are based on the testwork completed before the publication of the 2013 Feasibility Study NI 43-101 Technical Report (2013 FS). Results from metallurgical and/or mineralogical studies and flowsheet development undertaken subsequent to this have not been included in this Report.

The 2013 FS was prepared by SNC-Lavalin (SLI) on behalf of Avalon. The 2013 FS was completed in April, 2013 and the results summarized in an Avalon press release dated April 17, 2013. Most of this section is based on the NI43-101 Technical Report dated 31 May, 2013, prepared by Micon which summarizes the results of the 2013 FS.

Extensive metallurgical testwork programs were completed at a number of different laboratories between 2008 and 2013. This included SGS Mineral Services, Lakefield, Ontario (SGS), XPS Industry Relevant Solutions (XPS), Sudbury, Ontario and FLSmidth (FLS), Salt Lake City, Utah. Numerous testwork reports have been issued, however, this Report only includes work used to generate final 2013 FS process design information and subsequent optimization testwork that was designed to enhance the metallurgical performance.

As discussed in Section 1.2.3, Cheetah Canada (Vital Metals) acquired from Avalon ownership of the minerals in, upon or under the area of the Mining Leases from surface to the depth limit of 150 metres above sea level, designated (the “Upper Zone” (UZ)) and Avalon has ownership of the minerals in, below the Upper Zone (the “Lower Zone” (LZ)). The testwork discussed below summarises testwork that covers both of these zones although the results for Basal Zone mineralization are considered more representative of the mineral resources outlined in this Report.

The 15 lanthanide elements are divided into two groups. The ‘light’ rare earth elements (LREE) are those with atomic numbers 57 through 62 (lanthanum to samarium) and the ‘heavy’ rare earth elements (HREE) from 63 to 71 (europium to lutetium). Yttrium has properties more similar to the heavy lanthanides and is included within this group.

Other elements of potential economic interest include zirconium (Zr), tantalum (Ta) and Niobium (Nb).

13.2 METALLURGICAL SAMPLES

Most of the pertinent metallurgical and mineralogical development studies used bulk composite samples that represent the whole Nechalacho deposit mineralization spatially and in terms of lithology. These selected composite samples were selected to represent mineralization at different depths in the deposit in terms of elevation. The composites designated UZ were from Upper Zone mineralization and BZ were from Basal Zone mineralization.

Between 2010 and 2012, Avalon completed the following series of flotation pilot plant tests:

- **In 2010:** Two mini-pilot plant tests (MPP) at Xstrata Process Support (XPS) using around 1 t of sample each.
- **August, 2011:** Pilot plant at SGS Minerals, Lakefield, Ontario (SGS) using around 3.7 t of sample comprising one UZ and one BZ composite.

- **February, 2012:** Pilot plant test program at SGS using approximately 40 t of sample, two UZ and two BZ composites.
- **October, 2012:** MPP at XPS using about 2 t of sample from the BZ (two composites from deepest areas of the BZ zone).

All of these pilot plants used bulk samples sourced from drill core.

The 40 t bulk sample selected for the 2012 pilot plant operated by SGS comprised four main composites designated UZ-LG, UZ-AG, BZ-AG and BZ-MP. The UZ-LG and UZ-AG composites were from similar levels within the deposit, with the UZ-LG being low grade and the UZ-AG being similar to the average resource grade. The BZ-AG composite represented the upper half of the BZ and the BZ-MP composite the lower half of the BZ.

Subsequent testing undertaken during October 2012 used samples designated as BZ-Q3 and BZ-Q4, which originated from the deepest areas of the BZ-MP zone. The BZ-Q3 and Q4 composite samples were the upper and lower quarters, respectively, of the deeper half of the BZ.

The key deleterious elements or compounds that need to be monitored in the waste, residue and products include uranium and thorium.

13.3 MINERALOGY

The mineralogy of the Nechalacho deposit has been studied by SGS using QEMSCAN®, a scanning electron microscope (SEM) and an electron microprobe (EMP). Addition studies were conducted by a team led by Professor Anthony Williams-Jones of McGill University, Montreal.

Nechalacho mineralization is hosted in nepheline syenite that has been extensively hydrothermally altered in areas of mineralization. Thus, the gangue mineralogy of the deposit comprises the nepheline syenite minerals along with alteration products, many of which are typically fine grained.

The payable elements of the Nechalacho deposit are typically hosted in the following minerals:

- LREEs dominantly occur in bastnaesite, synchisite, monazite and allanite.
- HREEs dominantly occur in zircon, fergusonite and rare xenotime.
- Zr, along with HREE, Nb and Ta occurs in zircon and other zircono-silicates (eudialyte).
- Nb and Ta occur in columbite and ferrocolumbite, fergusonite and zircon.

The mineralogy of the Nechalacho ore is complex and guides metallurgical development and performance. Consequently, it is critical to have a comprehensive understanding of the minerals, their textures and compositions relative to position within the deposit.

Heavy Rare Earth Oxides (HREO), Nb and Ta, tend to increase with lower depths in the deposit, relative to the Light Rare Earth Oxide (LREO) content. In the BZ, an almost continuous layer of mineralization at the base of the deposit (typically HREO) makes up more than 15% of Total Rare Earth Oxides (TREO). The lower parts of the BZ have gradually increasing HREO contents, with two individual 2-m interval drill core samples containing HREO levels of over 50% of TREO.

Above the BZ, the UZ comprises a zone of less continuous mineralization, with lens-like layers of higher grades TREO-Zr-Nb-Ta contained within an anomalous background rare earth content. The HREO content can be as low as 6% of TREO in the highest levels of the deposit.

The relative distribution of ore minerals shows very clear trends. The zircon content increases towards the bottom of the mineralization, in the UZ-AG, BZ-AG and BZ-MP. Fergusonite is the other ore mineral that shows the greatest relative increase from UZ to BZ, more than doubling in relative abundance. The columbite abundance drops in sympathy, presumably indicating a partial shift in the host for Nb and Ta from columbite in the UZ to fergusonite in the BZ. The LREE-bearing minerals also show clear trends, as allanite and monazite decrease from top to bottom in the deposit with bastnaesite increasing. Synchysite does not show a clear trend.

Detailed mineralogical investigations into the zircon and zircon-silicates show particularly complex textures that suggest complex multistage origins.

Extensive mineralogical investigation of the deposit using QEMSCAN® and EMPA has been completed to aid in predicting or explaining metallurgical performance during the programs of flowsheet development testwork. The QEMSCAN® examination of the pilot plant composites demonstrated little change in overall grain size with depth. There was no statistically significant trend between the four composites, with the median grain diameters of around 12 µm and 11 µm for gangue and ore, respectively.

QEMSCAN® grain liberation analysis completed on the 40 t pilot plant composite suggested a general trend of steadily decreasing proportion of liberated and free (lib+free) minerals with depth, the UZ samples tended to show superior lib+free and complex grain characteristics than the BZ samples. However, there were increases in the proportion of lib+free mineral particles in the BZ-MP compared to the BZ-AG for bastnaesite, fergusonite, columbite, allanite and synchysite.

13.4 METALLURGICAL TESTWORK – MINERAL PROCESSING

Metallurgical analyses traced the performance of the cerium (Ce), yttrium (Y), Nb and Zr with the attention focused on the Zr as representing a valid indicator of the overall metallurgy. LREEs were tracked using Ce and La while the HREEs were tracked using Y. Mass balances were calculated using BilmattM (a mass balance program) to make minor adjustments to the actual assays while attributing balanced masses to each stream.

Results from the numerous bench scale tests completed by SGS were used to develop a flowsheet which was tested at a pilot plant scale.

Flotation results from the August 2011 MPP program undertaken at SGS using around 3.7 t of sample comprising one UZ and one BZ composite, were used as the basis for the 2013 FS flotation circuit process design criteria (PDC). The material treated during this program of testwork was considered to be more representative of the total BZ than other pilot work, which tested a variety of different materials. The 2013 FS was based on feeding the concentrator with BZ mineralization.

Following the 3.7 t MPP, a further 40 t pilot plant campaign was undertaken also at SGS, primarily to generate a bulk concentrate for down-stream hydrometallurgical process development, although data generated in this program was also used to develop the 2013 feasibility process design.

Additional bench scale flotation testwork was completed by XPS in an attempt to optimize flotation reagent addition. The results from this work resulted in a further pilot plant campaign at XPS in October 2012, to test this revised reagent circuit. Whilst successful in reducing reagent requirements, the final recoveries did not match those achieved in the 3.7 t program.

Additional investigations at SGS were completed at the end of 2013 with the objective of simplifying the feasibility study flowsheet without compromising REE concentrator recoveries. However, the results from this work were not available for inclusion in this Report.

13.4.1 Comminution

The 2013 feasibility study crushing and grinding circuits were selected and designed using test data generated during the 3.7 t and 40 t pilot test programs.

A rod/ball mill combination was selected on the basis that this circuit offered the best opportunity to minimize fines production and to produce the narrowest flotation feed size distribution (flotation testwork had indicated the need for slimes removal ahead of flotation hence slimes production needs to be minimized).

In November, 2010, FLSmidth (FLS) completed a comminution study which designed and sized the crushing, milling and classification equipment. In February 2011, FLS issued a further report describing the de-sliming cyclone circuit, and then early in 2012, they issued a process design package including a full set of process flow diagrams (PFDs) for the entire mill and flotation processing facility.

The crushing plant was designed to produce a rod mill 80% passing feed size (F80) of 16 mm (100% minus 25 mm) and the target ball mill circuit 80% passing product size (P80) of 36 μm . In the initial simulations, FLS used a Bond rod mill work index (RWi) of 16.5 kWh/t and a Bond ball mill work index (BWi) of 15.7 kWh/t (as used in the prefeasibility study). The BWi was later updated to 17.5 kWh/t, which was based on recent grindability tests that used a more project applicable and finer closing size.

The standard Bond rod mill work index determinations for the four composite samples used during the 40 t pilot plant test ranged from 13.9 kWh/t to 14.8 kWh/t with the index tending to increase with depth. The two samples tested (BZ-Q3 and BZ-Q4) during September 2012 gave results of 15.8 kWh/t and 15.5 kWh/t. Based on these results, the RWi used for the feasibility study design (16.5 kWh/t) appears to be reasonable.

The standard Bond ball mill indices determined for the two composite samples selected for the August, 2011 3.7 t pilot plant and four composites used for the February, 2012 40 t pilot plant varied between 14.7 kWh/t and 15.9 kWh/t. These tests used a ball mill closing test size of 75 μm . The two recent tests (October, 2012 test program) using a closing size of 53 μm gave results of 17.6 kWh/t and 17.0 kWh/t. The selection of 17.5 kWh/t for the design appears to be reasonable and appropriate.

Standard Bond abrasion index test results on two 3.7 t, four 40 t and two XPS 2012 pilot plant test samples ranged from 0.428 and 0.607. These samples can be considered relatively abrasive.

13.4.2 Magnetic Separation

The purpose of the magnetic separation of the flotation feed (by low intensity magnetic separation (LIMS)) is to remove iron. This will reduce flotation reagent consumption and flotation feed volume as well as the iron in the feed to the hydrometallurgical plant.

Numerous tests using a drum magnet separator at a low magnetic field strength of approximately 650 gauss have been undertaken on different batch test and pilot plant samples. The results of these tests showed that the final mass pull to magnetics varies depending on feed material, but was typically in the 7% to 10% range with metal losses generally around 3% to 4%.

13.4.3 De-Sliming

Comparative flotation testwork using the feasibility study proposed reagent suite showed that the introduction of a de-sliming process ahead of flotation is essential in order to achieve acceptable recoveries at optimum concentrate grades and mass pull. A target cut point, 80% passing size (K80), in the range of 7 µm to 10 µm was selected.

Various tests undertaken on different batch test and pilot plant samples indicated typical mass of slimes removed of around 8% to 15% with losses of REEs ranging from 4% to 15%. In the feasibility study the mass of slimes removed was stated as 9.3%.

FLS-Krebbs conducted de-sliming cyclone simulations and developed material balances for the de-sliming process area. A three-stage cyclone system was selected for the feasibility study.

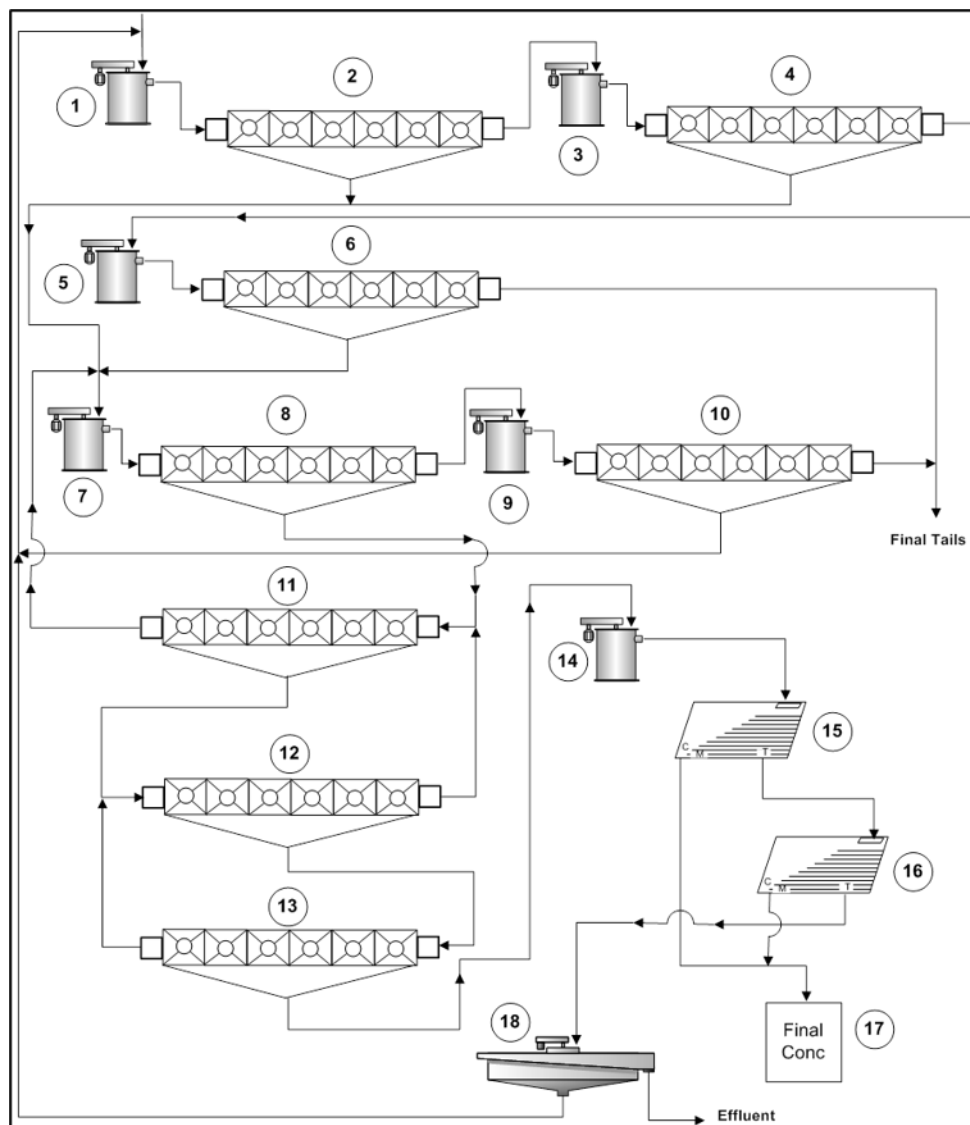
Subsequent work that investigated alternative flotation reagent suites suggests it may be possible to eliminate this de-sliming process without impacting negatively on flotation performance.

13.4.4 Flotation

Numerous open circuit and locked cycle flotation tests (LCT) have been completed since 2008 by SGS under the direction of Srdjan Bulatovic a senior metallurgical consultant at SBM Mineral Processing and Engineering Services Ltd. (SBM). This development work was undertaken using a variety of samples representing the various ore-types of the deposit. The flotation circuit developed by SGS was tested during the various pilot plant test runs described earlier.

The 2013 FS study used the test conditions and metallurgical results from two locked cycle tests (LCTs) (F4 and F6) that were undertaken as part of the 3.7 t pilot plant program at SGS. These tests were considered to be the most reliable representation of flotation performance for the Project based on the composite samples used compared to the life-of-mine (LOM) plan, the flowsheet and the test conditions adopted. A schematic flowsheet used for the flotation and downstream gravity LCT and pilot plant tests is presented in Figure 13.1.

Figure 13.1: SGS-2012 Flotation and Gravity Continuous Pilot Plant Flowsheet



Source: Ref: SGS-M Test Report “Small Continuous Pilot-Scale Program on Thor Lake Ore”, December, 2012.

Table 13.1: Key for Figure 13.1

No	Parameter	No	Parameter
1	Primary rougher conditioner	10	1st cleaner scavenger
2	Primary rougher	11	2nd cleaner
3	Secondary rougher conditioner	12	3rd cleaner
4	Secondary rougher	13	4th cleaner
5	Rougher scavenger conditioner	14	Neutralizing conditioner
6	Rougher scavenger	15	Primary gravity table
7	1st cleaner conditioner	16	Secondary gravity table
8	1st cleaner	17	Concentrate filter
9	1st cleaner scavenger conditioner	18	Gravity tailings thickener

The average results from LCT F4 and F6 are presented in Table 13.2.

Table 13.2: Average Flotation LCT F4 and F6 Results

Sample	Wt%	Grades (%)							Distribution (%) ¹				
		Nb ₂ O ₅	Ce ₂ O ₃	La ₂ O ₃	Nd ₂ O ₃	Y ₂ O ₃	ZrO ₂	Nb ₂ O ₅	Ce ₂ O ₃	La ₂ O ₃	Nd ₂ O ₃	Y ₂ O ₃	ZrO ₂
Feed	100	0.39	0.53	0.24	0.26	0.21	3.21	100	100	100	100	100	100
Final Concentrate	18	1.61	2.28	1.05	1.13	0.94	14.93	73.9	76.6	78.35	77.2	80.55	83.75

¹Distribution recoveries to final concentrate account for losses to slimes as well as flotation tailings.

The 3.7 t pilot plant program that immediately followed the LCT tests successfully produced over 200 kg of on-specification final concentrate which was used for hydrometallurgical testing. The metallurgical recoveries and reagent dosage rates used during the pilot plant testing were not optimized due to a lack of operating time to properly optimize the system.

The primary objective of the SGS 40 t pilot plant was to produce a bulk concentrate for use in the further development of the down-stream hydrometallurgical process. However, tests were conducted using a variety of different feed materials and the impact of key operating parameters on performance was also investigated. The flowsheet adopted was very similar to that of the 3.7 t pilot test (Figure 1.9) including de-sliming and gravity enrichment of the flotation concentrate.

13.4.5 Gravity Separation

SGS was contracted to conduct gravity separation testwork on cleaner flotation concentrate from the 40 t pilot plant. The objective of this work was to upgrade the final concentrator product by the removal of lighter, gangue material. The results of these tests suggested a concentrate upgrading factor of between 2 and 3.

13.4.6 Solid-Liquid Separation

Thickening testwork was conducted by SGS and Outotec on several products from the various pilot plant campaigns and various ore types. The streams investigated were:

- First Cleaner scavenger concentrate.
- Gravity tailings.
- Gravity concentrate (final product).
- Combined tailings.

The results from these tests were used for equipment selection and sizing for the 2013 FS.

13.5 TESTWORK - HYDROMETALLURGY

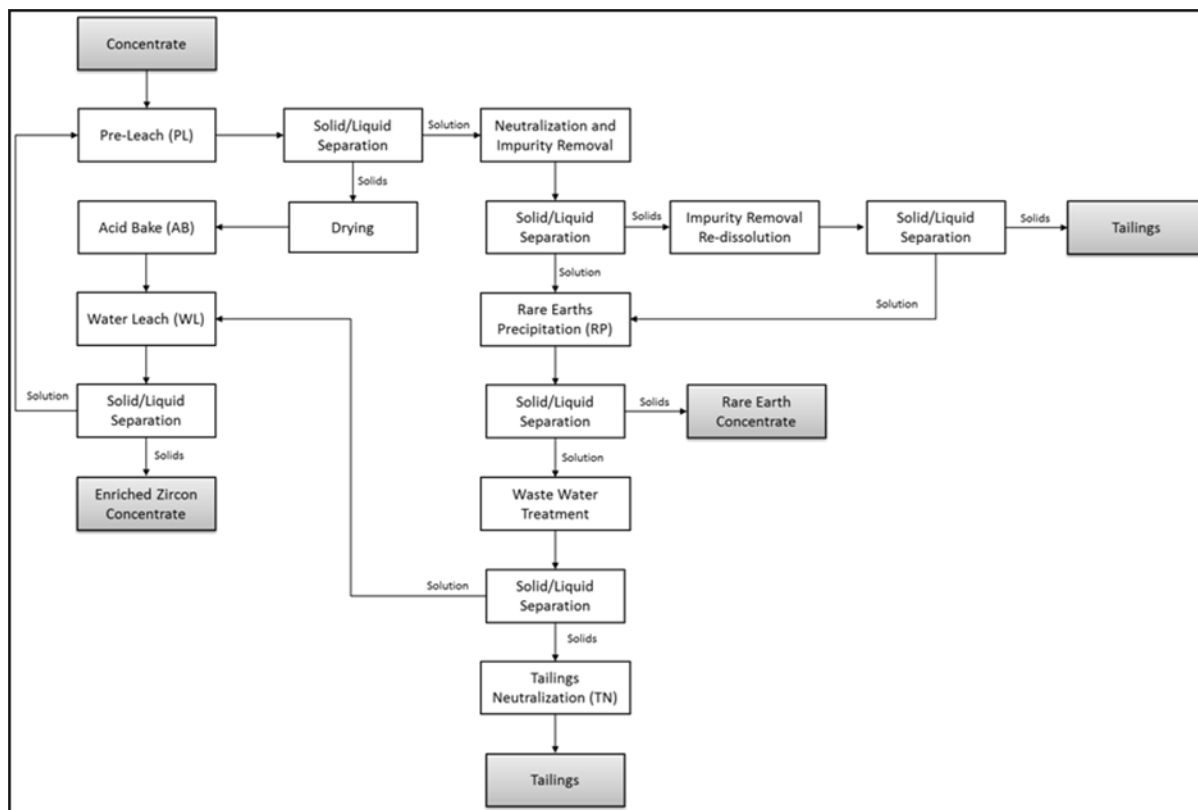
Hydrometallurgical testwork has been conducted since late 2008. Tests have been undertaken using both the bench and pilot scale flotation concentrate. The 2013 FS final process design criteria were mainly developed from the operating conditions used in the final (PP6) pilot plant campaign completed by SGS in October 2012.

Hydrometallurgical plant process selected for the 2013 FS consisted of the following major stages:

- Pre-leaching (PL).
- Acid Baking (AB).
- Water Leach (WL).
- Neutralization and Impurity Removal (IR).
- Impurity Removal Re-dissolution.
- RE Precipitation (RP).
- Waste Water Treatment.
- Tailings Neutralization (TN).

A simplified process block flow diagram is provided in Figure 1.10.

Figure 13.2: 2013 FS Hydrometallurgical Process Block Flow Diagram



Source: Figure taken from SNC Feasibility Study Report, Section 13.

13.5.1 Bench Scale Testwork

Extensive static bench work, mainly undertaken by SGS, has been completed using samples representing the Nechalacho deposit. The main objectives of the bench testwork were to:

- Determine the best hydrometallurgical methods to extract REEs from the concentrate while minimizing co-extraction of contaminants.
- Investigate and optimize key operating parameters such as temperature, reagent concentrations, pH, reaction time etc.
- Characterize chemical reactions (especially for acid bake) by determining reaction kinetics, conversion profiles and fractional conversion of REEs.
- Optimize reagent dosages.
- Provide input for subsequent continuous scale pilot campaigns.

The main reagents used in this flowsheet include:

- Concentrated sulphuric acid, which is used in the acid bake process and the impurity removal and re-dissolution circuit.

- Dolomite, hydrogen peroxide and magnesia, which are used in the neutralization and impurity removal circuit.
- Lime, which is used in the rare earth precipitation circuit and for wastewater treatment.

13.5.2 Mini Pilot Plant Testwork

Seven mini-pilot plant campaigns were conducted at SGS in order to investigate the acid bake operating parameters and to determine the optimal conditions leading to the best REE recoveries. These were conducted between January 25 and May 14, 2012, using concentrate derived from BZ (Basal Zone) and UZ (Upper Zone) type mineralization.

13.5.3 Pilot Plant Campaigns

Six hydrometallurgical pilot plant campaigns (PP1 to PP6) were conducted at SGS between June and October, 2012. The main objectives of these campaigns were to:

- Test a continuous version of the hydrometallurgical flowsheet and demonstrate steady state operation.
- Optimize REE extraction in the pregnant solution (through the pre-leach, acid bake and water leach circuits) and achieve recoveries comparable to previously conducted bench tests.
- Remove target contaminants (iron, uranium and thorium (Fe, U, Th)) in the iron removal circuit while ensuring minimal REE losses.
- Recover zircon and other associated valuable elements into an Enriched Zircon Concentrate (Ezc).
- Ensure the final mixed rare earth precipitate (REP) product had an acceptable grade of rare earths higher than that in the input concentrate while minimizing the U and Th content to a level lower than 500 ppm as imposed by the Transportation of Dangerous Goods Act.
- Ensure the concentrations of species in the filtrate from the tailings circuit met target environmental levels determined via hydrological modelling (especially targets for Mg (800 mg/L) and SO₄ (500 mg/L), respectively).

The hydrometallurgical pilot plant campaigns operated at a throughput rate of around 2 kg/h of concentrate feed.

The final pilot plant campaign (PP6) operated between September 24, 2012 and October 5, 2012, and was the most successful. The results from this campaign proved the technical viability of the process and provided crucial input for the final hydrometallurgical flowsheet, process design criteria and process engineering adopted for the feasibility study. A picture showing the pilot plant set-up at SGS is presented in Figure 13.3.

Figure 13.3: Hydrometallurgical Pilot Plant at SGS-M



Source: Photograph taken from SNC Feasibility Study Report, Section 13.

The results for the pilot plant campaign PP6 are summarized in Table 13.3.

Table 13.3: Summary of Pilot Plant (PP6) Results

Element	Rare Earth Precipitate			EZC	
	Grade (%)	Recovery (%) ¹	Recovery (%) ²	Grade (%)	Recovery (%)
La	2.4	79	83	0.16	17
Ce	5.36	78	81	0.41	18
Pr	0.66	78	82	0.06	19
Nd	2.66	72	75	0.28	25
Sm	0.44	62	62	0.07	34
Eu	0.065	61	66	0.011	37
Gd	0.465	61	65	0.076	38
Tb	0.073	59	64	0.013	40
Dy	0.376	56	60	0.077	43
Ho	0.061	53	54	0.016	46
Y	1.28	50	50	0.38	50
Er	0.128	43	45	0.047	56
Tm	0.014	37	37	0.007	62
Yb	0.066	31	31	0.053	68
Lu	0.007	25	25	0.008	74
Zr	0.27	1	1	12.48	97
Nb	<0.01	0	1	1.2	
U+Th	0.04			0.019	

¹ The average recoveries across all runs during PP06 (including runs which experienced some problems).

² Average values measured during times when the pilot plant was operating smoothly under optimal conditions. The feasibility assumes average recoveries for initial operations and optimized higher values after the first year of operation.

One important accomplishment of PP6 was the reduced U and Th levels in the final rare earth product to below the 500-ppm limit governed by transportation regulations. PP6 was able to achieve a reduced net U and Th level by using hydrated lime instead of magnesium oxide as a precipitating reagent. Also, use of hydrated lime in the REP circuit resulted in Mg and sulphate (SO₄) concentrations in the tailings filtrate being consistently below target environmental levels as specified by hydrological modelling (800 mg/L for Mg and 4,500 mg/L for sulphate).

13.6 TESTWORK – RARE EARTH REFINING

The REP refining process included in the 2013 FS comprised two plants, the leaching and the separation plants. The leaching plant removes impurities from the hydrometallurgical rare earth precipitate to attain a purified rare earth element feed (+99.9%) to the separation plant where the individual rare earth products will be produced.

The leaching process consists of the following major unit processes:

- Acid leach.
- Selective precipitation.
- Solvent extraction, scrub and strip for impurity removal.
- Crud treatment.
- Rare earth precipitation.
- Hydrochloric acid digestion.
- Water treatment.

The separation plant process consists of the following major unit processes:

- Solvent extraction to separate LREEs from HREEs.
- Crud treatment.
- A series of solvent extraction systems for individual rare earth separation.
- Precipitation.
- Thickening.
- Filtration.
- Product drying.
- Product calcining.
- Product packaging.

Various testwork reports have been issued that summarize the testwork undertaken at a number of different laboratories over the last few years. All relevant testwork has been completed using the rare earth precipitate produced during the hydrometallurgical pilot plant testwork program discussed previously. All the solids from the six different hydrometallurgical pilot plants were combined to provide a total of 200 kg of rare earth precipitate for the leaching and separation plant testwork with average composition shown in Table 13.4.

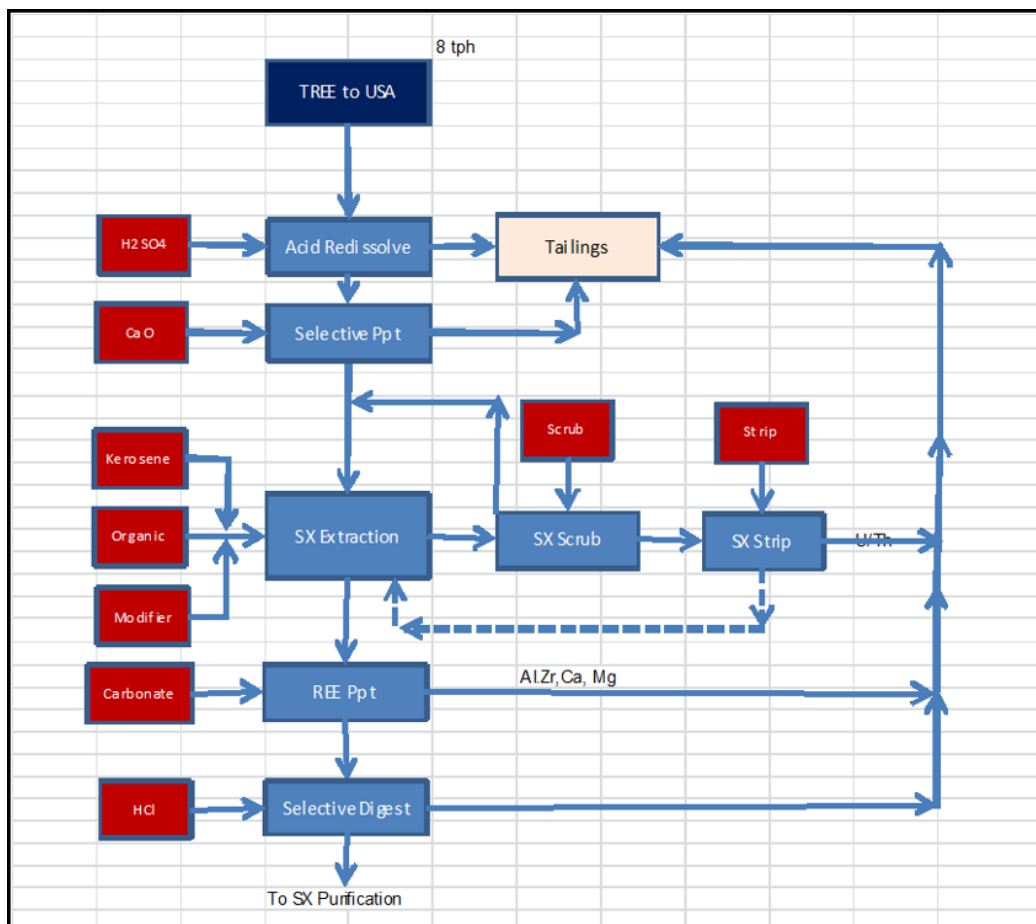
Table 13.4: Comparison of the Combined REE Precipitate Test Sample and Study Specifications

Element	Combined Actual REE Leach Plant Sample for Testwork (%)	2013FS Process Design Criteria Leach Plant Feed (%)	Impurity Specification, Feed to Separation Plant (ppm)
La	2.69	1.765	-
Ce	5.41	4.375	-
Pr	0.66	0.571	-
Nd	2.69	2.409	-
Sm	0.54	0.429	-
Eu	0.07	0.063	-
Gd	0.49	0.485	-
Tb	0.06	0.068	-
Dy	0.33	0.338	-
Ho	0.05	0.051	-
Y	1.1	1.04	-
Er	0.09	0.096	-
Tm	0.01	0.012	-
Yb	0.05	0.05	-
Lu	0.005	0.006	-
Zr	0.33	0.209	<10
Nb	0.02	0.004	-
P	0.01	0.004	<10
Fe	0.76	0.554	<350
Si	0.56	0.216	<10
Na	0.08	0.004	1,378
K	0.02	0.004	-
F	4.45	2.409	<200
Al	5.07	2.975	<200
Mg	7.41	-	<3,000
Ca	4.83	-	<7,000
S	6.79	-	-
TREE Content	14	12	-
LREE Content	12	10	-
HREE Content	2	2	-
U + Th (ppm)	610	500	<14.7

13.6.1 Leaching Process

As mentioned previously, a large amount of testwork has been undertaken by a number of different laboratories over the last few years, including SGS and Mintek of South Africa. The most recent relevant testing has been conducted using the combined rare earth precipitate produced during the hydrometallurgical pilot plant testwork program. The resulting flowsheet developed from this work is presented in Figure 13.4.

Figure 13.5: Simplified Leach Plant Process Block Flow Diagram



Source: SNC Feasibility Study Report, Section 22.

The results from the testwork programs completed to date have suggested that the specified impurity criteria shown in Table 1.12 for the feed to the rare earth separation plant can be achieved with a loss of rare earth to the residue of less than 2%.

13.6.2 Separation Plant

It is noted that the design of the rare earth separation plant is not based on testwork. It is based on the proven standard rare earth separation processing methods and equipment selections. The flowsheet and process design criteria proposed for this plant is mainly based on Chinese technology. The detailed design was provided by a Chinese expert who has many years of experience in the design and operation of similar plants in China. This detailed design was reviewed by Jerald (Jerry) Tabor, an independent consultant engaged by Avalon who has over 40 years of experience including in the design and operation of commercial production facilities for high purity rare earths such as lanthanum, cerium, praseodymium, neodymium, samarium, gadolinium and yttrium.

The separation plant extraction process for the feasibility study is based on experience and widely accepted, well proven standard rare earth separation processing methods and equipment selections. It uses 16 solvent extraction systems (chloride solutions) to separate the individual rare earths from

each other. The separation plant will produce 10 different pure rare earth oxides products in accordance with the specifications indicated in Table 13.5. The plant will also produce one separate stream containing four different rare earth carbonates for which there is a limited market at the present time. This stream will be stockpiled initially and eventually disposed of if markets are not forthcoming.

Table 13.5: List of Products from the Separation Plant

Product	Design Plant Production (t/y)	Product Distribution (%)	Feasibility Study Specification ¹
La Oxide	1,583	16	3 N
Ce Oxide	3,572	36	3 N
Pr Oxide	451	4	3 N
Nd Oxide	1,783	18	3 N
Sm Oxide	391	4	2 N
Eu Oxide	49	0.5	4 N
Gd Oxide	371	4	3 N
Tb Oxide	54	0.5	4 N
Dy Oxide	271	3	4 N
Y Oxide	1,170	11	5 N
Lu Oxide	14	0.1	3 N
Er/Ho/Tm/Yb Carbonate Mix	292	3	2 N
Total	10,000	100	-

¹“N” stands for the number of nines purity produced as final product, for example 3 N = 99.9%.

13.7 METALLURGICAL RECOVERY ESTIMATES

The metallurgical recoveries estimated for the updated MRE are presented in Table 13.6. These estimates are based on the metallurgical testwork described in this section of this Report.

Table 13.6: Estimate of Metallurgical Recoveries for the MRE

Oxide	Concentrator	Hydrometallurgical Plant Ezc ^{1,3}	REP ²	Total	REO Refinery
La ₂ O ₃	78.00%	13.10%	82.60%	95.70%	98.00%
CeO ₂	78.00%	15.70%	80.80%	96.50%	98.00%
Pr ₆ O ₁₁	78.00%	14.60%	82.30%	96.90%	98.00%
Nd ₂ O ₃	78.00%	21.70%	75.30%	97.00%	98.00%
Sm ₂ O ₃	78.00%	33.70%	62.00%	95.70%	98.00%
Eu ₂ O ₃	78.00%	32.70%	65.60%	98.30%	98.00%
Gd ₂ O ₃	78.00%	33.40%	65.40%	98.80%	98.00%
Tb ₄ O ₇	78.00%	34.80%	64.10%	98.90%	98.00%
Dy ₂ O ₃	78.00%	38.70%	60.40%	99.00%	98.00%
Ho ₂ O ₃	78.00%	45.30%	53.90%	99.10%	98.00%
Er ₂ O ₃	78.00%	54.60%	44.70%	99.30%	98.00%
Tm ₂ O ₃	78.00%	62.30%	37.10%	99.30%	98.00%
Yb ₂ O ₃	78.00%	68.40%	31.00%	99.40%	98.00%
Lu ₂ O ₃	78.00%	74.10%	25.40%	99.60%	98.00%
Y ₂ O ₃	78.00%	49.30%	49.90%	99.20%	98.00%
ZrO ₂	83.80%	96.90%	0.00%	96.90%	0.00%
Nb ₂ O ₅	73.90%	99.30%	0.00%	99.30%	0.00%
Ta ₂ O ₅	74.30%	99.10%	0.00%	99.10%	0.00%

Notes ¹REP = Rare Earth Precipitate.

²Ezc = Enriched Zirconium Concentrate.

³The average Ezc grade is 25% ZrO₂.

14 MINERAL RESOURCE ESTIMATES

14.1 INTRODUCTION

Avalon's geologists developed internally the geological model for Nechalacho. A block model was generated in Seequent Leapfrog Geo/EDGE for grade estimation purposes. The project database interpreted domain wireframes, and the block model was then provided to Micon.

Micon's QP reviewed and verified the drill hole database, the geological interpretation, and the block model with estimated grades. Micon adopted Avalon's block model, then the model was used to generate constraining wireframes for resource reporting. The block model was transferred to Datamine software and a minable shape optimizer (MSO) algorithm was used to produce underground mining shapes. Only the material captured in the underground mining wireframes were reported.

14.2 DATABASE

The database for the July 14, 2026 MRE for the Nechalacho deposit contained 582 drill holes totalling 120,062 m. The database included 51 historical drill holes amounting to 5,588 m and 531 recent drill holes with a total length of 114,474 m. The estimate used samples assayed for rare metals, rare earths, and other elements, from 521 drill holes, 47 historical and 474 recent. Samples from 41 historical drill holes have incomplete or no REE assays results. Only 21 of the historical drill holes sampled the Basal Zone, as it was not a target at that time. Figure 14.1 presents the Nechalacho drill hole location map.

Prior to the interpretation, data from the database was imported into Seequent Leapfrog Geo/EDGE software for geological modelling and resource estimation by Avalon geologists. Additional exploratory data analysis was performed using Datamine Supervisor.

Avalon geologists reviewed the drill hole database on multiple occasions, ensuring accuracy and integrity of the data before resource estimation exercises. The drilling database was also reviewed and verified by independent parties. The 2026 drilling database was compared by Micon against previous databases and against selected sample assay certificates from drilling campaigns performed in 2013 and 2014. Micon's review found no significant errors in the database and Micon concluded that it was acceptable to be used as the basis for this MRE.

14.3 GEOLOGICAL INTERPRETATION

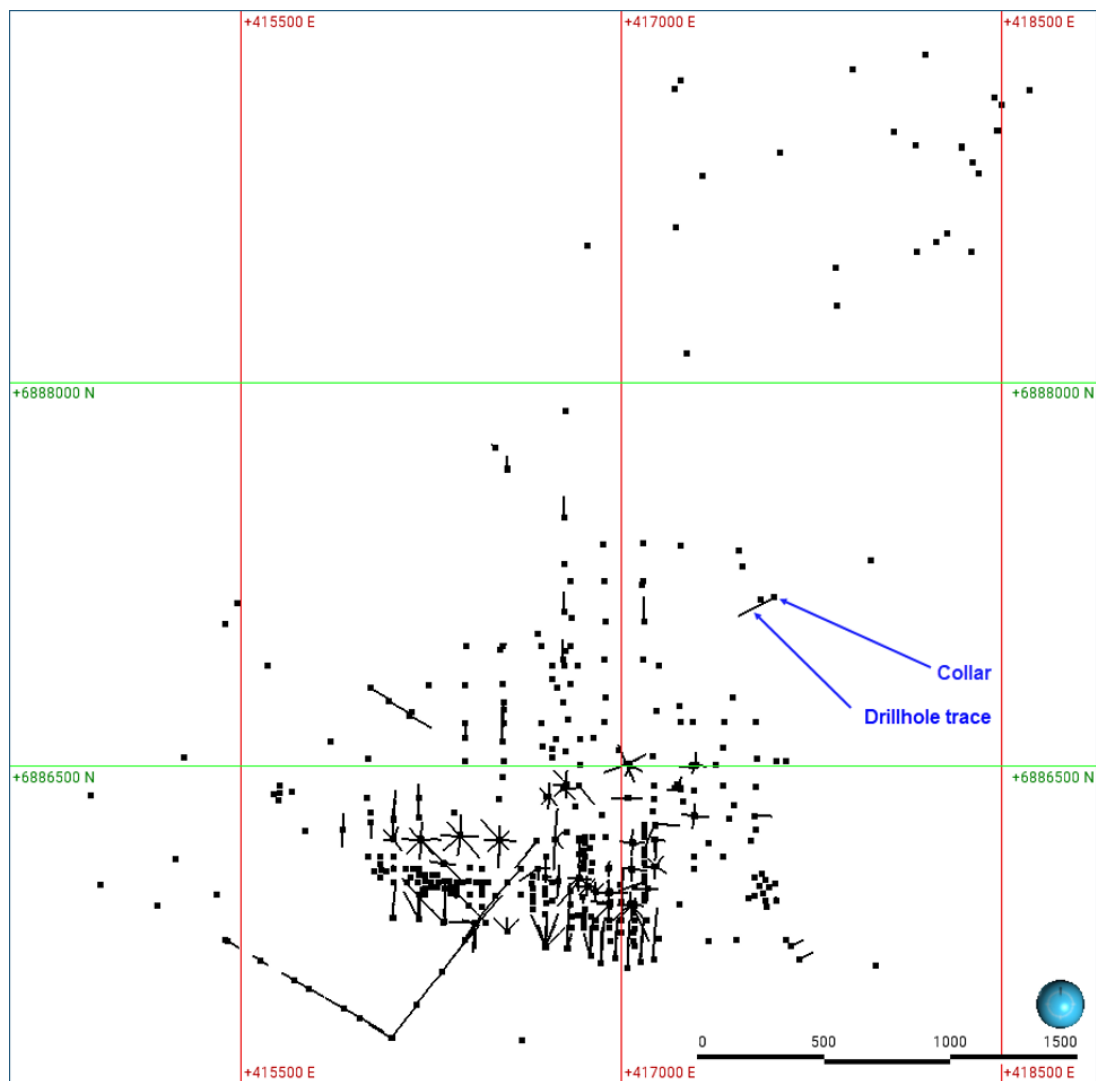
Avalon geologists recognized two main domains of REO enrichment at the Nechalacho deposit, the Upper Zone and Basal Zone. The current geological model identifies two basal zones (Basal Zone 1 and 3) and five upper zones (Upper Zone 1, 2, 3, 4, and 6), along with a surrounding undifferentiated suite (Nechalacho Layered Suite).

The mineralized domains were modelled as sub-horizontal layers using logged lithology and a threshold of approximately 1% TREO, which represents a natural grade break observed in the deposit. The lower domain boundaries, and particularly that of the Basal Zone, are usually sharp whereas the upper boundaries can be gradational. Lower-grade material was included locally to maintain geological continuity. A total of seven mineralized domains were modelled (Table 14.1). The remainder of the host intrusion was modelled as one-unit, undifferentiated Nechalacho Layered Suite. The mineralized domains with the largest volume below the 150 m elevation are UZ-2 and BZ-1. The UZ-1 domain locally extends below 150 m. Figure 14.1 shows the interpreted domains and the drilling.

Table 14.1: Modelled Domains

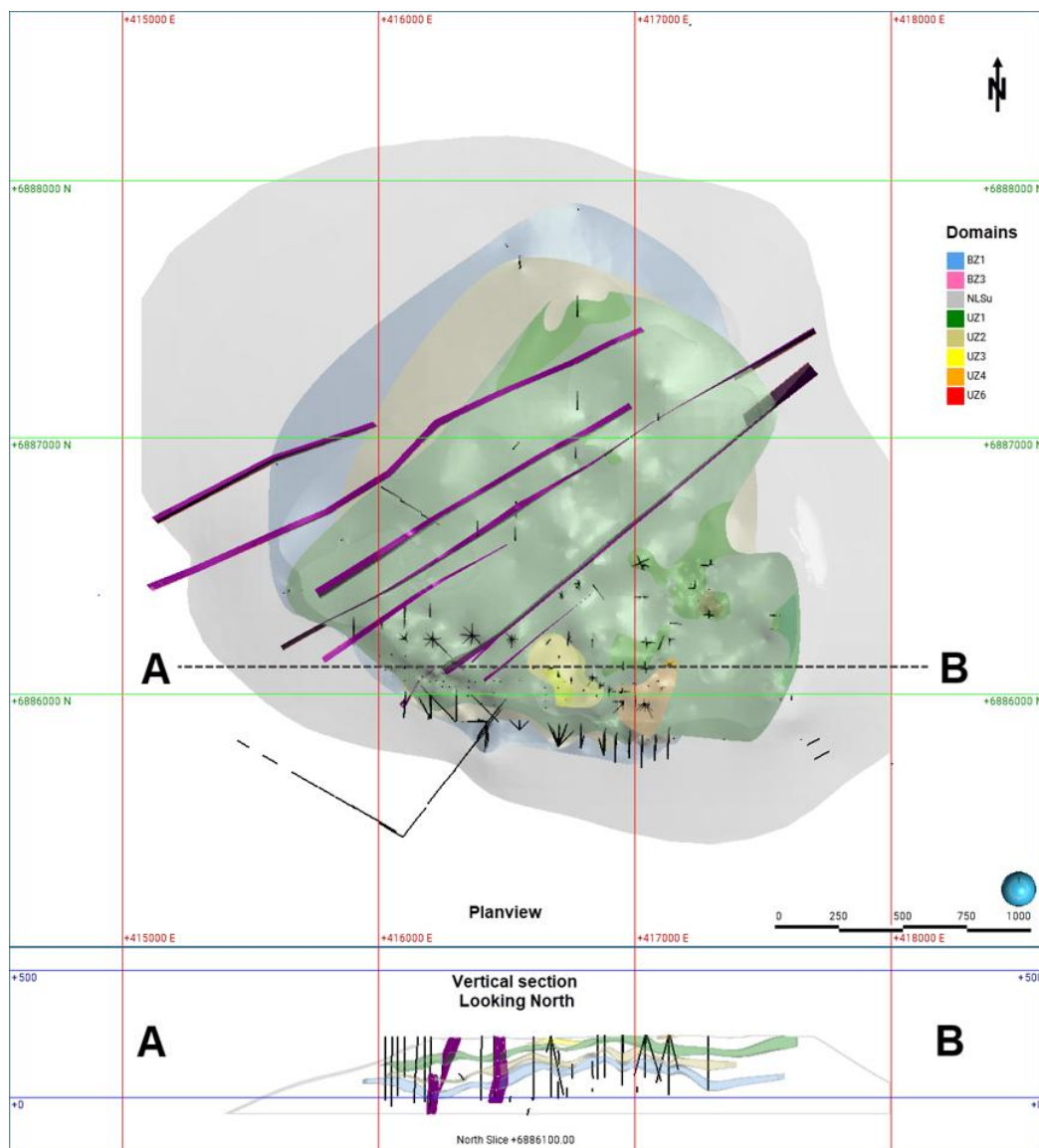
Domain	Abbreviation
Nechalacho Layered Suite (undifferentiated)	NLS
Upper Zone 1	UZ-1
Upper Zone 2	UZ-2
Upper Zone 3	UZ-3
Upper Zone 4	UZ-4
Upper Zone 6	UZ-6
Basal Zone 1	BZ-1
Basal Zone 3	BZ-3

Figure 14.1: Nechalacho Drill Hole Location Map



Source: Micon July, 2026.

Figure 14.2: Nechalacho Modelled Domains – Composite View



Source: Micon July, 2026.

14.4 ASSAYS STATISTICS AND CAPPING OF HIGH-GRADE VALUES

The resource estimate is based on intercepts from 521 drill holes. Data from intercepts with the modelled domains BZ-1 and -3, UZ-1 to -4 and -6, and NLS, delineating the mineralized volumes, were used for exploratory data analysis. For each modelled domain, assays summary statistics were reviewed, a visual inspection of the grades was performed, along with checks for grade trends and grade contours. For each element and domain, histograms and log probability plots were analyzed, followed by a visual examination of outliers. An example of the capping analysis for Nd_2O_3 in Basal Zone 1 is presented in Figure 14.3. Capping levels selected for each oxide and domain are presented in Table 14.2. Assays were capped before compositing. The descriptive statistics of the raw and capped assays are presented in Table 14.3 to Table 14.10.

Figure 14.3: Capping for Nd₂O₃ in Basal Zone 1

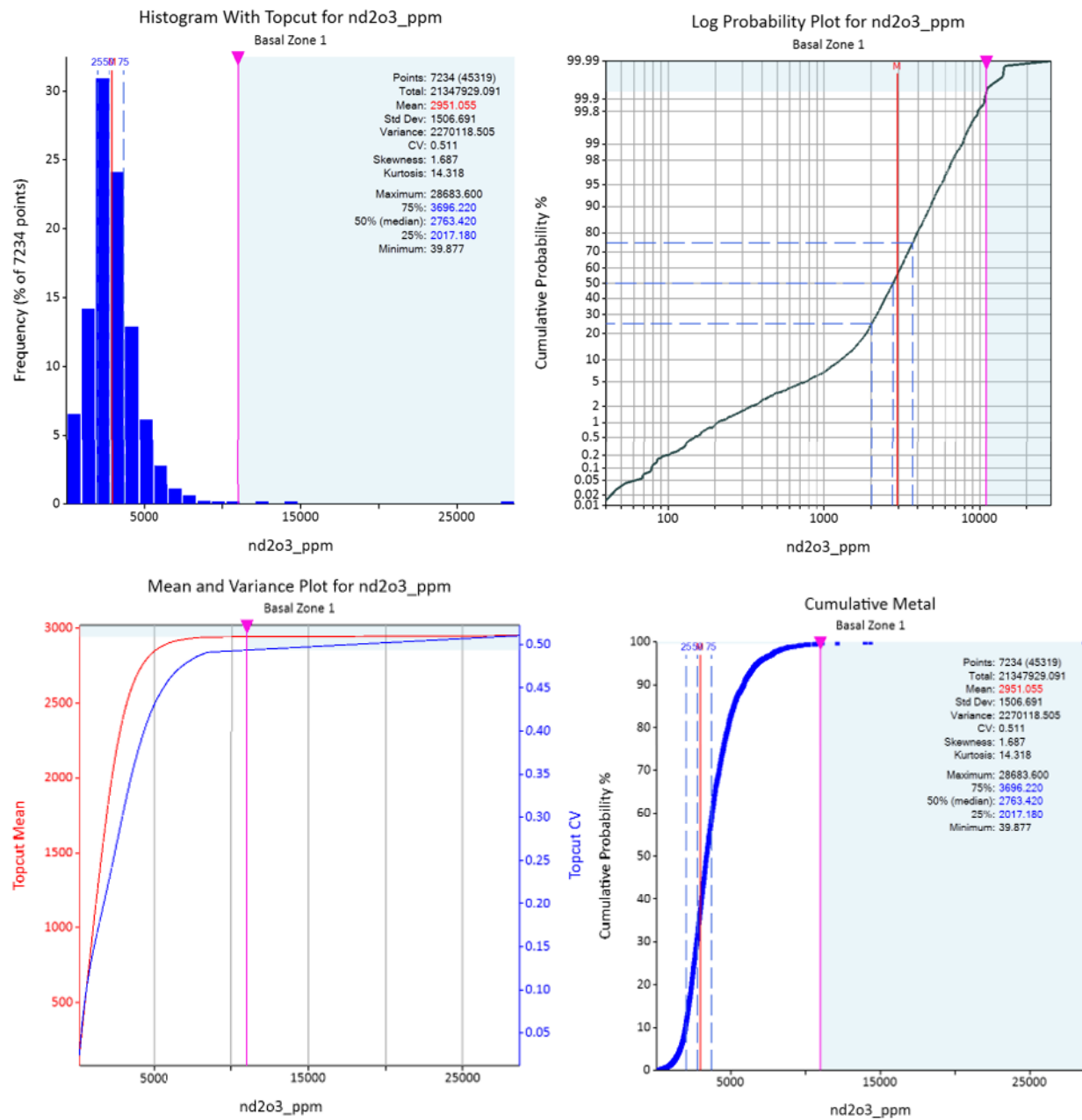


Table 14.2: Capping Threshold by Domains and Oxide

Domain Oxide	Capping Threshold			
	UZ 1, 3, 4, 6 (ppm)	UZ 2 (ppm)	BZ 1, 3 (ppm)	NLS (ppm)
CeO ₂	35,000	25,000	25,000	25,000
Dy ₂ O ₃	800	1,100	2,500	800
Er ₂ O ₃	400	600	1,100	400
Eu ₂ O ₃	250	300	250	150
Ga ₂ O ₃	-	-	-	350
Gd ₂ O ₃	2,000	1,800	2,200	1,100
HfO ₂	1,300	2,300	2,300	1,200
Ho ₂ O ₃	150	450	450	150
La ₂ O ₃	20,000	11,000	11,000	7,000
Lu ₂ O ₃	50	80	130	40
Nb ₂ O ₅	14,000	14,000	14,000	11,000
Nd ₂ O ₃	14,000	12,000	11,000	7,000
Pr ₆ O ₁₁	6,000	3,000	3,000	2,000
Sm ₂ O ₃	2,500	2,500	2,500	1,500
Ta ₂ O ₅	700	-	1,400	800
Tb ₄ O ₇	250	300	450	150
ThO ₂	800	1,000	1,100	600
Tm ₂ O ₃	35	90	130	45
U ₃ O ₈	1,000	700	320	700
Y ₂ O ₃	4,500	8,000	13,000	4,000
Yb ₂ O ₃	250	500	850	350
ZrO ₂	-	85,000	130,000	70,000

Table 14.3: Basal Zone 1 – Raw and Capped Assays

Oxide	Count	Length	Mean	Std. Dev.	C. of V.	Minimum	Median	Maximum
Domain: Basal Zone 1								
Raw Assays								
CeO ₂	7,234	12,238.90	6,245.85	3,156.35	0.51	104.41	5,820.72	61,400.00
Dy ₂ O ₃	7,234	12,238.90	451.5	344.05	0.76	4.71	378.84	4,637.92
Er ₂ O ₃	7,234	12,238.90	204.33	180.36	0.88	1.37	149.73	2,131.70
Eu ₂ O ₃	7,234	12,238.90	78.9	40.87	0.52	1.16	74.46	318.45
Ga ₂ O ₃	5,159	9,291.50	147.94	31.35	0.21	35.48	143.81	396.08
Gd ₂ O ₃	7,234	12,238.90	571.43	307.09	0.54	9.22	537.3	2,628.84
HfO ₂	7,210	12,187.30	641.26	338.6	0.53	2.24	618.03	2,547.35
Ho ₂ O ₃	7,234	12,238.90	80.06	67.94	0.85	0.64	61.88	929.41
La ₂ O ₃	7,234	12,238.90	2,678.13	1,377.56	0.51	45.75	2,510.22	39,530.10
Lu ₂ O ₃	7,234	12,238.90	22.35	19.92	0.89	0.14	15.18	155.2
Nb ₂ O ₅	7,300	12,407.70	4,147.74	2,019.41	0.49	37.21	3,886.17	18,603.00
Nd ₂ O ₃	7,234	12,238.90	2,939.27	1,485.57	0.51	39.88	2,763.42	28,683.60
Pr ₆ O ₁₁	7,234	12,238.90	770.23	377.82	0.49	11.59	724.8	6,040.00
Sm ₂ O ₃	7,234	12,238.90	642.37	327.45	0.51	7.77	609	3,990.40
Ta ₂ O ₅	7,300	12,407.70	410.04	216.47	0.53	1.47	378.51	1,831.50
Tb ₄ O ₇	7,234	12,238.90	88.74	57.65	0.65	1.16	79.03	722.06
ThO ₂	7,234	12,238.90	135.87	124.34	0.92	3.37	97.64	1,530.61
Tm ₂ O ₃	7,234	12,238.90	27.16	24.27	0.89	0.19	19.07	217.55
U ₃ O ₈	7,234	12,238.90	29.85	26.59	0.89	0.54	23.82	708.58
Y ₂ O ₃	7,234	12,238.90	1,989.65	1,662.81	0.84	20.32	1,581.15	25,908.00
Yb ₂ O ₃	7,234	12,238.90	161.31	142.43	0.88	0.68	110.71	1,039.91
ZrO ₂	7,210	12,187.30	32,589.71	17,903.21	0.55	98.55	31,320.00	157,950.00
Capped Assays								
CeO ₂	7,234	12,238.90	6,237.73	3,069.75	0.49	104.41	5,820.72	25,000.00
Dy ₂ O ₃	7,234	12,238.90	450.58	336.58	0.75	4.71	378.84	2,500.00
Er ₂ O ₃	7,234	12,238.90	203.86	177.15	0.87	1.37	149.73	1,100.00
Eu ₂ O ₃	7,234	12,238.90	78.85	40.61	0.52	1.16	74.46	250
Ga ₂ O ₃	5,159	9,291.50	147.94	31.35	0.21	35.48	143.81	396.08
Gd ₂ O ₃	7,234	12,238.90	571.27	306.18	0.54	9.22	537.3	2,200.00
HfO ₂	7,210	12,187.30	641.15	338.05	0.53	2.24	618.03	2,300.00
Ho ₂ O ₃	7,234	12,238.90	79.82	66.1	0.83	0.64	61.88	450
La ₂ O ₃	7,234	12,238.90	2,672.55	1,291.52	0.48	45.75	2,510.22	11,000.00
Lu ₂ O ₃	7,234	12,238.90	22.34	19.88	0.89	0.14	15.18	130
Nb ₂ O ₅	7,300	12,407.70	4,145.42	2,006.37	0.48	37.21	3,886.17	14,000.00
Nd ₂ O ₃	7,234	12,238.90	2,935.40	1,445.88	0.49	39.88	2,763.42	11,000.00
Pr ₆ O ₁₁	7,234	12,238.90	769.45	370.82	0.48	11.59	724.8	3,000.00
Sm ₂ O ₃	7,234	12,238.90	642.08	325.24	0.51	7.77	609	2,500.00
Ta ₂ O ₅	7,300	12,407.70	409.89	215.65	0.53	1.47	378.51	1,400.00
Tb ₄ O ₇	7,234	12,238.90	88.66	56.97	0.64	1.16	79.03	450
ThO ₂	7,234	12,238.90	135.69	122.69	0.9	3.37	97.64	1,100.00
Tm ₂ O ₃	7,234	12,238.90	27.1	23.98	0.88	0.19	19.07	130
U ₃ O ₈	7,234	12,238.90	29.78	25.65	0.86	0.54	23.82	320
Y ₂ O ₃	7,234	12,238.90	1,984.60	1,615.08	0.81	20.32	1,581.15	13,000.00
Yb ₂ O ₃	7,234	12,238.90	161.22	141.97	0.88	0.68	110.71	850
ZrO ₂	7,210	12,187.30	32,585.78	17,879.62	0.55	98.55	31,320.00	130,000.00

Table 14.4: Basal Zone 3 – Raw and Capped Assays

Oxide	Count	Length	Mean	Std. Dev.	C. of V.	Minimum	Median	Maximum
Domain: Basal Zone 3								
Raw Assays								
CeO ₂	85	133.2	5,027.82	2,281.44	0.45	961.52	4,776.92	10,425.72
Dy ₂ O ₃	85	133.2	466.97	242.94	0.52	49.82	423.61	1,457.96
Er ₂ O ₃	85	133.2	208.87	126.69	0.61	15.77	176.59	661.8
Eu ₂ O ₃	85	133.2	66.11	30.34	0.46	9.31	61.37	149.38
Ga ₂ O ₃	47	81.4	135.54	19.74	0.15	100.8	131.31	197.57
Gd ₂ O ₃	85	133.2	498.6	233.84	0.47	67.45	468.12	1,233.71
HfO ₂	85	133.2	605.52	287.14	0.47	46.1	536.45	1,332.27
Ho ₂ O ₃	85	133.2	84.7	47.82	0.56	7.79	76.78	270.46
La ₂ O ₃	85	133.2	2,206.70	1,010.56	0.46	458.64	2,076.21	4,645.08
Lu ₂ O ₃	85	133.2	23.33	15.95	0.68	1.9	19.67	78
Nb ₂ O ₅	85	133.2	3,582.57	1,816.92	0.51	608.17	3,176.82	10,446.30
Nd ₂ O ₃	85	133.2	2,313.72	1,035.20	0.45	366.12	2,256.21	4,978.82
Pr ₆ O ₁₁	85	133.2	615.03	276.98	0.45	110.17	596.75	1,298.60
Sm ₂ O ₃	85	133.2	517.45	237.65	0.46	75.4	503.44	1,099.68
Ta ₂ O ₅	85	133.2	407.17	197.32	0.48	46.89	395.6	1,013.43
Tb ₄ O ₇	85	133.2	86.95	42.48	0.49	10.7	77.62	235.2
ThO ₂	85	133.2	95.89	83.33	0.87	18.66	67.82	407.4
Tm ₂ O ₃	85	133.2	28.06	18.26	0.65	2.07	22.67	89.19
U ₃ O ₈	85	133.2	35.88	59.8	1.67	6.91	18.98	457.45
Y ₂ O ₃	85	133.2	1,997.03	1,163.30	0.58	173.99	1,765.30	7,683.50
Yb ₂ O ₃	85	133.2	167.67	113.01	0.67	13.04	140.1	534.19
ZrO ₂	85	133.2	29,515.31	15,433.39	0.52	1809	27,135.00	78,705.00
Capped Assays								
CeO ₂	85	133.2	5,027.82	2,281.44	0.45	961.52	4,776.92	10,425.72
Dy ₂ O ₃	85	133.2	466.97	242.94	0.52	49.82	423.61	1,457.96
Er ₂ O ₃	85	133.2	208.87	126.69	0.61	15.77	176.59	661.8
Eu ₂ O ₃	85	133.2	66.11	30.34	0.46	9.31	61.37	149.38
Ga ₂ O ₃	47	81.4	135.54	19.74	0.15	100.8	131.31	197.57
Gd ₂ O ₃	85	133.2	498.6	233.84	0.47	67.45	468.12	1,233.71
HfO ₂	85	133.2	605.52	287.14	0.47	46.1	536.45	1,332.27
Ho ₂ O ₃	85	133.2	84.7	47.82	0.56	7.79	76.78	270.46
La ₂ O ₃	85	133.2	2,206.70	1,010.56	0.46	458.64	2,076.21	4,645.08
Lu ₂ O ₃	85	133.2	23.33	15.95	0.68	1.9	19.67	78
Nb ₂ O ₅	85	133.2	3,582.57	1,816.92	0.51	608.17	3,176.82	10,446.30
Nd ₂ O ₃	85	133.2	2,313.72	1,035.20	0.45	366.12	2,256.21	4,978.82
Pr ₆ O ₁₁	85	133.2	615.03	276.98	0.45	110.17	596.75	1,298.60
Sm ₂ O ₃	85	133.2	517.45	237.65	0.46	75.4	503.44	1,099.68
Ta ₂ O ₅	85	133.2	407.17	197.32	0.48	46.89	395.6	1,013.43
Tb ₄ O ₇	85	133.2	86.95	42.48	0.49	10.7	77.62	235.2
ThO ₂	85	133.2	95.89	83.33	0.87	18.66	67.82	407.4
Tm ₂ O ₃	85	133.2	28.06	18.26	0.65	2.07	22.67	89.19
U ₃ O ₈	85	133.2	34.33	49.67	1.45	6.91	18.98	320
Y ₂ O ₃	85	133.2	1,997.03	1,163.30	0.58	173.99	1,765.30	7,683.50
Yb ₂ O ₃	85	133.2	167.67	113.01	0.67	13.04	140.1	534.19
ZrO ₂	85	133.2	29,515.31	15,433.39	0.52	1809	27,135.00	78,705.00

Table 14.5: Nechalacho Layered Suite Undifferentiated – Raw and Capped Assays

Oxide	Count	Length	Mean	Std. Dev.	C. of V.	Minimum	Median	Maximum
Domain: Nechalacho Layered Suite undifferentiated								
Raw Assays								
CeO ₂	24,500	45,975.90	1,450.78	1,482.66	1.02	17.19	961.82	111,782.49
Dy ₂ O ₃	24,500	45,975.90	50.87	66.92	1.32	0.6	30.42	1,802.36
Er ₂ O ₃	24,500	45,975.90	19.56	28.57	1.46	0.11	10.92	900.68
Eu ₂ O ₃	24,500	45,975.90	13.67	14.85	1.09	0.12	8.46	223.49
Ga ₂ O ₃	22,453	42,671.50	140.37	36.76	0.26	19.22	133.19	540.29
Gd ₂ O ₃	24,500	45,975.90	93.91	103.58	1.1	0.96	57.77	1,717.97
HfO ₂	24,358	45,603.70	131.91	141.78	1.07	0.06	83.24	1,992.51
Ho ₂ O ₃	24,500	45,975.90	8.12	11.56	1.42	0.09	4.65	336.92
La ₂ O ₃	24,500	45,975.90	634.3	639.05	1.01	6.45	426.39	14,937.33
Lu ₂ O ₃	24,500	45,975.90	1.99	3.01	1.51	0.01	1.02	106.65
Nb ₂ O ₅	25,207	47,956.40	1,081.88	1,117.75	1.03	5	704.05	19,318.50
Nd ₂ O ₃	24,500	45,975.90	650.17	673.72	1.04	8.28	422.09	11,193.60
Pr ₆ O ₁₁	24,500	45,975.90	175.73	178.99	1.02	2.08	115.55	3,116.41
Sm ₂ O ₃	24,500	45,975.90	122.76	132.54	1.08	1.5	75.86	2,041.60
Ta ₂ O ₅	25,159	47,817.70	75.98	84.07	1.11	0.01	45.3	1,288.15
Tb ₄ O ₇	24,500	45,975.90	11.68	13.73	1.18	0.13	7.14	290.47
ThO ₂	24,500	45,975.90	42.5	45.66	1.07	0.11	28.11	1,928.00
Tm ₂ O ₃	24,500	45,975.90	2.42	3.68	1.52	0.01	1.27	125.62
U ₃ O ₈	24,574	46,180.00	23.16	37.2	1.61	0.12	14.97	1,179.00
Y ₂ O ₃	24,500	45,975.90	218.34	303.1	1.39	1.9	127	8,737.60
Yb ₂ O ₃	24,500	45,975.90	14.2	21.59	1.52	0.09	7.3	787.05
ZrO ₂	24,358	45,603.70	6,417.30	7,534.51	1.17	0.01	3,672.00	118,800.00
Capped Assays								
CeO ₂	24,500	45,975.90	1,450.58	1,478.69	1.02	17.19	961.82	25,000.00
Dy ₂ O ₃	24,500	45,975.90	50.77	65.48	1.29	0.6	30.42	800
Er ₂ O ₃	24,500	45,975.90	19.52	27.88	1.43	0.11	10.92	400
Eu ₂ O ₃	24,500	45,975.90	13.66	14.74	1.08	0.12	8.46	150
Ga ₂ O ₃	22,453	42,671.50	140.35	36.61	0.26	19.22	133.19	350
Gd ₂ O ₃	24,500	45,975.90	93.85	102.91	1.1	0.96	57.77	1,100.00
HfO ₂	24,358	45,603.70	131.78	140.62	1.07	0.06	83.24	1,200.00
Ho ₂ O ₃	24,500	45,975.90	8.1	11.26	1.39	0.09	4.65	150
La ₂ O ₃	24,500	45,975.90	633.48	627.42	0.99	6.45	426.39	7,000.00
Lu ₂ O ₃	24,500	45,975.90	1.98	2.89	1.46	0.01	1.02	40
Nb ₂ O ₅	25,207	47,956.40	1,081.23	1,110.46	1.03	5	704.05	11,000.00
Nd ₂ O ₃	24,500	45,975.90	649.45	665.35	1.02	8.28	422.09	7,000.00
Pr ₆ O ₁₁	24,500	45,975.90	175.6	177.34	1.01	2.08	115.55	2,000.00
Sm ₂ O ₃	24,500	45,975.90	122.71	131.91	1.07	1.5	75.86	1,500.00
Ta ₂ O ₅	25,159	47,817.70	75.96	83.85	1.1	0.01	45.3	800
Tb ₄ O ₇	25,159	47,817.70	62.76	50.89	0.81	0.01	45.3	150
ThO ₂	24,500	45,975.90	42.41	43.94	1.04	0.11	28.11	600
Tm ₂ O ₃	24,500	45,975.90	2.41	3.53	1.47	0.01	1.27	45
U ₃ O ₈	24,574	46,180.00	23.09	35.67	1.54	0.12	14.97	700
Y ₂ O ₃	24,500	45,975.90	218	297.51	1.36	1.9	127	4,000.00
Yb ₂ O ₃	24,500	45,975.90	14.18	21.14	1.49	0.09	7.3	350
ZrO ₂	24,358	45,603.70	6,412.65	7,487.97	1.17	0.01	3,672.00	70,000.00

Table 14.6: Upper Zone 1 – Raw and Capped Assays

Oxide	Count	Length	Mean	Std. Dev.	C. of V.	Minimum	Median	Maximum
Domain: Upper Zone 1								
Raw Assays								
CeO ₂	5,698	10,330.30	5,984.41	4,540.14	0.76	110.06	5,220.61	111,782.49
Dy ₂ O ₃	5,698	10,330.30	131.77	105.78	0.8	2.86	105.04	2,278.78
Er ₂ O ₃	5,698	10,330.30	42.46	37.62	0.89	0.95	32.58	598.93
Eu ₂ O ₃	5,698	10,330.30	52.51	32.98	0.63	1.1	47.71	633.43
Ga ₂ O ₃	4,940	9,254.70	184.64	41.89	0.23	39.51	179.42	650.5
Gd ₂ O ₃	5,698	10,330.30	349.99	230.87	0.66	6.73	313.62	5,765.00
HfO ₂	5,632	10,148.90	321.5	219.72	0.68	0.35	286.97	1,844.78
Ho ₂ O ₃	5,698	10,330.30	18.3	15.98	0.87	0.38	13.98	285.35
La ₂ O ₃	5,698	10,330.30	2,534.82	2,022.28	0.8	46.92	2,222.84	58,650.00
Lu ₂ O ₃	5,698	10,330.30	4.21	4.31	1.02	0.07	3.1	66.17
Nb ₂ O ₅	5,931	10,920.30	2,592.12	1,606.82	0.62	39	2,346.84	19,667.81
Nd ₂ O ₃	5,698	10,330.30	2,701.40	1,793.29	0.66	49.67	2,411.99	51,070.80
Pr ₆ O ₁₁	5,698	10,330.30	724.32	470.28	0.65	13.1	645.07	6,339.33
Sm ₂ O ₃	5,698	10,330.30	495.33	313.12	0.63	9.72	446.6	5,800.00
Ta ₂ O ₅	5,917	10,880.50	157.12	100.63	0.64	0.01	136.75	1,130.00
Tb ₄ O ₇	5,698	10,330.30	36.56	26.15	0.72	0.83	31.26	665.15
ThO ₂	5,698	10,330.30	124.56	98.2	0.79	4.83	103.56	2,503.60
Tm ₂ O ₃	5,698	10,330.30	4.83	4.55	0.94	0.09	3.6	51.39
U ₃ O ₈	5,740	10,429.40	46.11	60.76	1.32	1.18	31.24	1,705.90
Y ₂ O ₃	5,698	10,330.30	532.62	459.53	0.86	16.13	413	5,880.10
Yb ₂ O ₃	5,698	10,330.30	30.22	29.34	0.97	0.68	22.67	391.82
ZrO ₂	5,632	10,148.90	17,944.28	12,991.72	0.72	32.4	13,635.00	116,505.00
Capped Assays								
CeO ₂	5,698	10,330.30	5,931.13	3,895.52	0.66	110.06	5,220.61	35,000.00
Dy ₂ O ₃	5,698	10,330.30	131.2	99.67	0.76	2.86	105.04	800
Er ₂ O ₃	5,698	10,330.30	42.39	36.83	0.87	0.95	32.58	400
Eu ₂ O ₃	5,698	10,330.30	52.4	31.95	0.61	1.1	47.71	250
Ga ₂ O ₃	4,940	9,254.70	184.64	41.89	0.23	39.51	179.42	650.5
Gd ₂ O ₃	5,698	10,330.30	348.98	217.58	0.62	6.73	313.62	2,000.00
HfO ₂	5,632	10,148.90	321.12	217.81	0.68	0.35	286.97	1,300.00
Ho ₂ O ₃	5,698	10,330.30	18.25	15.46	0.85	0.38	13.98	150
La ₂ O ₃	5,698	10,330.30	2,516.16	1,723.41	0.68	46.92	2,222.84	20,000.00
Lu ₂ O ₃	5,698	10,330.30	4.21	4.25	1.01	0.07	3.1	50
Nb ₂ O ₅	5,931	10,920.30	2,590.41	1,591.71	0.61	39	2,346.84	14,000.00
Nd ₂ O ₃	5,698	10,330.30	2,691.42	1,652.97	0.61	49.67	2,411.99	14,000.00
Pr ₆ O ₁₁	5,698	10,330.30	724.24	469.31	0.65	13.1	645.07	6,000.00
Sm ₂ O ₃	5,698	10,330.30	494.2	302.06	0.61	9.72	446.6	2,500.00
Ta ₂ O ₅	5,917	10,880.50	156.82	98.54	0.63	0.01	136.75	700
Tb ₄ O ₇	5,698	10,330.30	36.46	24.76	0.68	0.83	31.26	250
ThO ₂	5,698	10,330.30	123.9	89.72	0.72	4.83	103.56	800
Tm ₂ O ₃	5,698	10,330.30	4.82	4.44	0.92	0.09	3.6	35
U ₃ O ₈	5,740	10,429.40	45.94	57.38	1.25	1.18	31.24	1,000.00
Y ₂ O ₃	5,698	10,330.30	532.11	454.42	0.85	16.13	413	4,500.00
Yb ₂ O ₃	5,698	10,330.30	30.12	28.48	0.95	0.68	22.67	250
ZrO ₂	5,632	10,148.90	17,944.28	12,991.72	0.72	32.4	13,635.00	116,505.00

Table 14.7: Upper Zone 2 – Raw and Capped Assays

Oxide	Count	Length	Mean	Std. Dev.	C. of V.	Minimum	Median	Maximum
Domain: Upper Zone 2								
Raw Assays								
CeO ₂	3,887	6,837.90	5,876.61	3,539.34	0.6	95.57	5,409.90	59,680.80
Dy ₂ O ₃	3,888	6,839.70	201.17	172.21	0.86	5.07	155.55	3,134.04
Er ₂ O ₃	3,888	6,839.70	72.39	77.57	1.07	1.44	49.15	1,417.32
Eu ₂ O ₃	3,888	6,839.70	60.24	36.71	0.61	1.27	55.58	452.78
Ga ₂ O ₃	3,335	6,025.60	172.88	39.26	0.23	54.3	167.33	400.51
Gd ₂ O ₃	3,888	6,839.70	407.23	252.64	0.62	4.81	371.27	2,432.83
HfO ₂	3,825	6,681.30	398.48	266.82	0.67	0.24	365.49	2,725.97
Ho ₂ O ₃	3,888	6,839.70	30.77	31.69	1.03	0.66	21.54	601.65
La ₂ O ₃	3,888	6,839.70	2,505.74	1,485.57	0.59	42.58	2,322.54	25,454.10
Lu ₂ O ₃	3,888	6,839.70	7.72	9.61	1.24	0.05	5.09	172.26
Nb ₂ O ₅	3,942	6,972.10	3,031.74	1,832.70	0.6	5	2,718.90	21,178.80
Nd ₂ O ₃	3,888	6,839.70	2,702.76	1,616.19	0.6	46.41	2,506.90	25,069.00
Pr ₆ O ₁₁	3,888	6,839.70	719.25	423.63	0.59	11.58	670.44	6,040.00
Sm ₂ O ₃	3,888	6,839.70	537.23	325.75	0.61	10.05	495.32	4,477.60
Ta ₂ O ₅	3,942	6,972.10	221.62	130.37	0.59	0.01	207.57	1,241.02
Tb ₄ O ₇	3,888	6,839.70	48.8	35.2	0.72	1.05	41.75	457.46
ThO ₂	3,888	6,839.70	145.82	122.93	0.84	1.82	114.37	1,963.05
Tm ₂ O ₃	3,888	6,839.70	9.03	10.22	1.13	0.13	5.94	152.46
U ₃ O ₈	3,914	6,908.50	38.64	54.28	1.4	1.06	26.88	1,874.61
Y ₂ O ₃	3,888	6,839.70	844.17	848.56	1.01	16.76	589.28	15,621.00
Yb ₂ O ₃	3,888	6,839.70	55.39	65.45	1.18	0.47	36.56	968.15
ZrO ₂	3,825	6,681.30	21,633.25	15,403.15	0.71	13.5	18,630.00	135,675.00
Capped Assays								
CeO ₂	3,887	6,837.90	5,864.71	3,442.94	0.59	95.57	5,409.90	25,000.00
Dy ₂ O ₃	3,888	6,839.70	199.92	161.53	0.81	5.07	155.55	1,100.00
Er ₂ O ₃	3,888	6,839.70	71.81	71.7	1	1.44	49.15	600
Eu ₂ O ₃	3,888	6,839.70	60.22	36.51	0.61	1.27	55.58	300
Ga ₂ O ₃	3,335	6,025.60	172.88	39.26	0.23	54.3	167.33	400.51
Gd ₂ O ₃	3,888	6,839.70	406.67	249.08	0.61	4.81	371.27	1,800.00
HfO ₂	3,825	6,681.30	398.41	266.27	0.67	0.24	365.49	2,300.00
Ho ₂ O ₃	3,888	6,839.70	30.74	31.22	1.02	0.66	21.54	450
La ₂ O ₃	3,888	6,839.70	2,501.05	1,445.69	0.58	42.58	2,322.54	11,000.00
Lu ₂ O ₃	3,888	6,839.70	7.66	8.96	1.17	0.05	5.09	80
Nb ₂ O ₅	3,942	6,972.10	3,026.20	1,792.80	0.59	5	2,718.90	14,000.00
Nd ₂ O ₃	3,888	6,839.70	2,699.98	1,591.86	0.59	46.41	2,506.90	12,000.00
Pr ₆ O ₁₁	3,888	6,839.70	718.22	415.95	0.58	11.58	670.44	3,000.00
Sm ₂ O ₃	3,888	6,839.70	536.82	322.31	0.6	10.05	495.32	2,500.00
Ta ₂ O ₅	3,942	6,972.10	221.62	130.37	0.59	0.01	207.57	1,241.02
Tb ₄ O ₇	3,888	6,839.70	48.71	34.37	0.71	1.05	41.75	300
ThO ₂	3,888	6,839.70	145.34	118.19	0.81	1.82	114.37	1,000.00
Tm ₂ O ₃	3,888	6,839.70	8.99	9.78	1.09	0.13	5.94	90
U ₃ O ₈	3,914	6,908.50	38.34	48.21	1.26	1.06	26.88	700
Y ₂ O ₃	3,888	6,839.70	841.63	817.84	0.97	16.76	589.28	8,000.00
Yb ₂ O ₃	3,888	6,839.70	54.96	61.45	1.12	0.47	36.56	500
ZrO ₂	3,825	6,681.30	21,556.51	15,003.65	0.7	13.5	18,630.00	85,000.00

Table 14.8: Upper Zone 3 – Raw and Capped Assays

Oxide	Count	Length	Mean	Std. Dev.	C. of V.	Minimum	Median	Maximum
Domain: Upper Zone 3								
Raw Assays								
CeO ₂	223	420.3	4,192.13	1,685.65	0.4	389.4	4,016.80	9,298.83
Dy ₂ O ₃	223	420.3	88.92	53.68	0.6	11.07	77.83	299.63
Er ₂ O ₃	223	420.3	25.54	18.07	0.71	2.33	21.09	102.18
Eu ₂ O ₃	223	420.3	40.31	17.22	0.43	3.44	38.56	91.13
Ga ₂ O ₃	223	420.3	158.05	21.43	0.14	98.11	157.92	227.14
Gd ₂ O ₃	223	420.3	237.74	106.85	0.45	20.58	227.14	555.75
HfO ₂	223	420.3	219.78	137.2	0.62	7.9	203.97	687.36
Ho ₂ O ₃	223	420.3	12.2	8.01	0.66	1.41	10.47	44.24
La ₂ O ₃	223	420.3	1,758.20	703.4	0.4	179.47	1,700.85	3,835.71
Lu ₂ O ₃	223	420.3	2.04	1.67	0.82	0.1	1.61	9.21
Nb ₂ O ₅	223	420.3	1,784.36	924.34	0.52	301.94	1,631.34	4,579.20
Nd ₂ O ₃	223	420.3	1,904.48	766.9	0.4	166.16	1,807.30	4,022.70
Pr ₆ O ₁₁	223	420.3	505.72	202.87	0.4	46.12	482.98	1,075.83
Sm ₂ O ₃	223	420.3	370.38	156.38	0.42	30.74	353.8	850.28
Ta ₂ O ₅	223	420.3	124.87	64.03	0.51	11.72	119.66	343.1
Tb ₄ O ₇	223	420.3	23.93	12.73	0.53	2.59	21.74	67.34
ThO ₂	223	420.3	85.24	47.8	0.56	8.83	76.59	291.33
Tm ₂ O ₃	223	420.3	2.9	2.27	0.78	0.21	2.31	14.45
U ₃ O ₈	223	420.3	26.45	13.19	0.5	8.43	22.75	99.74
Y ₂ O ₃	223	420.3	383.93	263.75	0.69	33.4	325.12	1,504.95
Yb ₂ O ₃	223	420.3	15.58	12.49	0.8	0.83	12.81	72.33
ZrO ₂	223	420.3	11,934.94	8,059.17	0.68	341.55	10,584.00	39,015.00
Capped Assays								
CeO ₂	223	420.3	4,192.13	1,685.65	0.4	389.4	4,016.80	9,298.83
Dy ₂ O ₃	223	420.3	88.92	53.68	0.6	11.07	77.83	299.63
Er ₂ O ₃	223	420.3	25.54	18.07	0.71	2.33	21.09	102.18
Eu ₂ O ₃	223	420.3	40.31	17.22	0.43	3.44	38.56	91.13
Ga ₂ O ₃	223	420.3	158.05	21.43	0.14	98.11	157.92	227.14
Gd ₂ O ₃	223	420.3	237.74	106.85	0.45	20.58	227.14	555.75
HfO ₂	223	420.3	219.78	137.2	0.62	7.9	203.97	687.36
Ho ₂ O ₃	223	420.3	12.2	8.01	0.66	1.41	10.47	44.24
La ₂ O ₃	223	420.3	1,758.20	703.4	0.4	179.47	1,700.85	3,835.71
Lu ₂ O ₃	223	420.3	2.04	1.67	0.82	0.1	1.61	9.21
Nb ₂ O ₅	223	420.3	1,784.36	924.34	0.52	301.94	1,631.34	4,579.20
Nd ₂ O ₃	223	420.3	1,904.48	766.9	0.4	166.16	1,807.30	4,022.70
Pr ₆ O ₁₁	223	420.3	505.72	202.87	0.4	46.12	482.98	1,075.83
Sm ₂ O ₃	223	420.3	370.38	156.38	0.42	30.74	353.8	850.28
Ta ₂ O ₅	223	420.3	124.87	64.03	0.51	11.72	119.66	343.1
Tb ₄ O ₇	223	420.3	23.93	12.73	0.53	2.59	21.74	67.34
ThO ₂	223	420.3	85.24	47.8	0.56	8.83	76.59	291.33
Tm ₂ O ₃	223	420.3	2.9	2.27	0.78	0.21	2.31	14.45
U ₃ O ₈	223	420.3	26.45	13.19	0.5	8.43	22.75	99.74
Y ₂ O ₃	223	420.3	383.93	263.75	0.69	33.4	325.12	1,504.95
Yb ₂ O ₃	223	420.3	15.58	12.49	0.8	0.83	12.81	72.33
ZrO ₂	223	420.3	11,934.94	8,059.17	0.68	341.55	10,584.00	39,015.00

Table 14.9: Upper Zone 4 – Raw and Capped Assays

Oxide	Count	Length	Mean	Std. Dev.	C. of V.	Minimum	Median	Maximum
Domain: Upper Zone 4								
Raw Assays								
CeO ₂	314	577.7	3,780.93	1,863.71	0.49	792.3	3,439.46	12,775.14
Dy ₂ O ₃	314	577.7	65.99	44.33	0.67	9.99	59.47	451.16
Er ₂ O ₃	314	577.7	21.74	13.25	0.61	3.54	20.35	138.87
Eu ₂ O ₃	314	577.7	33.57	21.92	0.65	6.9	30.69	287.18
Ga ₂ O ₃	306	565.7	146.89	16.61	0.11	84	145.82	252.67
Gd ₂ O ₃	314	577.7	220.31	119.22	0.54	48.31	204.66	1,153.00
HfO ₂	314	577.7	247.64	116.55	0.47	26.06	245.23	848.88
Ho ₂ O ₃	314	577.7	9.02	6.02	0.67	1.28	8.1	59.48
La ₂ O ₃	314	577.7	1,633.68	958.13	0.59	340.17	1,477.98	11,730.00
Lu ₂ O ₃	314	577.7	1.94	1.28	0.66	0.15	1.75	9.98
Nb ₂ O ₅	314	577.7	1,279.39	827.16	0.65	256.15	1,110.46	8,872.20
Nd ₂ O ₃	314	577.7	1,762.02	1,027.61	0.58	357.96	1,591.59	11,660.00
Pr ₆ O ₁₁	314	577.7	463.18	228.22	0.49	96.96	421.4	1,587.78
Sm ₂ O ₃	314	577.7	331.21	169.31	0.51	65.42	301.6	1,229.60
Ta ₂ O ₅	314	577.7	106.55	55.85	0.52	15.75	98.9	488.4
Tb ₄ O ₇	314	577.7	20.41	13.33	0.65	4.05	18.33	159.24
ThO ₂	314	577.7	65.38	62.6	0.96	6.54	54.97	851.22
Tm ₂ O ₃	314	577.7	2.34	1.54	0.66	0.3	2.14	15.93
U ₃ O ₈	314	577.7	26.4	12.72	0.48	7.55	23.34	136.17
Y ₂ O ₃	314	577.7	251.45	175.55	0.7	33.4	218.44	1,587.50
Yb ₂ O ₃	314	577.7	14.37	9.22	0.64	1.41	13.1	79.73
ZrO ₂	314	577.7	11,889.48	6,234.61	0.52	837	11,556.00	56,700.00
Capped Assays								
CeO ₂	314	577.7	3,780.93	1,863.71	0.49	792.3	3,439.46	12,775.14
Dy ₂ O ₃	314	577.7	65.99	44.33	0.67	9.99	59.47	451.16
Er ₂ O ₃	314	577.7	21.74	13.25	0.61	3.54	20.35	138.87
Eu ₂ O ₃	314	577.7	33.45	20.48	0.61	6.9	30.69	250
Ga ₂ O ₃	306	565.7	146.89	16.61	0.11	84	145.82	252.67
Gd ₂ O ₃	314	577.7	220.31	119.22	0.54	48.31	204.66	1,153.00
HfO ₂	314	577.7	247.64	116.55	0.47	26.06	245.23	848.88
Ho ₂ O ₃	314	577.7	9.02	6.02	0.67	1.28	8.1	59.48
La ₂ O ₃	314	577.7	1,633.68	958.13	0.59	340.17	1,477.98	11,730.00
Lu ₂ O ₃	314	577.7	1.94	1.28	0.66	0.15	1.75	9.98
Nb ₂ O ₅	314	577.7	1,279.39	827.16	0.65	256.15	1,110.46	8,872.20
Nd ₂ O ₃	314	577.7	1,762.02	1,027.61	0.58	357.96	1,591.59	11,660.00
Pr ₆ O ₁₁	314	577.7	463.18	228.22	0.49	96.96	421.4	1,587.78
Sm ₂ O ₃	314	577.7	331.21	169.31	0.51	65.42	301.6	1,229.60
Ta ₂ O ₅	314	577.7	106.55	55.85	0.52	15.75	98.9	488.4
Tb ₄ O ₇	314	577.7	20.41	13.33	0.65	4.05	18.33	159.24
ThO ₂	314	577.7	65.2	60.4	0.93	6.54	54.97	800
Tm ₂ O ₃	314	577.7	2.34	1.54	0.66	0.3	2.14	15.93
U ₃ O ₈	314	577.7	26.4	12.72	0.48	7.55	23.34	136.17
Y ₂ O ₃	314	577.7	251.45	175.55	0.7	33.4	218.44	1,587.50
Yb ₂ O ₃	314	577.7	14.37	9.22	0.64	1.41	13.1	79.73
ZrO ₂	314	577.7	11,889.48	6,234.61	0.52	837	11,556.00	56,700.00

Table 14.10: Upper Zone 6 – Raw and Capped Assays

Oxide	Count	Length	Mean	Std. Dev.	C. of V.	Minimum	Median	Maximum
Domain: Upper Zone 6								
Raw Assays								
CeO ₂	18	31.7	5,269.40	1,259.53	0.24	2137.38	5,269.75	10,564.06
Dy ₂ O ₃	18	31.7	133.25	48.71	0.37	64.17	124.56	277.82
Er ₂ O ₃	18	31.7	49.78	20.49	0.41	16.29	45.95	109.16
Eu ₂ O ₃	18	31.7	54.55	13.9	0.25	16.33	58.02	88.36
Ga ₂ O ₃	18	31.7	157.41	24.36	0.15	136.42	151.2	244.61
Gd ₂ O ₃	18	31.7	412.62	100.75	0.24	135.48	435.83	673.35
HfO ₂	18	31.7	280.86	103.24	0.37	42.09	282.96	650.81
Ho ₂ O ₃	18	31.7	18.43	8.24	0.45	7.67	16.39	42.52
La ₂ O ₃	18	31.7	2,171.02	547.76	0.25	959.51	2,111.40	4,785.84
Lu ₂ O ₃	18	31.7	4.14	2.18	0.53	0.65	3.74	9.49
Nb ₂ O ₅	18	31.7	2,132.45	803.61	0.38	397.82	2,003.40	4,579.20
Nd ₂ O ₃	18	31.7	2,547.47	622.63	0.24	939.8	2,611.84	4,745.62
Pr ₆ O ₁₁	18	31.7	657.97	155.85	0.24	258.39	664.09	1,249.70
Sm ₂ O ₃	18	31.7	504.52	126.07	0.25	191.4	517.36	919.88
Ta ₂ O ₅	18	31.7	131.06	38.57	0.29	23.57	122.1	244.2
Tb ₄ O ₇	18	31.7	43.14	11.36	0.26	15.75	44.19	75.8
ThO ₂	18	31.7	97.99	21.1	0.22	45.98	97.41	154.77
Tm ₂ O ₃	18	31.7	4.96	2.52	0.51	1.02	4.25	11.76
U ₃ O ₈	18	31.7	20.27	10.23	0.5	12.2	17.51	49.16
Y ₂ O ₃	18	31.7	534.21	251.08	0.47	168.91	496.57	1,230.63
Yb ₂ O ₃	18	31.7	31.48	15.74	0.5	5.57	28.59	71.64
ZrO ₂	18	31.7	16,173.79	6,375.53	0.39	1667.25	16,200.00	38,070.00
Capped Assays								
CeO ₂	18	31.7	5,269.40	1,259.53	0.24	2137.38	5,269.75	10,564.06
Dy ₂ O ₃	18	31.7	133.25	48.71	0.37	64.17	124.56	277.82
Er ₂ O ₃	18	31.7	49.78	20.49	0.41	16.29	45.95	109.16
Eu ₂ O ₃	18	31.7	54.55	13.9	0.25	16.33	58.02	88.36
Ga ₂ O ₃	18	31.7	157.41	24.36	0.15	136.42	151.2	244.61
Gd ₂ O ₃	18	31.7	412.62	100.75	0.24	135.48	435.83	673.35
HfO ₂	18	31.7	280.86	103.24	0.37	42.09	282.96	650.81
Ho ₂ O ₃	18	31.7	18.43	8.24	0.45	7.67	16.39	42.52
La ₂ O ₃	18	31.7	2,171.02	547.76	0.25	959.51	2,111.40	4,785.84
Lu ₂ O ₃	18	31.7	4.14	2.18	0.53	0.65	3.74	9.49
Nb ₂ O ₅	18	31.7	2,132.45	803.61	0.38	397.82	2,003.40	4,579.20
Nd ₂ O ₃	18	31.7	2,547.47	622.63	0.24	939.8	2,611.84	4,745.62
Pr ₆ O ₁₁	18	31.7	657.97	155.85	0.24	258.39	664.09	1,249.70
Sm ₂ O ₃	18	31.7	504.52	126.07	0.25	191.4	517.36	919.88
Ta ₂ O ₅	18	31.7	131.06	38.57	0.29	23.57	122.1	244.2
Tb ₄ O ₇	18	31.7	43.14	11.36	0.26	15.75	44.19	75.8
ThO ₂	18	31.7	97.99	21.1	0.22	45.98	97.41	154.77
Tm ₂ O ₃	18	31.7	4.96	2.52	0.51	1.02	4.25	11.76
U ₃ O ₈	18	31.7	20.27	10.23	0.5	12.2	17.51	49.16
Y ₂ O ₃	18	31.7	534.21	251.08	0.47	168.91	496.57	1,230.63
Yb ₂ O ₃	18	31.7	31.48	15.74	0.5	5.57	28.59	71.64
ZrO ₂	18	31.7	16,173.79	6,375.53	0.39	1667.25	16,200.00	38,070.00

14.5 TOPOGRAPHY

A topographic surface with variable resolution, resolving features of approximately 5 m, is available for Nechalacho, sufficient for the purpose of the current resource estimate. A 0.5 m resolution topographical surface is also available for the Project.

14.6 ROCK DENSITY

Specific gravity (SG) is measured on core samples taken at 5 m intervals within the hole, on samples approximately 10 cm long. The geological model domains were modelled, and then samples captured inside the modelled wireframes were reviewed to obtain average density values for each domain. Table 14.11 shows the density statistics for each domain.

Table 14.11: Statistics for Density Values in the Modelled Domains

Domain	Count	Density (t/m ³)			
		Min.	Max.	Mean	Std. Dev.
Overburden	18	2.59	2.89	2.66	0.07
Diabase	197	2.56	3.22	2.84	0.11
Sodalite Syenite	633	2.21	3.64	2.73	0.09
Nechalacho Layered Suite (undifferentiated)	11,901	1.07	3.85	2.73	0.13
Thor Lake Syenite	1,910	2.11	3.94	2.69	0.08
Upper Zone 1	1,991	2.29	3.95	2.79	0.16
Upper Zone 2	1,310	1.91	3.73	2.83	0.16
Upper Zone 3	90	2.58	3.08	2.72	0.09
Upper Zone 4	117	2.51	3.33	2.69	0.12
Upper Zone 6	7	2.59	2.77	2.69	0.06
Basal Zone 1	2,321	2.09	4.07	2.89	0.16
Basal Zone 3	24	2.68	3.05	2.84	0.08

For all domains in the Nechalacho Layered Suite, including the mineralized domains, density was interpolated using the inverse distance squared (IDW²) method with variable anisotropy and the search parameters in Table 14.12. Blocks that were not interpolated were assigned the average density value for each domain and the Overburden and Water were assigned default density values (Table 14.13).

Table 14.12: Search Parameters for Density Interpolation

Number of Samples			Search Ellipse Dimensions (m)		
Max/Hole	Min.	Max.	Major	Semi-Major	Minor
1	1	6	200	200	30

Table 14.13: Density Values Assigned to Blocks Not Estimated

Domain	Default Density Value (t/m ³)
Water	1.00
Overburden	2.00
Diabase	2.84
Sodalite Syenite	2.73

Nechalacho Layered Suite (undifferentiated)	2.73
Thor Lake Syenite	2.69
Upper Zone 1	2.79
Upper Zone 2	2.83
Upper Zone 3	2.72
Upper Zone 4	2.69
Upper Zone 6	2.69
Basal Zone 1	2.89
Basal Zone 3	2.84

14.7 COMPOSITING

Composites were generated for a nominal length of two metres within the mineralized domain wireframes, automatically adjusting interval lengths to avoid residuals at the end of drill holes. A minimum sample coverage of 50% was required to create a composite. Missing assays were ignored. Some drill programs targeted only the Basal Zone; assays are thus missing for the domains above it. Table 14.14 to Table 14.21 show descriptive statistics of the capped composites in the modelled domains.

Table 14.14: Basal Zone 1 – Capped Composites

Oxide	Count	Length	Mean	Std. Dev.	C. of V.	Minimum	Median	Maximum
CeO ₂	6,144	12,246.00	6,237.94	2,806.45	0.45	183.85	5,906.68	24,188.81
Dy ₂ O ₃	6,144	12,246.00	450.71	315.4	0.7	9.89	391.7	2,500.00
Er ₂ O ₃	6,144	12,246.00	203.92	167.27	0.82	2.83	154.77	1,100.00
Eu ₂ O ₃	6,144	12,246.00	78.86	37.43	0.47	1.77	75.47	250
Ga ₂ O ₃	4,664	9,298.30	147.95	30.26	0.2	64.78	143.81	391.52
Gd ₂ O ₃	6,144	12,246.00	571.33	282.54	0.49	12.65	544.22	2,200.00
HfO ₂	6,119	12,194.40	641.26	311.54	0.49	2.36	627.78	2,300.00
Ho ₂ O ₃	6,144	12,246.00	79.84	62.19	0.78	1.55	64.86	450
La ₂ O ₃	6,144	12,246.00	2,672.65	1,180.64	0.44	73.45	2,543.48	10,631.59
Lu ₂ O ₃	6,144	12,246.00	22.35	18.72	0.84	0.22	15.71	128.48
Nb ₂ O ₅	6,230	12,414.80	4,145.87	1,824.61	0.44	37.76	3,964.35	14,000.00
Nd ₂ O ₃	6,144	12,246.00	2,935.55	1,322.80	0.45	73.27	2,798.15	10,972.06
Pr ₆ O ₁₁	6,144	12,246.00	769.48	339.01	0.44	21.51	739.07	2,904.96
Sm ₂ O ₃	6,144	12,246.00	642.14	298.24	0.46	14.98	616.7	2,500.00
Ta ₂ O ₅	6,230	12,414.80	409.97	199.79	0.49	1.47	387.7	1,400.00
Tb ₄ O ₇	6,144	12,246.00	88.68	53.09	0.6	1.99	80.61	442.18
ThO ₂	6,144	12,246.00	135.69	114.79	0.85	3.56	100.49	1,074.27
Tm ₂ O ₃	6,144	12,246.00	27.11	22.69	0.84	0.21	19.88	130
U ₃ O ₈	6,144	12,246.00	29.78	23.46	0.79	0.72	24.33	320
Y ₂ O ₃	6,144	12,246.00	1,985.16	1,511.62	0.76	36.99	1,651.73	13,000.00
Yb ₂ O ₃	6,144	12,246.00	161.27	133.94	0.83	1.42	115.24	850
ZrO ₂	6,119	12,194.40	32,590.97	16,392.36	0.5	98.55	31,725.00	130,000.00

Table 14.15: Basal Zone 3 – Capped Composites

Oxide	Count	Length	Mean	Std. Dev.	C. of V.	Minimum	Median	Maximum
CeO ₂	69	132.5	5,032.73	1,985.23	0.39	961.52	4,913.22	10,425.72
Dy ₂ O ₃	69	132.5	467.48	207.53	0.44	49.82	451.39	1,005.65
Er ₂ O ₃	69	132.5	209.2	109.79	0.52	15.77	200.02	562.36
Eu ₂ O ₃	69	132.5	66.18	26.14	0.39	9.31	61.88	132.59
Ga ₂ O ₃	42	80.5	135.49	18.7	0.14	101.07	133.89	194.53
Gd ₂ O ₃	69	132.5	499	203.51	0.41	67.45	470.83	1,013.49
HfO ₂	69	132.5	605.34	253.64	0.42	46.1	602.47	1,167.21
Ho ₂ O ₃	69	132.5	84.82	41.12	0.48	7.79	81.71	201.7
La ₂ O ₃	69	132.5	2,208.98	877.37	0.4	458.64	2,181.78	4,645.08
Lu ₂ O ₃	69	132.5	23.35	13.62	0.58	1.9	20.19	62.65
Nb ₂ O ₅	69	132.5	3,587.86	1,522.74	0.42	608.17	3,315.17	7,859.77
Nd ₂ O ₃	69	132.5	2,315.37	903.29	0.39	366.12	2,330.55	4,978.82
Pr ₆ O ₁₁	69	132.5	615.61	240.9	0.39	110.17	608.31	1,298.60
Sm ₂ O ₃	69	132.5	517.84	205.89	0.4	75.4	533.6	1,045.81
Ta ₂ O ₅	69	132.5	407.39	171.4	0.42	46.89	411.13	855.92
Tb ₄ O ₇	69	132.5	87.04	36.75	0.42	10.7	81.5	180.52
ThO ₂	69	132.5	96.04	79.4	0.83	24.71	66.31	405.13
Tm ₂ O ₃	69	132.5	28.09	15.89	0.57	2.07	25.05	79.03
U ₃ O ₈	69	132.5	34.45	46.49	1.35	8.61	19.71	249.95
Y ₂ O ₃	69	132.5	2,000.10	973.41	0.49	173.99	1,786.40	4,858.54
Yb ₂ O ₃	69	132.5	167.84	97.39	0.58	13.04	142.78	471.55
ZrO ₂	69	132.5	29,522.36	13,584.12	0.46	1809	27,675.00	70,875.00

Table 14.16: Nechalacho Layered Suite Undifferentiated – Capped Composites

Oxide	Count	Length	Mean	Std. Dev.	C. of V.	Minimum	Median	Maximum
CeO ₂	23,083	46,015.70	1,451.20	1,371.33	0.94	18.91	1,003.39	25,000.00
Dy ₂ O ₃	23,083	46,015.70	50.8	60.67	1.19	0.6	31.82	800
Er ₂ O ₃	23,083	46,015.70	19.53	25.74	1.32	0.25	11.51	398.04
Eu ₂ O ₃	23,083	46,015.70	13.66	13.76	1.01	0.14	8.88	150
Ga ₂ O ₃	21,414	42,696.40	140.34	35.59	0.25	29.19	133.23	350
Gd ₂ O ₃	23,083	46,015.70	93.9	96.07	1.02	1.16	60.65	1,100.00
HfO ₂	22,894	45,642.50	131.82	132.32	1	0.1	87.09	1,197.69
Ho ₂ O ₃	23,083	46,015.70	8.1	10.39	1.28	0.11	4.87	150
La ₂ O ₃	23,083	46,015.70	633.78	583.18	0.92	8.33	444.18	7,000.00
Lu ₂ O ₃	23,083	46,015.70	1.98	2.68	1.35	0.02	1.1	40
Nb ₂ O ₅	24,069	47,997.50	1,081.45	1,048.95	0.97	5	730.4	11,000.00
Nd ₂ O ₃	23,083	46,015.70	649.77	618.82	0.95	8.74	441.32	7,000.00
Pr ₆ O ₁₁	23,083	46,015.70	175.68	164.94	0.94	2.3	120.8	2,000.00
Sm ₂ O ₃	23,083	46,015.70	122.79	122.87	1	1.5	79.93	1,500.00
Ta ₂ O ₅	23,999	47,857.70	75.99	79.37	1.04	0.01	47.51	750.51
Tb ₄ O ₇	23,999	47,857.70	62.78	48.54	0.77	0.01	47.29	150
ThO ₂	23,083	46,015.70	42.42	40.71	0.96	0.11	29.36	600
Tm ₂ O ₃	23,083	46,015.70	2.41	3.27	1.36	0.03	1.35	45
U ₃ O ₈	23,184	46,217.20	23.08	32.96	1.43	0.2	15.45	700
Y ₂ O ₃	23,083	46,015.70	218.14	274.22	1.26	3.17	133.49	4,000.00
Yb ₂ O ₃	23,083	46,015.70	14.18	19.56	1.38	0.13	7.84	350
ZrO ₂	22,894	45,642.50	6,414.80	7,041.56	1.1	5.83	3,886.43	68,914.36

Table 14.17: Upper Zone 1 – Capped Composites

Oxide	Count	Length	Mean	Std. Dev.	C. of V.	Minimum	Median	Maximum
CeO ₂	5,172	10,328.90	5,930.82	3,598.28	0.61	181.77	5,318.88	35,000.00
Dy ₂ O ₃	5,172	10,328.90	131.21	92.33	0.7	5.38	107.94	800
Er ₂ O ₃	5,172	10,328.90	42.4	34.16	0.81	1.66	33.38	400
Eu ₂ O ₃	5,172	10,328.90	52.41	29.58	0.56	1.6	48.35	250
Ga ₂ O ₃	4,631	9,255.30	184.67	39.96	0.22	45.69	179.86	632.36
Gd ₂ O ₃	5,172	10,328.90	349.01	201.72	0.58	11.7	318.2	2,000.00
HfO ₂	5,080	10,147.00	321.13	201.91	0.63	0.35	294.35	1,300.00
Ho ₂ O ₃	5,172	10,328.90	18.26	14.31	0.78	0.85	14.42	150
La ₂ O ₃	5,172	10,328.90	2,516.09	1,590.55	0.63	82.01	2,258.03	20,000.00
Lu ₂ O ₃	5,172	10,328.90	4.21	3.94	0.94	0.1	3.21	49.63
Nb ₂ O ₅	5,469	10,918.80	2,590.47	1,468.67	0.57	50.64	2,398.58	13,415.77
Nd ₂ O ₃	5,172	10,328.90	2,691.29	1,529.78	0.57	77.92	2,456.28	14,000.00
Pr ₆ O ₁₁	5,172	10,328.90	724.2	434.42	0.6	21.41	657.6	6,000.00
Sm ₂ O ₃	5,172	10,328.90	494.2	279.64	0.57	14.2	454.53	2,500.00
Ta ₂ O ₅	5,449	10,878.30	156.83	92.06	0.59	3.54	141.61	700
Tb ₄ O ₇	5,172	10,328.90	36.47	22.95	0.63	1.43	31.78	250
ThO ₂	5,172	10,328.90	123.9	82.24	0.66	6.94	106.25	800
Tm ₂ O ₃	5,172	10,328.90	4.82	4.12	0.85	0.18	3.73	35
U ₃ O ₈	5,221	10,427.30	45.96	52.09	1.13	1.18	32.22	884.08
Y ₂ O ₃	5,172	10,328.90	532.17	420.85	0.79	22.22	423.51	4,323.20
Yb ₂ O ₃	5,172	10,328.90	30.13	26.44	0.88	0.98	23.38	250
ZrO ₂	5,080	10,147.00	17,946.32	12,033.47	0.67	32.41	14,435.87	106,985.00

Table 14.18: Upper Zone 2 – Capped Composites

Oxide	Count	Length	Mean	Std. Dev.	C. of V.	Minimum	Median	Maximum
CeO ₂	3,447	6,837.30	5,864.77	3,165.95	0.54	149.57	5,459.65	24,678.38
Dy ₂ O ₃	3,448	6,839.20	199.98	149.76	0.75	7.1	159	1,100.00
Er ₂ O ₃	3,448	6,839.20	71.83	66.65	0.93	1.75	50.53	600
Eu ₂ O ₃	3,448	6,839.20	60.23	33.63	0.56	1.42	56.57	289.5
Ga ₂ O ₃	3,038	6,025.80	172.89	37.46	0.22	74.37	167.94	378.74
Gd ₂ O ₃	3,448	6,839.20	406.72	230.22	0.57	9.09	381.09	1,800.00
HfO ₂	3,368	6,680.70	398.38	248.05	0.62	3.65	374.18	2,171.64
Ho ₂ O ₃	3,448	6,839.20	30.75	28.83	0.94	0.94	22.33	443.96
La ₂ O ₃	3,448	6,839.20	2,501.09	1,329.54	0.53	64.56	2,344.02	11,000.00
Lu ₂ O ₃	3,448	6,839.20	7.66	8.31	1.08	0.11	5.32	80
Nb ₂ O ₅	3,513	6,971.50	3,026.24	1,656.00	0.55	5	2,774.02	14,000.00
Nd ₂ O ₃	3,448	6,839.20	2,700.08	1,461.56	0.54	70.8	2,518.56	11,824.71
Pr ₆ O ₁₁	3,448	6,839.20	718.24	383.14	0.53	18.09	672.86	2,962.19
Sm ₂ O ₃	3,448	6,839.20	536.86	297.22	0.55	12.14	503.75	2,475.36
Ta ₂ O ₅	3,513	6,971.50	221.62	121.35	0.55	0.01	207.5	1,191.10
Tb ₄ O ₇	3,448	6,839.20	48.72	31.79	0.65	1.33	42.57	300
ThO ₂	3,448	6,839.20	145.34	109.55	0.75	2.38	117.21	1,000.00
Tm ₂ O ₃	3,448	6,839.20	8.99	9.1	1.01	0.15	6.16	90
U ₃ O ₈	3,482	6,908.10	38.34	45.2	1.18	1.18	27.3	700
Y ₂ O ₃	3,448	6,839.20	841.69	758.09	0.9	24.38	616.63	8,000.00
Yb ₂ O ₃	3,448	6,839.20	54.97	57.19	1.04	0.81	38.26	500
ZrO ₂	3,368	6,680.70	21,555.19	13,969.83	0.65	189	19,315.66	85,000.00

Table 14.19: Upper Zone 3 – Capped Composites

Oxide	Count	Length	Mean	Std. Dev.	C. of V.	Minimum	Median	Maximum
CeO ₂	212	421.2	4,193.90	1,565.23	0.37	769.78	4,065.93	9,298.83
Dy ₂ O ₃	212	421.2	88.87	49.94	0.56	17.38	79.23	299.63
Er ₂ O ₃	212	421.2	25.52	16.57	0.65	3.88	21.92	96.58
Eu ₂ O ₃	212	421.2	40.3	16.01	0.4	7.58	39.54	90.89
Ga ₂ O ₃	212	421.2	158.08	20.43	0.13	98.29	158.59	217.04
Gd ₂ O ₃	212	421.2	237.7	99.61	0.42	43.69	232.29	555.63
HfO ₂	212	421.2	219.49	125.9	0.57	9.34	207.22	687.36
Ho ₂ O ₃	212	421.2	12.19	7.4	0.61	2.19	10.64	44.24
La ₂ O ₃	212	421.2	1,759.01	652.08	0.37	328.61	1,712.25	3,835.71
Lu ₂ O ₃	212	421.2	2.04	1.53	0.75	0.19	1.69	7.78
Nb ₂ O ₅	212	421.2	1,785.13	867.41	0.49	329.54	1,687.65	4,579.20
Nd ₂ O ₃	212	421.2	1,904.97	709.79	0.37	350.84	1,834.29	4,022.70
Pr ₆ O ₁₁	212	421.2	505.86	187.99	0.37	92.99	489.18	1,075.83
Sm ₂ O ₃	212	421.2	370.41	144.85	0.39	60.09	353.8	850.28
Ta ₂ O ₅	212	421.2	124.78	59.9	0.48	19.16	121.39	343.1
Tb ₄ O ₇	212	421.2	23.92	11.9	0.5	4.72	21.71	67.22
ThO ₂	212	421.2	85.17	44.63	0.52	14.54	78.55	264.02
Tm ₂ O ₃	212	421.2	2.9	2.07	0.71	0.38	2.35	11.9
U ₃ O ₈	212	421.2	26.51	12.53	0.47	8.43	23.82	99.74
Y ₂ O ₃	212	421.2	383.76	242.3	0.63	61.24	330.96	1,428.75
Yb ₂ O ₃	212	421.2	15.56	11.38	0.73	1.78	13.16	59.45
ZrO ₂	212	421.2	11,918.92	7,408.23	0.62	416.09	11,102.06	39,015.00

Table 14.20: Upper Zone 4 – Capped Composites

Oxide	Count	Length	Mean	Std. Dev.	C. of V.	Minimum	Median	Maximum
CeO ₂	292	577.8	3,782.20	1,693.44	0.45	974.1	3,506.14	12,775.14
Dy ₂ O ₃	292	577.8	66.02	40.02	0.61	12.07	60.27	451.16
Er ₂ O ₃	292	577.8	21.76	11.58	0.53	4.92	20.59	107.72
Eu ₂ O ₃	292	577.8	33.46	19.1	0.57	7.96	30.74	250
Ga ₂ O ₃	286	565.8	146.91	16.07	0.11	84	146.04	252.67
Gd ₂ O ₃	292	577.8	220.38	108.9	0.49	59.49	206.86	1,153.00
HfO ₂	292	577.8	247.82	102.52	0.41	26.06	246.41	775.92
Ho ₂ O ₃	292	577.8	9.03	5.33	0.59	1.56	8.23	46.4
La ₂ O ₃	292	577.8	1,634.23	903.46	0.55	423.45	1,489.71	11,730.00
Lu ₂ O ₃	292	577.8	1.95	1.14	0.59	0.25	1.81	8.89
Nb ₂ O ₅	292	577.8	1,280.54	734.05	0.57	331.99	1,159.11	8,061.64
Nd ₂ O ₃	292	577.8	1,762.59	958.69	0.54	448.9	1,609.08	11,660.00
Pr ₆ O ₁₁	292	577.8	463.32	206.51	0.45	122.58	429.85	1,587.78
Sm ₂ O ₃	292	577.8	331.35	152.81	0.46	80.94	302.74	1,160.00
Ta ₂ O ₅	292	577.8	106.62	50.02	0.47	24.3	101.85	444.07
Tb ₄ O ₇	292	577.8	20.42	12.33	0.6	5.02	18.7	159.24
ThO ₂	292	577.8	65.23	58.22	0.89	9.65	55.21	800
Tm ₂ O ₃	292	577.8	2.34	1.35	0.58	0.36	2.14	12.32
U ₃ O ₈	292	577.8	26.4	11.5	0.44	7.63	23.64	116.03
Y ₂ O ₃	292	577.8	251.59	154.1	0.61	38.4	224.79	1,257.81
Yb ₂ O ₃	292	577.8	14.38	8.18	0.57	2.17	13.38	61.91
ZrO ₂	292	577.8	11,897.04	5,561.69	0.47	837	11,556.00	51,695.02

Table 14.21: Upper Zone 4 – Capped Composites

Oxide	Count	Length	Mean	Std. Dev.	C. of V.	Minimum	Median	Maximum
CeO ₂	16	31.7	5,269.40	1,110.70	0.21	3476.31	5,284.05	8,359.12
Dy ₂ O ₃	16	31.7	133.25	44.63	0.33	64.17	124.5	234.96
Er ₂ O ₃	16	31.7	49.78	19	0.38	16.29	45.89	91.97
Eu ₂ O ₃	16	31.7	54.55	12.92	0.24	22.99	58.47	71.56
Ga ₂ O ₃	16	31.7	157.41	23.4	0.15	136.64	151.46	221.09
Gd ₂ O ₃	16	31.7	412.62	92.48	0.22	196.59	435.24	543.06
HfO ₂	16	31.7	280.86	95.03	0.34	42.09	284.81	529.96
Ho ₂ O ₃	16	31.7	18.43	7.64	0.41	7.67	16.42	36.19
La ₂ O ₃	16	31.7	2,171.02	453.83	0.21	1560.09	2,121.90	3,595.25
Lu ₂ O ₃	16	31.7	4.14	2.05	0.49	0.65	3.76	9.22
Nb ₂ O ₅	16	31.7	2,132.45	785.4	0.37	904.39	2,022.62	4,221.45
Nd ₂ O ₃	16	31.7	2,547.47	563.91	0.22	1469.16	2,618.63	3,830.31
Pr ₆ O ₁₁	16	31.7	657.97	140.39	0.21	409.32	665.97	1,010.63
Sm ₂ O ₃	16	31.7	504.52	114.1	0.23	259.84	517.52	753.42
Ta ₂ O ₅	16	31.7	131.06	35.3	0.27	72.89	122.1	244.2
Tb ₄ O ₇	16	31.7	43.14	10.33	0.24	20.04	45.84	59.35
ThO ₂	16	31.7	97.99	19.87	0.2	65.21	95.73	138.46
Tm ₂ O ₃	16	31.7	4.96	2.37	0.48	1.02	4.25	10.48
U ₃ O ₈	16	31.7	20.27	9.6	0.47	12.22	17.41	49.16
Y ₂ O ₃	16	31.7	534.21	236.29	0.44	168.91	496.94	1,066.18
Yb ₂ O ₃	16	31.7	31.48	14.72	0.47	5.57	28.55	66.2
ZrO ₂	16	31.7	16,173.79	5,969.75	0.37	1667.25	16,332.99	30,712.50

14.8 VARIOGRAPHY

Variography was performed for the two largest mineralized units present below the 150 m elevation, namely UZ-2 and BZ-1. An example of experimental and modelled variograms for Nd₂O₃ in unit BZ-1 are shown in Figure 14.4. The variograms are all characterized by low nugget values and ranges up to approximately 200 m in the horizontal plane.

Table 14.22 and Table 14.23 show the modelled variograms for the BZ-1 and UZ-2 domains, respectively, for each of the REO.

Figure 14.4: Experimental and Modelled Variograms for Nd_2O_3 in Domain BZ-1

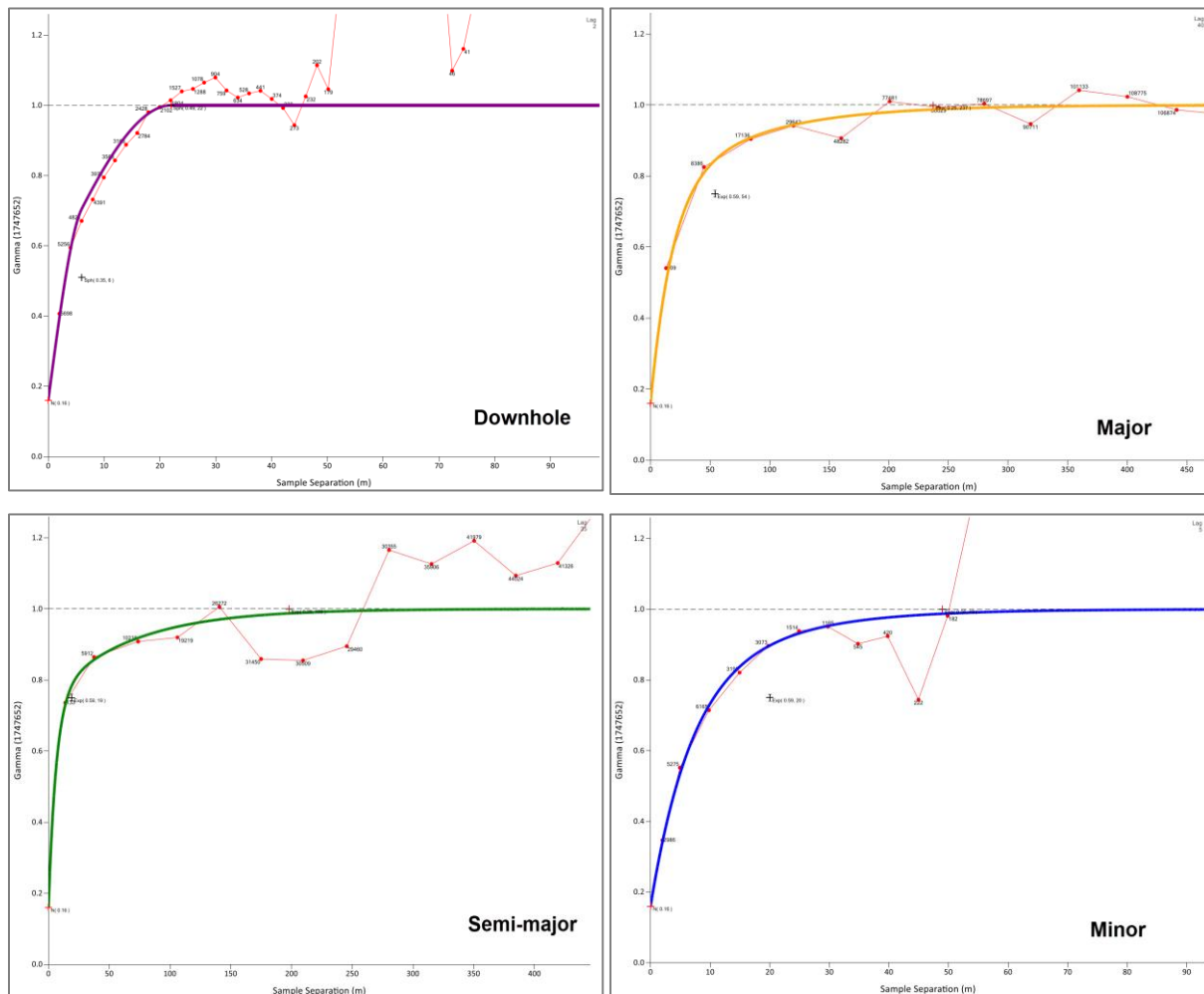


Table 14.22: Modelled Variograms for BZ-1 Domain

Oxide	Direction			Nugget	Type	1 st Structure			Minor	Type	2 nd Structure			Minor
	Dip (°)	Dip Azimuth (°)	Pitch (°)			Sill	Major	Semi-Major			Sill	Major	Semi-Major	
CeO ₂	0	0	5	0.13	exponential	0.66	51	35	19	spherical	0.21	268	200	55
Dy ₂ O ₃	0	0	0	0.06	exponential	0.39	34	20	35	exponential	0.55	237	352	39
Er ₂ O ₃	0	0	170	0.07	exponential	0.58	48	28	23	spherical	0.35	375	195	24
Eu ₂ O ₃	0	0	0	0.1	exponential	0.67	51	32	20	spherical	0.23	151	220	45
Ga ₂ O ₃	0	0	5	0.1	spherical	0.39	54	46	25	spherical	0.51	384	165	92
Gd ₂ O ₃	0	0	0	0.09	exponential	0.66	54	25	20	spherical	0.25	141	331	39
HfO ₂	0	0	0	0.11	exponential	0.56	32	17	21	spherical	0.33	194	262	26
Ho ₂ O ₃	0	0	0	0.02	exponential	0.71	48	47	21	spherical	0.27	537	366	27
La ₂ O ₃	0	0	0	0.16	exponential	0.59	39	31	20	spherical	0.25	223	198	45
Lu ₂ O ₃	0	0	0	0.08	exponential	0.6	48	32	20	spherical	0.32	320	243	25
Nb ₂ O ₅	5	180	180	0.13	exponential	0.68	61	28	22	exponential	0.19	111	320	35
Nd ₂ O ₃	0	0	10	0.16	exponential	0.59	54	19	20	exponential	0.25	237	198	49
Pr ₆ O ₁₁	0	0	5	0.18	exponential	0.6	44	18	19	spherical	0.22	224	162	26
Sm ₂ O ₃	0	0	0	0.14	exponential	0.67	56	34	22	spherical	0.19	255	265	62
Ta ₂ O ₅	0	0	0	0.11	exponential	0.66	44	23	20	spherical	0.23	165	235	21
Tb ₄ O ₇	0	0	0	0.1	spherical	0.5	30	33	18	exponential	0.4	281	368	42
ThO ₂	0	0	10	0.1	spherical	0.45	63	24	11	spherical	0.45	1068	168	36
Tm ₂ O ₃	0	0	0	0.06	exponential	0.63	52	57	24	spherical	0.31	417	294	25
U ₃ O ₈	110	0	0	0.2	spherical	0.29	65	112	5	spherical	0.51	520	198	36
Y ₂ O ₃	0	0	0	0.08	exponential	0.68	68	53	22	spherical	0.24	323	348	40
Yb ₂ O ₃	0	0	165	0.07	exponential	0.67	23	72	24	spherical	0.26	319	225	25
ZrO ₂	0	0	0	0.1	spherical	0.73	66	37	16	spherical	0.17	182	277	22

Table 14.23: Modelled Variograms for UZ-2 Domain

Oxide	Direction			Nugget	Type	1 st Structure			Minor	Type	2 nd Structure			Minor
	Dip (°)	Dip Azimuth (°)	Pitch (°)			Sill	Major	Semi-Major			Sill	Major	Semi-Major	
CeO ₂	0	0	0	0.17	exponential	0.4	77	27	6	exponential	0.42	333	121	52
Dy ₂ O ₃	0	0	165	0.1	spherical	0.36	31	30	4	spherical	0.54	74	78	36
Er ₂ O ₃	0	0	170	0.07	exponential	0.57	20	45	12	spherical	0.36	128	109	29
Eu ₂ O ₃	0	0	90	0.11	spherical	0.49	37	46	7	spherical	0.4	233	174	55
Ga ₂ O ₃	0	0	0	0.07	exponential	0.75	45	87	33	spherical	0.18	124	159	56
Gd ₂ O ₃	0	0	0	0.07	exponential	0.56	37	67	12	exponential	0.37	277	144	87
HfO ₂	5	180	180	0.13	spherical	0.5	105	42	9	spherical	0.37	266	165	43
Ho ₂ O ₃	0	0	90	0.1	exponential	0.55	127	75	13	spherical	0.35	188	247	49
La ₂ O ₃	0	5	85	0.14	exponential	0.42	43	34	6	exponential	0.44	233	148	55
Lu ₂ O ₃	5	165	180	0.07	exponential	0.81	34	28	18	spherical	0.12	183	127	81
Nb ₂ O ₅	5	215	150	0.17	spherical	0.45	56	54	6	spherical	0.38	452	170	37
Nd ₂ O ₃	0	0	0	0.1	exponential	0.56	88	32	9	exponential	0.34	306	128	48
Pr ₆ O ₁₁	0	0	0	0.1	exponential	0.62	61	29	7	spherical	0.28	264	126	59
Sm ₂ O ₃	0	0	0	0.14	spherical	0.54	70	36	7	spherical	0.32	318	89	67
Ta ₂ O ₅	0	0	175	0.12	spherical	0.53	63	55	8	spherical	0.35	200	132	66
Tb ₄ O ₇	0	0	165	0.02	spherical	0.5	37	54	5	spherical	0.48	136	81	42
ThO ₂	0	0	170	0.14	spherical	0.31	22	43	6	exponential	0.54	83	53	40
Tm ₂ O ₃	5	345	0	0.06	spherical	0.38	110	46	23	exponential	0.56	111	97	29
U ₃ O ₈	5	0	15	0.22	spherical	0.52	56	6	7	spherical	0.26	98	60	21
Y ₂ O ₃	0	0	160	0.03	spherical	0.51	33	39	5	spherical	0.46	74	50	60
Yb ₂ O ₃	5	180	170	0.11	spherical	0.54	46	34	7	spherical	0.35	151	90	48
ZrO ₂	5	180	0	0.14	spherical	0.47	33	36	7	exponential	0.39	256	146	54

14.9 BLOCK MODEL AND GRADE ESTIMATION

A block model was created in Seequent EDGE to support the MRE. The model was non-rotated, sub-blocked, and followed the modelled domains. Table 14.24 shows the block model setup parameters.

Table 14.24: Block Model Setup

Element	Easting	Northing	Elevation
Origin (m)	415,100	6,885,350	300
Size (m)	2,900	3,000	351
No. of Blocks	580	600	117
Parent Block Size (m)	5	5	3
No. of Sub-Blocks (m)	5	5	3

Grades were interpolated for parent blocks pertaining to the modelled domains BZ, UZ, and NLS. The grade interpolation search parameters are listed in Table 14.25. A maximum number of two composites per drill hole and variable anisotropy based on the mineralized domains were used. The domains BZ-1 and UZ-2 were estimated using Ordinary Kriging (OK). Block discretization of 5, 5 and 3 were set in the X, Y and Z directions, respectively. All other domains were interpolated using the inverse distance weighting squared (IDW2) method.

The UZ-1 domain is mainly above the 150 m elevation threshold marking the upper boundary of Avalon's property. The rest of the modelled mineralized domains are much smaller in volume and contain only a small number of composites, with a much-reduced contribution to the mineral resources.

A Nearest Neighbour (NN) estimation was also performed for the estimation domains, to be used for block model validation purposes.

Table 14.25: Sample Selection and Estimation Strategy

Pass	Number of Samples		Search Ellipse Dimensions (m)		
	Min	Max	Major	Semi-Major	Minor
1	6	10	30	30	5
2	6	10	60	60	10
3	4	12	150	150	25
4	1	12	200	200	30

Individual oxide values in ppm were estimated and then summed to obtain the sum of the light, heavy and total rare earth oxide values of each resource block.

The group of LREO comprises La_2O_3 , Ce_2O_3 , Pr_2O_3 , Nd_2O_3 and Sm_2O_3 . The group of HREO comprise Eu_2O_3 , Gd_2O_3 , Tb_2O_3 , Dy_2O_3 , Ho_2O_3 , Er_2O_3 , Tm_2O_3 , Yb_2O_3 and Lu_2O_3 , as well as Y_2O_3 . The TREO value represents the sum of LREO and HREO.

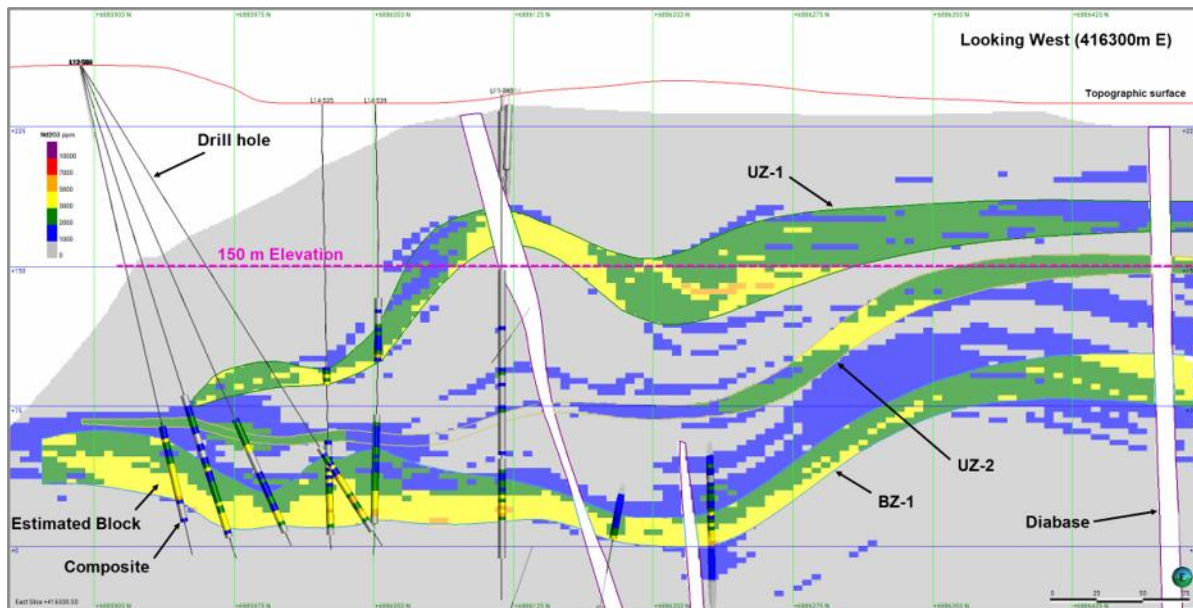
The block NMR value was calculated by summing the contributions of all of the individual elements that generate revenue. Oxide formulae and price per kilogram are presented in Table 14.26.

14.10 BLOCK MODEL VALIDATION

The estimated grades in the block model were validated using global statistics by domain, with swath plots, and visually in cross-sections and plan views. The classification assignment was validated against calculated drill hole spacing derived from a custom interpolator.

A typical vertical section, with drill hole traces, composites, mineralization wireframes, and estimated block grades for neodymium is shown in Figure 14.5. The estimated grades display local trends similar with those expected based on the geological interpretation.

Figure 14.5: Nd₂O₃ Estimated Block Grades vs Composites - Visual Inspections in Vertical Section



Source: Micon July, 2026.

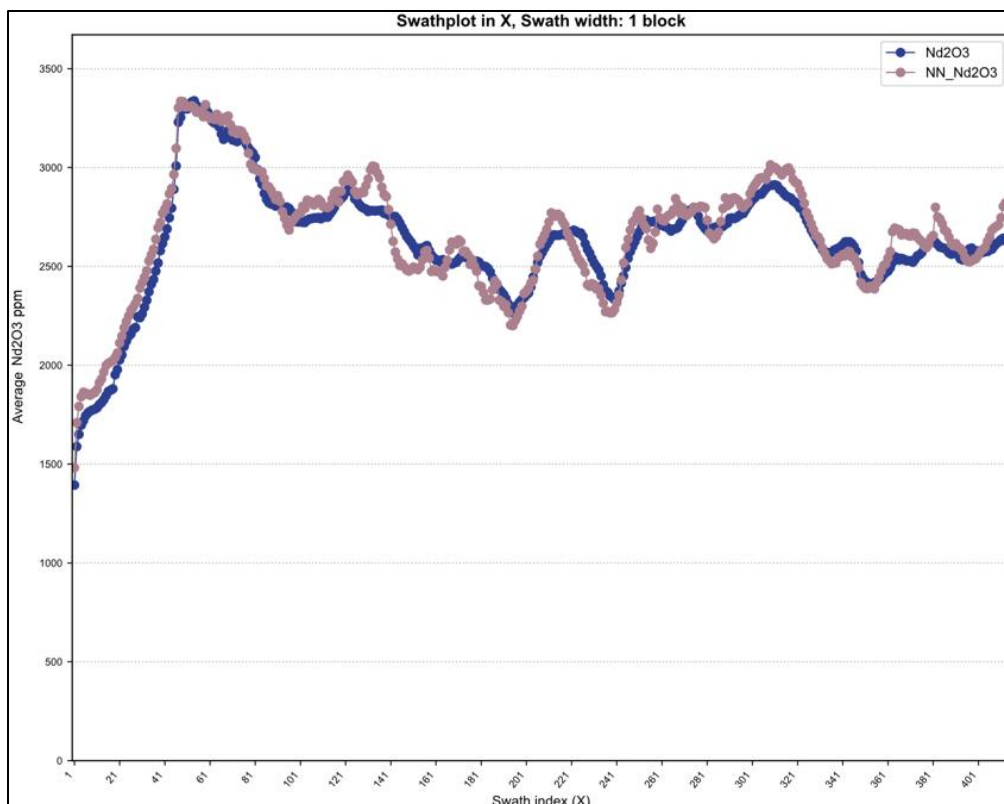
A NN grade estimate was performed for block model validation purposes. For this exercise, composites with a nominal length of 4 m were used, with variable anisotropy as in the grade interpolation, and using the Pass 4 search ellipse.

Figure 14.6 presents the swath plot for neodymium showing the estimated block grade vs NN check estimate.

Table 14.26: Nechalacho Project - Block Model Global Statistical Comparison

Element	Composites		Blocks		Difference (%)	
	UZ-2	BZ-1	UZ-2	BZ-1	UZ-2	UZ-2
CeO ₂	5859.7	6239.5	5997.6	5534.5	2%	-11%
Dy ₂ O ₃	199.9	451	183.5	382	-8%	-15%
Er ₂ O ₃	71.8	204	65.3	165.3	-9%	-19%
Eu ₂ O ₃	60.2	78.9	58.7	68.6	-2%	-13%
Gd ₂ O ₃	406.4	571.6	398.3	497.8	-2%	-13%
Ho ₂ O ₃	30.8	79.9	28.4	66.9	-8%	-16%
La ₂ O ₃	2499	2673.3	2490.1	2354.8	0%	-12%
Lu ₂ O ₃	7.7	22.4	7.6	18.1	-1%	-19%
Nd ₂ O ₃	2697.5	2936.4	2762.3	2633.8	2%	-10%
Pr ₆ O ₁₁	717.6	769.7	730.5	689.1	2%	-10%
Sm ₂ O ₃	536.3	642.4	528	555.2	-2%	-14%
Tb ₄ O ₇	48.7	88.7	45.4	76.3	-7%	-14%
Tm ₂ O ₃	9	27.1	8.7	22.2	-4%	-18%
Y ₂ O ₃	841.4	1986.1	763.6	1639.3	-9%	-17%
Yb ₂ O ₃	55	161.4	53.2	129.7	-3%	-20%

Figure 14.6: Swath Plot for Neodymium – Estimated Block Grade vs NN Check Estimate



Source: Micon July, 2026.

14.11 REASONABLE PROSPECTS FOR EVENTUAL ECONOMIC EXTRACTION

An estimated mineral resource must have reasonable prospects for eventual economic extraction (RPEEE). To assess the economic value of the Nechalacho Basal Deposit, Micon adopted a Net Metal Revenue (NMR) approach. The largest contributors to the revenue are neodymium (approximately 25% of the total value) and dysprosium (approximately 11%). Estimated grades for uranium and thorium are available in the block model, but these elements were not included in the resource estimation because they are both considered deleterious elements, the effects of which may need to be mitigated during any potential mining process. Table 14.27 summarizes the economic parameters used for the NMR calculation.

Table 14.27: Economic Assumptions for the NMR Calculation

Pricing and Costs	Description	Units	Value*	Comments
Rare Earth Oxide Pricing	Cerium Oxide (CeO ₂)	US\$/kg	1.51	Oxide factor = 1.228
	Lanthanum Oxide (La ₂ O ₃)	US\$/kg	0.70	Oxide factor = 1.173
	Neodymium Oxide (Nd ₂ O ₃)	US\$/kg	125.61	Oxide factor = 1.166
	Praseodymium Oxide (Pr ₆ O ₁₁)	US\$/kg	130.48	Oxide factor = 1.208
	Samarium Oxide (Sm ₂ O ₃)	US\$/kg	7.32	Oxide factor = 1.160
	Dysprosium Oxide (Dy ₂ O ₃)	US\$/kg	459.61	Oxide factor = 1.148
	Erbium Oxide (Er ₂ O ₃)	US\$/kg	61.08	Oxide factor = 1.144
	Europium Oxide (Eu ₂ O ₃)	US\$/kg	17.45	Oxide factor = 1.158
	Gadolinium Oxide (Gd ₂ O ₃)	US\$/kg	56.83	Oxide factor = 1.153
	Holmium Oxide (Ho ₂ O ₃)	US\$/kg	75.25	Oxide factor = 1.146
	Lutetium Oxide (Lu ₂ O ₃)	US\$/kg	1,022.18	Oxide factor = 1.137
	Terbium Oxide (Tb ₄ O ₇)	US\$/kg	1,280.38	Oxide factor = 1.176
	Yttrium Oxide (Y ₂ O ₃)	US\$/kg	18.90	Oxide factor = 1.270
	Thulium Oxide (Tm ₂ O ₃)	US\$/kg	146.38	Oxide factor = 1.142
	Ytterbium Oxide (Yb ₂ O ₃)	US\$/kg	19.54	Oxide factor = 1.139
Operating Costs, Metallurgical Recovery and Grade	Underground Mining	US\$/t	54.40	Assuming a long hole mining method
	Beneficiation Plant	US\$/t	78.69	-
	Hydrometallurgical Plant	US\$/t	149.24	-
	General and Administration (G&A)	US\$/t	42.68	-
	Metallurgical Recovery	%	78.0	Varies by metal species (76.6-80.6%)
	Transportation	US\$/t	41.39	Assumed to be dry concentrate
	NMR Cut-Off Value	US\$/t	366.4	-

*Note: REO value pricing is based on the information from Argus Non-Ferrous Markets (argusmedia.com) as of May 01, 2026.

The NMR calculation formula is:

$$NMR(x_1, x_2, ..., x_n) = x_1 r_1 p_1 (V_1 - R_1) + x_2 r_2 p_2 (V_2 - R_2) + ... + x_n r_n p_n (V_n - R_n) - C_s / K - C_t / K$$

Where:

- x is Grade of each metal.
- r is Metallurgical recovery of each metal.
- R is Refining cost of each metal.
- p is Smelting recovery of each metal.
- V is Market price value of each metal.
- K is Metric tonnes of ore required to produce one metric tonne of concentrate.
- Cs is Smelter cost per tonne of concentrate.
- Ct is Transportation cost per tonne of concentrate.

Once all the economic assumptions were processed, NMR value was calculated for each estimated block in the model.

The formula used for calculating the block NMR value based on the estimated block grades was:

$$NMR = ([CeO_2]*0.900 + [La_2O_3]*0.433 + [Nd_2O_3]*69.915 + [Nd_2O_3]*21.894 + [Pr_6O_{11}]*78.995 + [Sm_2O_3]*3.543 + [Dy_2O_3]*201.525 + [Dy_2O_3]*137.698 + [Er_2O_3]*20.63 + [Eu_2O_3]*8.344 + [Eu_2O_3]*4.518 + [Gd_2O_3]*26.913 + [Gd_2O_3]*15.156 + [Ho_2O_3]*30.941 + [Lu_2O_3]*202.566 + [Lu_2O_3]*530.205 + [Tb_4O_7]*592.377 + [Tb_4O_7]*354.92 + [Y_2O_3]*7.539 + [Y_2O_3]*6.574 + [Tm_2O_3]*42.37 + [Yb_2O_3]*4.725 + [Nb_2O_5]*30.965 + [Ta_2O_5]*110.992 + [ZrO_2]*2.547)/1000000*1000$$

The original sub-blocked resource block model was transferred to a Datamine software package for generating optimized minable stope shapes with the Movable Stope Optimizer (MSO) module. The block model was re-blocked to a block size of 15 m by 15 m by 15 m for processing with the MSO. The resulting stope wireframes were used to report the mineral resources for the Project.

14.12 MINERAL RESOURCE CLASSIFICATION

14.12.1 General Discussion

Mineral resources have been classified as Measured, Indicated or Inferred in accordance with the Canadian Institute of Mining, Metallurgy and Petroleum (CIM) Estimation of Mineral Resources and Mineral Reserves Best Practice Guidelines. The classification is based on the level of geological knowledge and continuity, data quality (assay, survey, logging), and drill hole spacing, as determined by the Qualified Person.

- **Measured Mineral Resource:** Reflects a high level of geological understanding and continuity, supported by closely spaced drilling (25 m drill hole spacing or closer).
- **Indicated Mineral Resource:** Areas where evidence is sufficient to confirm continuity with reasonable certainty, typically drilled on a nominal spacing of 50 m or closer. Geological continuity is established, but confidence is less than for Measured, with some local variability.
- **Inferred Mineral Resource:** Zones of mineralization where evidence and sampling are limited or wider spaced (up to 200 m between drill holes). There are several pods of blocks, internal to the modelled domains, where the drill hole spacing is larger than the maximum nominal of

200 m. These blocks have been retained in the Inferred class, as there is reasonably assumed geological continuity.

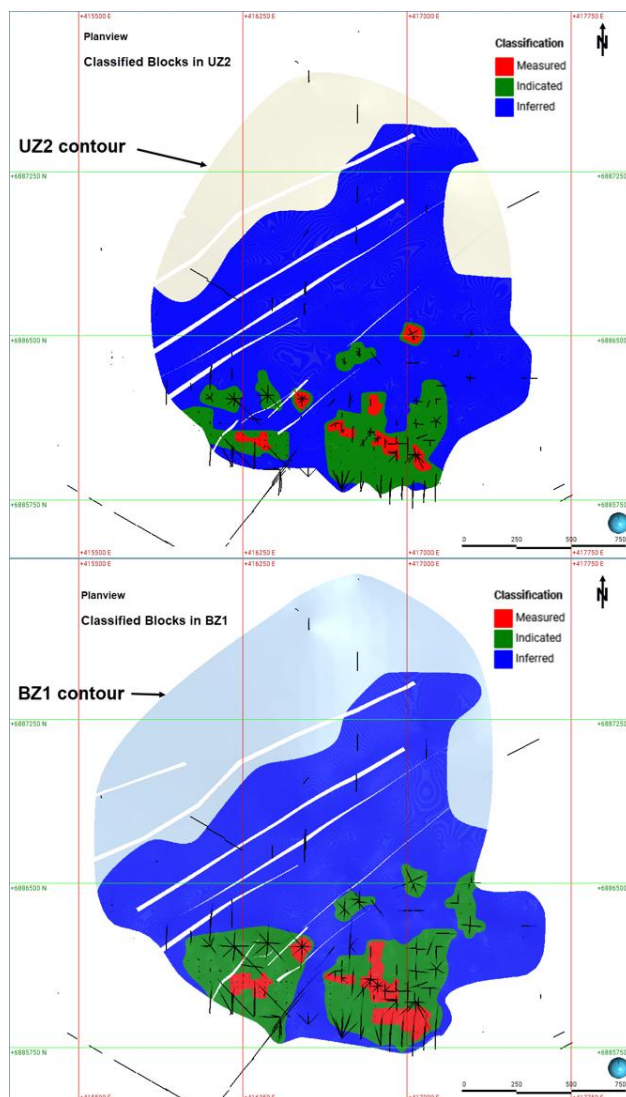
While mineral resource classification can be assigned primarily based on drill hole spacing, sample quality, and the degree of geological continuity, classification artifacts generated by a purely numerical approach are usually mitigated by reclassifying by means of scripts, manual selection, or by modelling classification wireframes. Higher classification block centered around a single hole (the so called “spotted dog” artifact) has also been removed. The material classified in the Measured and Indicated categories are estimated with sufficient confidence to allow for the application of Modifying Factors to support the conversion of Measured and Indicated on to Proven and Probable Reserves. Modifying Factors may include, but are not limited to, mining processing, metallurgical, infrastructure, economic, marketing, legal, environmental, social and governmental factors.

14.12.2 Nechalacho Mineral Resource Classification

An initial numerical approach was used for the block model, then a manually modelled wireframes were used for final classification assignment. The drill hole spacing and grade continuity within the mineralized domains were taken into consideration. The drill hole spacings were 25 m, 50 m, and 200 m for the Measured, Indicated, and Inferred categories, respectively. Historical drill holes from the 1970s and 1980s were not used in the Classification.

Classification of the UZ-2 and BZ-1 estimated blocks is shown in Figure 14.7. Blocks closer to the areas of contiguous coverage of closer drill hole spacing have been classified into Measured and Indicated categories.

Figure 14.: Block Classification in UZ-2 and BZ-1 – Plan View



Source: Micon July, 2026.

14.13 MINERAL RESOURCE ESTIMATE

The MRE for the Nechalacho Bazal Project is summarized in Table 14.28, with a more detailed summary for the various elements in Table 14.29. The MRE was determined using an NMR cut-off value of US\$366.40/t with this value being the sum of mining, beneficiation, hydrometallurgy processing, G&A, and transportation costs, along with recoveries. The MRE has an effective date of July 14, 2026, and is contained within Mineable Shape Optimizer (MSO) shapes which include dilution to ensure consistency with CRIRSCO aligned definitions for reporting mineral resources.

The 2026 Nechalacho Bazal Project MRE is considered to be a reasonable representation of the mineral resources for the Project, based on the currently available data and geological knowledge. As a point of reference, the in-situ total rare earth oxide (TREO) is inventoried and reported by the intended processing method. TREO refers to the sum-total of the REOs in a deposit.

Table 14.28: Nechalacho Basal TREO Mineral Resource Statement (Effective Date July 14, 2026)

Classification	Tonnes (million t)	NMR (US\$)	TREO (%)	Nb ₂ O ₅ (%)	Ta ₂ O ₅ (%)	ZrO ₂ (%)
Measured	10.3	787.4	1.517	0.358	0.034	2.786
Indicated	48.3	776.4	1.489	0.351	0.034	2.685
Measured + Indicated	58.6	778.4	1.494	0.352	0.034	2.736
Inferred	130.6	676.2	1.306	0.338	0.030	2.433

Note: Resource Estimate notes are found below Table 14.29.

Table 14.29: Nechalacho Basal TREO Mineral Resource Statement with REO Details (Effective Date July 14, 2026)

Item/Element	Measured	Indicated	Measured + Indicated	Inferred
Tonnes (million t)	10.3	48.3	58.6	130.6
NMR (US\$)	787.4	776.4	778.4	676.2
TREO (%)	1.517	1.489	1.494	1.306
La ₂ O ₃ (%)	0.246	0.241	0.242	0.216
CeO ₂ (%)	0.573	0.561	0.563	0.510
Pr ₆ O ₁₁ (%)	0.070	0.069	0.069	0.063
Nd ₂ O ₃ (%)	0.267	0.263	0.264	0.241
Sm ₂ O ₃ (%)	0.058	0.057	0.057	0.049
Eu ₂ O ₃ (%)	0.007	0.007	0.007	0.006
Gd ₂ O ₃ (%)	0.049	0.049	0.049	0.041
Tb ₄ O ₇ (%)	0.007	0.007	0.007	0.006
Dy ₂ O ₃ (%)	0.037	0.037	0.037	0.028
Ho ₂ O ₃ (%)	0.006	0.006	0.006	0.005
Er ₂ O ₃ (%)	0.016	0.016	0.016	0.011
Tm ₂ O ₃ (%)	0.002	0.002	0.002	0.002
Yb ₂ O ₃ (%)	0.013	0.012	0.013	0.009
Lu ₂ O ₃ (%)	0.002	0.002	0.002	0.001
Y ₂ O ₃ (%)	0.162	0.159	0.159	0.117

Resource Estimate Notes:

1. The effective date of the Mineral Resource Estimate is July 14, 2026.
2. The in-situ total rare earth oxide (TREO) is inventoried and reported by the intended processing method. TREO refers to the sum-total of the REOs in the deposit. TREO includes the heavy rare earth oxides (HREO) consisting of Y₂O₃, Eu₂O₃, Gd₂O₃, Tb₄O₇, Dy₂O₃, Ho₂O₃, Er₂O₃, Tm₂O₃, Yb₂O₃ and Lu₂O₃, and light rare earth oxides (LREO) consisting of La₂O₃, CeO₂, Pr₆O₁₁, Nd₂O₃, and Sm₂O₃.
3. The MRE was determined using an NMR cut-off value of US\$366.40/t.
4. The mineral resources described above have been prepared in accordance with the current Canadian Institute of Mining, Metallurgy and Petroleum Standards and Practices.
5. The mineral resources reported were considered to be mined using an MSO shape for a Longhole mining method. The original block model was re-blocked to 15 m x 15 m x 15 m. Mineralized blocks outside of the underground mining area are not considered to be part of the MRE.
6. For the purpose of the block model and future economic studies, uranium and thorium were modelled as deleterious elements.
7. The MRE has been classified according to the accepted definitions of Measured, Indicated and Inferred Resources.
8. Mineral Resources that are not Mineral Reserves do not have demonstrated economic viability.

9. The tonnes and metal oxide contents are rounded to reflect that the numbers are an estimate and any discrepancies in the totals are due to the rounding effects.
10. Micon's QPs have not identified any legal, political, environmental, taxation, socio-economic or other factors that could materially affect the potential development of the MRE.

14.14 NMR SENSITIVITY ANALYSIS

A sensitivity analysis has been conducted on the basis of different NMR US\$/t value cut-offs inside the mineralization wireframes (UZ and BZ). For this exercise the MSO shapes were not used, as there is a very good continuity of the mineralization throughout the modelled domains, with small pockets of internal waste. All the classified blocks from the UZ and BZ domains, situated below 150 m elevation were considered. A variable cut-off NMR value was used to retain the resources above specific values. The evolution of undiluted tonnage and grades at various cut-offs is presented in Table 14.30 and Figure 14.8. The reader should be cautioned that the figures provided in Table 14.30 should not be interpreted as a mineral resource statement, they are only demonstrating the impact of changes in the underlying economic parameters. The undiluted tonnages rather than the diluted tonnages were used for the sensitivity analysis to further demonstrate that these figures should not be interpreted as mineral resources. A sensitivity analysis is conducted to indicate how sensitive the MRE is to positive and negative swings in the various economic parameters which make up the cut-off value or grade. This can also be thought of as stress testing the robustness of MRE to rapid changes in the underlying economics of the mineral deposit.

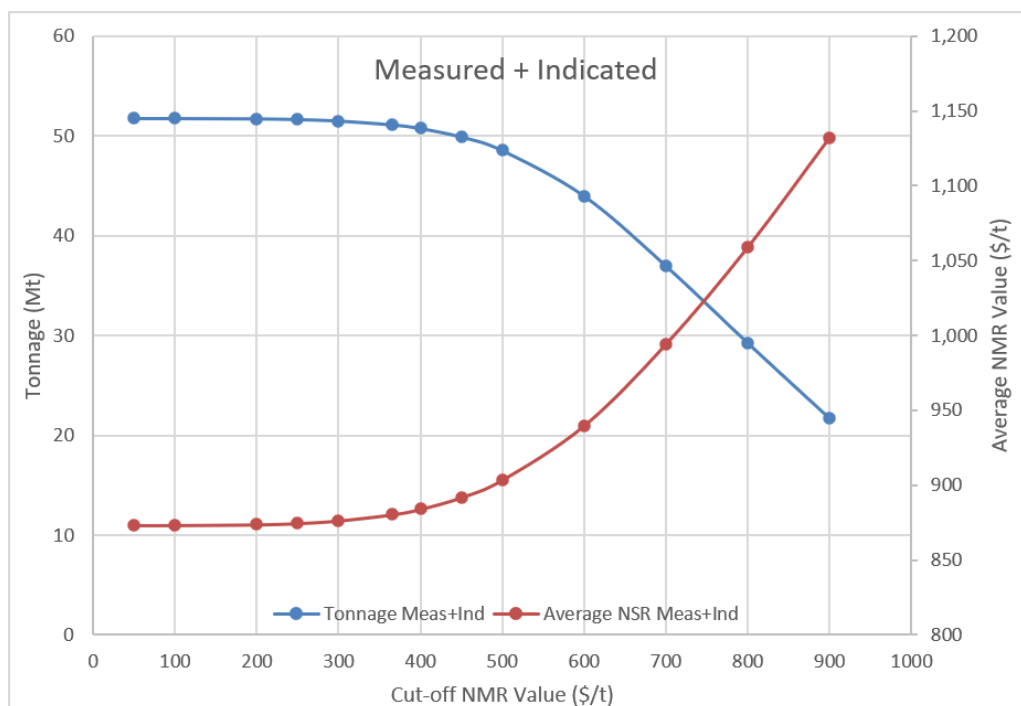
The analysis indicates that the mineral resource are not sensitive to the cut-off values below US\$500/t, with the current estimate using a break-even cut-off value of US\$366.40/t.

Table 14.30: Sensitivity Analysis to the NMR \$/t Value Cut-Off for Combined Measured and Indicated Categories*

NMR Cut-Off (US\$/t)	Tonnes (t)	TREO (%)	NMR (US\$/t)
50	51,769,076	1.679	873.3
100	51,766,995	1.679	873.4
200	51,733,877	1.680	873.8
250	51,667,137	1.682	874.6
300	51,514,953	1.685	876.4
366	51,124,392	1.692	880.5
400	50,758,173	1.697	884.1
450	49,902,151	1.710	891.9
500	48,538,003	1.727	903.6
600	43,971,037	1.780	939.9
700	36,960,726	1.858	994.3
800	29,228,153	1.953	1,059.0
900	21,678,661	2.064	1,132.2

Note: *Not a mineral resource statement

Figure 14.7: Grade-Tonnage Curve for Combined Measured and Indicated Categories



Source: Micon July, 2026.

14.15 FACTORS THAT COULD AFFECT THE MINERAL RESOURCE ESTIMATE

All estimation models have a degree of uncertainty associated with them, due to the assumptions used in their development. These uncertainties lead to risks in the relative accuracy of the models. In its independent review and verification of the MRE model for the Nechalacho Basal Project, Micon has used industry best practice guidelines and has reasonably mitigated much of the potential risks.

It is Micon's opinion that the factors set out below could affect the MRE:

- The geological interpretations and assumptions used to generate the estimation domains.
- Mineralization and geological geometry and continuity of the mineralized zones.
- Estimates of mineralization and grade continuity.
- The grade interpolation methods and estimation parameter assumptions.
- The confidence assumptions and methods used in the mineral resource classification.
- The density and the methods used in the estimation of density.
- Metal price and other economic assumptions used in the cut-off NMR value determination.
- Input and design parameter assumptions that pertain to the underground mining constraints.
- Assumptions as to the continued ability to access the Project site, retain mineral and surface rights titles, maintain the operation within environmental and other regulatory permits, and maintain the social license to operate.

- Currently there are no environmental, permitting, legal, title, taxation, socio-economic, marketing, political or other relevant factors known to Micon that would materially affect the estimation of Mineral Resources, other than those discussed previously in this Report.

NON-APPLICABLE SECTIONS

The following sections are not applicable to this Technical Report:

15 MINERAL RESERVE ESTIMATES

16 MINING METHODS

17 PROCESS AND RECOVERY METHODS

18 PROJECT INFRASTRUCTURE

19 MARKET STUDIES

Avalon engaged Argus Rare Earths Analytics (Argus) to undertake a forecast of the rare earth pricing as part of its ongoing work at the Nechalacho Basal Project. Argus provided two separate pricing guidelines with the China pricing being the current standard rare earth pricing base case and an EU/US pricing which reflects the EU/US pricing needed to overcome Chinese export controls and produce rare earths for their own strategic enterprises which will then not be subject to Chinese export controls. The current MRE is based on the Chinese pricing (base case scenario). Table 19.1 summarizes the China base case REE pricing forecast and Table 19.2 summarizes the EU/US pricing forecast (upside case scenario) as the western countries seek to eliminate China's dominance of the sector. This rare earth pricing was used in part to inform a portion of the economic pricing parameters used in the mineral resource estimate contained in Section 14.

Table 19.1: China Base Case Scenario REE Pricing Forecast (Used for the Current Mineral Resources)

Element Name	Element Symbol	Current REE Pricing	Argus 2026-2040 Forecast Average	Price Difference	Percentage Difference
Cerium	CeO ₂	4.32	1.51	-3.09	-71.50%
Lanthanum	La ₂ O ₃	1.31	0.7	-0.74	-56.40%
Neodymium	Nd ₂ O ₃	133.93	125.61	-16.55	-12.40%
Praseodymium	Pr ₆ O ₁₁	137.2	130.48	-15.13	-11.00%
Samarium	Sm ₂ O ₃	3.73	7.32	1.81	48.50%
Dysprosium	Dy ₂ O ₃	454.67	459.61	78.18	17.20%
Erbium	Er ₂ O ₃	56.32	61.08	0.75	1.30%
Europium	Eu ₂ O ₃	32.97	17.45	-19.56	-59.30%
Gadolinium	Gd ₂ O ₃	69.42	56.83	-20.67	-29.80%
Holmium	Ho ₂ O ₃	152.9	75.25	-82.58	-54.00%
Lutetium	Lu ₂ O ₃	878.59	1,022.18	76.63	8.70%
Terbium	Tb ₄ O ₇	1421.12	1,280.38	-199.88	-14.10%
Yttrium	Y ₂ O ₃	8.05	18.9	4.19	52.00%
Thulium	Tm ₂ O ₃	0	146.38	136.79	-
Ytterbium	Yb ₂ O ₃	0	19.54	18.26	-
Niobium	Nb ₂ O ₅	0	-	-	-
Tantalum	Ta ₂ O ₅	0	-	-	-
Zircon	ZrO ₂	3.77	-	-	-

Source: Argus Rare Earths Analytics pricing report for Avalon.

Table 19.2: EU/US Upside Case Scenario REE Pricing Forecast

Element Name	Element Symbol	Current REE Pricing	Argus 2026-2040 Forecast Average	Price Difference	Percentage Difference
Cerium	CeO ₂	4.32	2.27	-2.11	-49.00%
Lanthanum	La ₂ O ₃	1.31	0.76	-0.66	-50.30%
Neodymium	Nd ₂ O ₃	133.93	146.56	25.17	18.80%
Praseodymium	Pr ₆ O ₁₁	137.2	151.43	27.84	20.30%
Samarium	Sm ₂ O ₃	3.73	8.49	3.13	84.00%
Dysprosium	Dy ₂ O ₃	454.67	978.76	479.11	105.40%
Erbium	Er ₂ O ₃	56.32	67	7.35	13.00%
Europium	Eu ₂ O ₃	32.97	19.14	-17.27	-52.40%
Gadolinium	Gd ₂ O ₃	69.42	705.04	609.69	878.30%
Holmium	Ho ₂ O ₃	152.9	73.5	-81.49	-53.30%
Lutetium	Lu ₂ O ₃	878.59	1,066.76	158.06	18.00%
Terbium	Tb ₄ O ₇	1421.12	3,550.41	1,974.44	138.90%
Yttrium	Y ₂ O ₃	8.05	793.31	755.95	9390.70%
Thulium	Tm ₂ O ₃	0	111.43	123.73	-
Ytterbium	Yb ₂ O ₃	0	20.39	19.81	-
Niobium	Nb ₂ O ₅	0	-	-	-
Tantalum	Ta ₂ O ₅	0	-	-	-
Zircon	ZrO ₂	3.77	-	-	-

Source: Argus Rare Earths Analytics pricing report for Avalon.

The China base case was used as the basis of the MRE contained in this Report whereas the EU/US base case was used for an upside case scenario.

Further market study forecast for rare earth pricing will be required as the Project advances due to the rapid changes in the rare earth sector and China's export controls on the majority of the rare earths currently being produced.

NON-APPLICABLE SECTIONS

The following sections are not applicable to this Technical Report:

20 ENVIRONMENTAL STUDIES, PERMITTING, AND SOCIAL OR COMMUNITY IMPACT

21 CAPITAL AND OPERATING COSTS

22 ECONOMIC ANALYSIS

23 ADJACENT PROPERTIES

There are no adjacent properties which would impact the interpretation of the rare earth element mineralization contained in the area of the Nechalacho Basal Project. Most of the known zones of rare earth element mineralization in the area surrounding the Nechalacho deposit are located on the Property. However, in January, 2019, Avalon announced that it had signed a binding Terms Sheet under which Cheetah Resources Pty Ltd. (Cheetah) acquired ownership of the near surface resources above a depth of 150 m above sea-level, principally the T-Zone and Tardiff Zones, while Avalon retained ownership of the deeper resources in the Basal Zone.

24 OTHER RELEVANT DATA AND INFORMATION

Subsequent to the completion of the FS in April, 2013, Avalon has been investigating optimization opportunities identified in the FS and conducting testwork/technical studies necessary to confirm potential benefits and with a view to potentially updating the development model of specific opportunities. A number of design optimization activities were initiated that have focused primarily on improving Project economics, improving operation efficiency and reducing Project risk. These include the following:

- Underground mine plan, including mining method, underground equipment and facilities.
- Nechalacho site and concentrator building layout and design.
- Hydrometallurgical plant location.
- Concentrate handling and shipping.
- Metallurgical process development for both the concentrator and hydrometallurgical plant.

In addition, two further drill programs were completed in winter (HQ rig) and summer (PQ rig), 2014. These programs, totalling 22 holes and 4,908 m, were mainly for the purpose of collecting further mineralized drill core for metallurgical purposes. The geological drill database has been updated, but no new resource was estimated prior to the one contained in this Report.

24.1 UNDERGROUND MINE

An initial study was carried out to determine the most appropriate mining method to be used. Particular consideration was given to the mining cost, the undulating floor of the Basal Zone, the changing Basal Zone thickness, and the need to be able to maintain a relatively constant grade of ore. A hybrid mining method consisting of “drift and fill” primary stopes, and “up-hole” bulk mining (uppers for the secondary stopes) was selected and a new mine plan developed accordingly for a 2,000 tonnes of ore per day, 20-year life-of-mine operation. Opportunity exists to reduce mine capital and operating costs with electrification of underground operations using proven technology for this size of operation. Avalon continues to monitor green energy production technology in hope of even more green energy utilization.

24.2 CONCENTRATOR PLANT

The crushing and milling circuits have also been re-examined. The milling circuit can be revised to include a SAG mill allowing the removal of secondary and tertiary crushing and resulting in a more energy efficient comminution circuit. A further study concluded that there were both cost and operability advantages in moving the primary crusher from the underground location previously considered, to an above ground location near the SAG mill. This change also included replacing the conveyor system with haul trucks to bring the mineralization to the surface.

Laboratory testwork and a pilot plant trial of an updated concentrator flowsheet have also been completed. This work has confirmed a potential overall improvement in REE flotation recoveries to approximately 89% (compared to approximately 78% in the FS) using a simpler and easier to operate flowsheet.

These results were achieved using a flowsheet without de-sliming ahead of flotation, with no gravity enrichment of final concentrate and with zero recycling of tailings from the four stages of cleaner flotation; all of which will result in a simpler plant to operate. The principal change has been the introduction of a superior reagent suite together with an increase in the flotation mass pull from 18.0% to 21.4%.

Environmental testing of the new tailings composition from the modified reagent suite has indicated no negative impacts on environmental performance. A simplified flowsheet is anticipated to improve environmental performance through reduced energy use, reduced carbon dioxide emissions and improvements in water treatment efficiencies.

As part of the optimization work, potential modifications are expected to be made to the site layout and the concentrator including revising the milling equipment and developing the surface materials handling/crushing area, modifying the equipment layout in the concentrator building and reducing the required size and volume of the building.

24.3 HYDROMETALLURGICAL PLANT FLOWSHEET

Significant modifications to the hydrometallurgical plant flowsheet are now envisaged based on the extensive testwork program undertaken since the FS.

This flowsheet optimization work for the hydrometallurgical plant has resulted in the development of an alkali cracking process to potentially replace the sulphuric acid baking used to treat the flotation concentrate in the FS. Optimization of this flowsheet is nearly completed with the details around reagent recovery and recycling being the only outstanding items. Work here has indicated an 80% reduction in hydrochloric acid (HCl), 90% reduction in magnesium oxide and almost 100% reduction in calcium carbonate could be achievable.

The sulphuric acid baking process utilized in the FS resulted in approximately 47% of the HREE contained in the flotation concentrate (as well as the niobium and tantalum) remaining trapped in the enriched zirconium concentrate (EZC) specialty byproduct. The alkali cracking process successfully alters (or “cracks”) the zircon in the flotation concentrate which enables the contained HREE (and most of the zirconium) to be released into solution. Total HREE recoveries reporting to the refinery could now be in excess of 90% of the HREE in the flotation concentrate, as opposed to the approximately 52% recovery contemplated in the FS. In addition, the alkali cracking process would allow for the recovery of zirconium in a form for which there is already established markets.

A further benefit of this alternative process is that the HCl will be recovered without the use of sulphuric acid and the production of large volumes of gypsum waste. Instead, a clean sodium chloride (salt) waste product is produced which is easier to dispose of and could potentially be of some use. The reduction in HCl transport achieved through recycling is an additional cost and sustainability advantage.

Light rare earth element (LREE) leach recoveries are also generally improved with the updated flowsheet (with the exception of cerium which becomes oxidized during the cracking process, making it less amenable to the acid leaching).

24.4 HYDROMETALLURGICAL PLANT LOCATION

Several sites in western Canada are under consideration for the location of a potential new hydrometallurgical plant design. The original design contemplated in the FS was planned to be located

in Pine Point, NWT, but this area has insufficient infrastructure to support the new potential plant design. Geismar was also considered as a potential location, but costs for transporting the concentrate to Louisiana remain high. Eventually a number of potential sites meeting the necessary infrastructure requirements were identified in Saskatchewan and Alberta and these are now undergoing further evaluation. An excellent potential site was identified in Saskatchewan, but nothing has yet been finalized.

The potential for relocating the hydrometallurgical plant outside the Pine Point, NWT area would likely require the shipment of concentrate by rail from Hay River, NWT. The entire shipping process has been carefully looked at including the containers required both for barge shipment and rail shipment, the concentrate loading requirements at Nechalacho, barging across the Great Slave Lake, rail car requirements for shipment from the Hay River, and a storage/trans-shipment facility at Hay River. A concept has been developed to include all of the shipping components from container loading at Nechalacho to railcar loading in the Hay River in a single contract, potentially reducing the Project capital costs and simplifying the shipping operation.

It is noted that these changes have been presented to the regulators, Indigenous groups and other communities of interest and due to the environmental benefits of these changes associated with lower energy use, fewer reagents and water treatment benefits, are not considered significant and will not impact on the permitting process in the NWT.

24.5 METALLURGICAL PROCESS DEVELOPMENT

Recent work has focused on various optimization opportunities within the FS base case flowsheets for the concentrator and in particular for the hydrometallurgical plant.

A further integrated pilot plant campaign has been planned, but will only proceed when funding becomes available. This is designed to fully evaluate process performance particularly with the incorporation of the acid recovery circuit(s) and associated recycle streams and would include all unit operations from crushing of ore right through to the generation of a mixed rare earth precipitate. The total bulk sample of ore required for this pilot plant is approximately eight tonnes. The material is being stored in Yellowknife, until such time as the funding becomes available to proceed with the pilot plant work, presently estimated at approximately CD\$4.0 million. There is no firm timeline for when this work will be carried out.

Efforts to recover the niobium and tantalum from the solid residue after acid leaching have so far proved unsuccessful and work in this regard has been placed on hold. This latest work has indicated that total HREE recoveries of approximately 93% can be achieved in the hydrometallurgical plant directly from the flotation concentrate.

The final economics for the potential revised process are still being determined. However, initial estimates of increased power and reagent consumption associated with the processes and logistical issues have necessitated consideration of alternative locations for the hydrometallurgical plant with better access to both infrastructure and reagents.

In Fiscal 2016, Avalon conducted metallurgical testwork investigations related to the potential recovery of zirconium and production of marketable quality zirconium basic sulphate (ZBS) and zirconium oxychloride (ZOC) products.

24.6 REFINERY

In early 2014, Avalon entered into an agreement which would have had Solvay toll-process Avalon's rare earth concentrate into separated and purified rare earth oxides rather than Avalon building its own refinery. In early 2016, Avalon and Solvay mutually terminated their refining agreement and left the door open to initiate discussions on an updated refining toll contract when market conditions became favourable for such discussions to take place.

24.7 METAL PRICES

As part of its annual procedures Avalon analyzes price trends and other factors as they may impact the determination of its mineral resources and potential mineral reserves in future studies. As part of this analysis, Avalon has obtained a new price forecast from a third party, which indicates that the long term REE average net price forecast could be approximately US\$65/kg compared to the US\$62.91/kg used in the resource estimate. Furthermore, the exchange rate used for the resource estimate was US\$1=CAD\$1.05 and current forecasts for the exchange rate are closer to US\$1=CAD\$1.33. As all of the projected revenues, and less than a third of the projected costs are expected to be denominated in US dollars, this has a beneficial effect on the determination of the mineral resources. Refined zirconium prices are also currently in the US\$5.75/kg range compared to the US\$3.77/kg used in the MRE. Niobium and tantalum do not have a significant impact on the MRE.

24.8 CURRENT DEVELOPMENT AND PERMITTING PLANS

Avalon and Cheetah closed the sale of the near-surface mineral resources in Fiscal 2020. Avalon and Cheetah formed a jointly-owned corporation to hold the exploration permits and related authorizations related to Nechalacho. Avalon and Cheetah also entered into a co-ownership agreement governing each party's activities and management at site. Cheetah has implemented maintenance and additional infrastructure development at site that are of benefit to Avalon, and future additional development could further reduce Avalon's future development costs on its own portion of the Nechalacho Basal Project. Cheetah has filed financial assurance that was approved by the NWT regulator for all their activities in the T-Zone, which reduces Avalon's overall site closure liability.

The Property is situated in an area referred to as the Akaitcho Territory, an area which is subject to comprehensive native land claim negotiations between the Government of Canada and the Treaty 8 Tribal Corporation, which consists of the Yellowknives Dene First Nation (YKDFN), the Deninu K'ue First Nation (DKFN) and the Lutsel K'e Dene First Nation (LKDFN). Avalon has signed an Accommodation Agreement with the DKFN. Avalon also recognizes that the Tlicho First Nation (TFN) has a settled land claim with the Government of Canada which provides for certain harvesting rights in the area of the Nechalacho Basal Project. The general area around the Project is subject to Indigenous rights asserted by two Métis organizations: the Northwest Territory Métis Nation (NWTMN) and the North Slave Métis Alliance (NSMA). During 2014, Avalon concluded a Participation Agreement with the NWTMN and commenced discussions with the NSMA.

Avalon completed a brief geological program in July, 2019 at the Project on behalf of Cheetah. This work assisted in drill targeting for a drill program planned and completed by Avalon in September and October, 2019 on behalf of Cheetah. Cheetah has successfully initiated production on the T-Zone resource, such that Avalon anticipates future opportunities to expand production at the site by reactivating work on its heavy rare earth rich Basal Zone resource.

Avalon's next steps are primarily focused on continuing its process optimization work and new product development, with a view towards producing an updated technical report incorporating the results of such work. Other goals include completing the acquisition of the operations land use permit and water license, carrying out an additional pilot plant trial of the new hydrometallurgical plant flowsheet (to confirm reagent recycle performance), finalize detailed plant designs and engineering, assess electrification of its underground operations to reduce greenhouse gas emissions and to lower capital and operating costs, securing commitments on offtake and arranging project financing. Avalon continues to monitor regulatory changes in the NWT in order to prepare for and facilitate permitting for its development of the Project. Avalon is working with Cheetah to update environmental management plans to ensure alignment with regulatory changes, to the benefit of both companies. Avalon is also monitoring and lobbying for the development of infrastructure in the NWT along with interested Indigenous stakeholders. A road and power line to or near to the mine site from Yellowknife for example, could have multiple benefits to the NWT as well as significantly reducing capital and operating costs while improving the social benefits of the Project.

While the Nechalacho Basal Project has been relatively inactive since 2014, Avalon continues to monitor REE markets closely and there is now renewed demand with supplies being limited and still largely controlled by China. REEs are indispensable to the energy transition and advanced technologies, serving as critical inputs in high-performance permanent magnets used in EV motors, wind turbines, defense systems, and advanced electronics. Current global supply remains highly concentrated in China, creating persistent geopolitical and supply-risk concerns among Western governments and OEMs. As the U.S., Canada, Japan, and the European Union implement policies to re-shore and diversify REE supply chains (from mining and separation to magnet manufacturing) demand for secure, responsibly sourced REE feedstock continues to strengthen

25 INTERPRETATION AND CONCLUSIONS

Exploration by Avalon has identified a potentially large deposit of REEs at the Nechalacho Basal Project. The majority of Avalon's work predates 2013, with some 2013 and 2014 drilling which had not been completed at the time of Avalon's previous 2013 NI 43-101 Technical Report.

Avalon's updated 2026 MRE can be used as the basis for further exploration studies and further economic studies.

25.1 CONCLUSIONS

Through its work, Avalon has demonstrated that the Nechalacho deposit hosts a rare earth mineral deposit which warrants further investigation towards a potential production decision.

25.2 RISKS, MITIGATIONS AND OPPURTUNITIES

All MREs have a degree of uncertainty or risk associated with them due to technical, environmental, permitting, legal, title, taxation, socio-economic, marketing or political factors, among others. All MREs also present their own opportunities. Table 25.1 outlines some of the Nechalacho Basal Project risks, their potential impact and possible means of mitigation. Table 25.1 also outlines some of the Nechalacho Basal Project's opportunities and potential benefits.

Table 25.1: Risks, Mitigations and Opportunities for the Nechalacho Basal Project

Risks	Description and Potential Impact	Possible Risk Mitigation
Local grade continuity issues	Poor grade forecasting.	Undertake further infill drilling to establish continuity of mineralization.
Local density variability	Misrepresentation of the in-situ tonnes, which also affects the in-situ metal content estimate.	It is recommended to develop a procedure of collecting density measurements spatially throughout the deposit at regular intervals in all rock/alteration types and implement their use in future mineralization models.
Geological Interpretation	If the geological interpretation and assumptions (geometry and continuity) used are inaccurate, then there is a potential lack of grade or continuity.	Continue infill drilling to confirm the grade continuity which will also tend to upgrade the mineral inventory to at least the Indicated category.
Metallurgical recoveries are based on limited testwork	Recovery might be lower than that which is currently being assumed or vary with rock type.	Conduct additional metallurgical tests on all rock types.
Difficulty in attracting experienced professionals	Technical work quality will be impacted and/or delayed.	Refine recruitment and retention planning and/or make use of consultants.
Conceptual mine plans in future are based on limited geotechnical testwork	Mining methods and dimensions selected might be different from what is currently being assumed.	Incorporate more comprehensive geotechnical data from drilling. Conduct additional geotechnical assessment and analysis.

Risks	Description and Potential Impact	Possible Risk Mitigation
Environmental or social Issues	Further studies may be delayed, and the Project may not advance due to environmental or social issues	Conduct meetings with all potential stake holders throughout the exploration and advanced development stages. Hire locals whenever possible.
Surface exploration drilling	Potential to identify additional prospects and resources.	Adding resources increases the economic value of the Project.
Potential improvement in metallurgical recoveries	Additional metallurgical testwork can be performed to determine if recovery can be improved through ore sorting, flotation or cyanidation.	Lower capital and operating costs.
Potential improvement in mining assumptions	Geotechnical analysis may determine that mining methods and dimensions can be improved.	Improved mining productivity and lower costs.
Potential additional economic minerals	All potentially economic minerals must be placed in the model such that changes in metal prices potentially allow for these to be added to the MRE.	Further metallurgical testwork to determine if any other minerals can be recovered economically, than those already identified.

26 RECOMMENDATIONS

26.1 BUDGET FOR FURTHER WORK

The budget presented in Table 26.1 summarizes the estimated costs for completing further exploration programs, metallurgical testwork, begin baseline studies, conduct social outreach programs with the various local groups and fast track further studies related to the Nechalacho Basal Project. The budget is estimated to be 10 million Canadian dollars.

Table 26.1: Nechalacho Basal Project, Recommended Budget for Further Work

Item	Budget Percentage	Budget (CD\$)	Description
Study Management and Administration	20%	2,000,000.00	Project management, quality, coordination and administration
Process Plant Design and Engineering	30%	3,000,000.00	Flowsheet development, PFD/PIDs, mechanical design, layout & equipment
Site Infrastructure Design and Engineering	25%	2,500,000.00	Site services, roads, power distribution, accommodation, water supply
Procurement and Estimation	10%	1,000,000.00	Market engagement for vendor pricing only, production of AACE Class 3 estimate
Geology and Mining	15%	1,500,000.00	Geological model, mine plan, pit designs, waste dump designs, fleet plan
Total	100%	10,000,000.00	-

It is the opinion of Micon that all of the recommended work noted in the budget is warranted. Micon appreciates that the nature of the programs and expenditures may change as further studies are undertaken, or the company priorities change and that the final expenditures and results may not be the same as originally proposed.

Micon is of the opinion that the recommended work program and proposed expenditures are appropriate and well thought out. Micon believes that the proposed budget reasonably reflects the type and amount of the activities required to advance the Nechalacho Basal Project, with the next phase culminating in the publication of an updated MRE and an economic study for the Project.

26.2 RECOMMENDATIONS

Micon recommends further exploration and development of the Nechalacho Basal Project. It is recommended that Avalon continues with exploration at the Nechalacho deposit, as well as other REE mineralization showings on the Property. It is also recommended that Avalon continues to conduct metallurgical testwork including different processing options for the varied rock assemblages and different REE minerals at the Nechalacho Basal Project. To that end, Micon makes the following recommendations for the Nechalacho Basal Project.

1. Undertake further mapping and sampling across the mineral deposits, paying particular attention to changes in alteration and geology which may affect metallurgical responses.
2. Conduct further density sampling to see if there is any variation between the mineralized zones or geological units.

3. Complete further resource infill and expansion drilling on the Nechalacho deposit to increase the confidence of the continuity of the REE mineralization and grade. Several drill holes from the 2007-2014 drilling programs should be twinned to mitigate the loss of core in the August 2025 wildfire.
4. Continue mineral characterization including that for sulphides as well as uranium and thorium, and REE ore deportment studies to support environmental design, planning for worker and public safety, metallurgical testwork, and process design.
5. Further metallurgical testwork should be conducted on the Nechalacho deposit and other mineralized showings to see if the metallurgical recoveries are different in the various geological rock types.
6. Conduct further diamond drill testing of the secondary exploration targets at the Nechalacho Basal Project as potential secondary sources of mineralization.

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27.2 WEB BASED SOURCES OF INFORMATION

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28 DATE AND SIGNATURE PAGE

Signed on behalf of Micon International Co Limited:

“XX” *{signed and sealed}*

Tudorel Ciuculescu, P.Geol.
Principal Resource Geologist

Effective Date: July 14, 2026

Signed Date: September 18, 2026

“XX” *{signed and sealed}*

Richard Gowans, P.Eng.
Principal Metallurgist

Effective Date: July 14, 2026

Signed Date: September 18, 2026

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William J. Lewis, P. Geo.
Principal Metallurgist

Effective Date: July 14, 2026

Signed Date: September 18, 2026

29 CERTIFICATES OF AUTHORS (QUALIFIED PERSONS)

CERTIFICATE OF AUTHOR
Richard M. Gowans, P.Eng.

As the co-author of this report for Avalon Advanced Materials and Magmic Rare Earths, entitled “NI 43-101 Technical Report for the 2026 Rare Earth Element Mineral Resource Estimate on the Nechalacho Basal Project, Northwest Territories, Canada” dated August 31, 2026, with an effective date of July 14, 2026, I, Richard Gowans do hereby certify that:

1. I am employed as Principal Metallurgist by, and carried out this assignment for, Micon International Limited, Suite 501, 212 King Street West, Toronto, Ontario M5H 1K5, tel. (416) 362-5135, e-mail rgowans@micon-international.com.
2. I hold the following academic qualifications:
B.Sc. (Hons) Minerals Engineering, The University of Birmingham, U.K. 1980.
3. I am a registered Professional Engineer of Ontario (membership number 90529389); as well, I am a member in good standing of the Canadian Institute of Mining, Metallurgy and Petroleum.
4. I am familiar with NI 43-101 and, by reason of education, experience and professional registration, I fulfil the requirements of a Qualified Person as defined in NI 43-101. My work experience includes over 30 years of the management of technical studies and design of numerous metallurgical testwork programs and metallurgical processing plants.
5. I have read NI 43-101, and this Technical Report has been prepared in compliance with the instrument.
6. I have not visited the Nechalacho for this Report. I visited the Nechalacho Project previously, on 13 March, 2013.
7. I have participated in the preparation of a prior Technical Reports on the Nechalacho Project.
8. I am independent of Avalon Advanced Materials and Magmic Rare Earths according to the definition described in NI 43-101 and the Companion Policy 43-101 CP.
9. I am responsible for Sections 1.11 and 13 of this Technical Report with Sections 15 through to 18 and Sections 20 through to 22 not applicable to this Technical Report.
10. As of the date of this certificate, to the best of my knowledge, information and belief, the Technical Report contains all scientific and technical information that is required to be disclosed to make this technical report not misleading.

Report Dated this 18th day of September, 2026 with an effective date of July 14, 2026.

“Richard M. Gowans” {signed and sealed as of the report date}

Richard Gowans P.Eng.
Principal Metallurgist, Micon International Limited

CERTIFICATE OF AUTHOR **Tudorel Ciuculescu, P.Geo.**

As the co-author of this report for Avalon Advanced Materials and Magmic Rare Earths, entitled “NI 43-101 Technical Report for the 2026 Rare Earth Element Mineral Resource Estimate on the Nechalacho Basal Project, Northwest Territories, Canada” dated August 31, 2026, with an effective date of July 14, 2026, I, Tudorel Ciuculescu, do hereby certify that:

1. I am employed as a Principal Geologist, and carried out this assignment for, Micon International Limited, Suite 501, 212 King St. W, Toronto, Ontario M5H 1K5, tel. (416) 362-5135, e-mail tciuculescu@micon-international.com.
2. I am a graduate of University of Bucharest with a B.Sc. degree in Geology in 2000 and University of Toronto with a M.Sc. degree in Geology in 2003.
3. I am registered as a Professional Geologist in the Province of Ontario (Reg. #1882) and in the Province of Newfoundland and Labrador (Reg. #10652).
4. I am familiar with NI 43-101 and, by reason of education, experience and professional registration, I fulfill the requirements of a Qualified Person as defined in NI 43-101. I have worked as a geoscientist in the minerals industry for over 20 years. My work experience includes over 15 years as a consultant geologist working on precious, base, and specialty metal deposits, and managing technical studies, due diligence reviews, and the preparation of Technical Reports in accordance with National Instrument 43-101.
5. I have read NI 43-101 and this Technical Report has been prepared in compliance with the instrument.
6. I visited the Nechalacho Project on June 25, 2026, and on two other occasions, from April 25 -27, 2011 and October 9-11, 2012, as a QP for technical reports issued in 2011 and 2013 for Avalon
7. This is the third Technical Report I have co-authored for the mineral property that is the subject of this Technical Report.
8. I am independent of Avalon Advanced Materials and Magmic Rare Earths according to the definition described in NI 43-101 and the Companion Policy 43-101 CP.
9. I am responsible for the preparation of Sections 1, Sections 7 to 12, Section 14, and Sections 23 to 27 of this Technical Report with Sections 15 through to 18 and Sections 20 through to 22 not applicable to this Technical Report.
10. As of the effective date of this Technical Report, to the best of my knowledge, information and belief, the Technical Report contains all scientific and technical information that is required to be disclosed to make this Technical Report not misleading.

Report Dated this 18th day of September, 2026 with an effective date of July 14, 2026.

“Tudorel Ciuculescu” {signed and sealed as of the report date}

Tudorel Ciuculescu, M.Sc., P.Geo.
Principal Resource Geologist, Micon International Limited

CERTIFICATE OF AUTHOR
William J. Lewis, B.Sc., P.Geo.

As the co-author of this report for Avalon Advanced Materials and Magmic Rare Earths, entitled “NI 43-101 Technical Report for the 2026 Rare Earth Element Mineral Resource Estimate on the Nechalacho Basal Project, Northwest Territories, Canada” dated August 31, 2026, with an effective date of July 14, 2026, I, William J. Lewis, do hereby certify that:

1. I am employed as a Principal Geologist by, and carried out this assignment for, Micon International Limited, Suite 501, 212 King St. W, Toronto, Ontario M5H 1K5, tel. (416) 362-5135, e-mail wlewis@micon-international.com.
2. I am a graduate of University of British Columbia with a B.Sc. degree in Geology in 1985.
3. I am a registered Professional Geoscientist with the Association of Professional Engineers, Geologists and Geophysicists of the Northwest Territories (Membership # 1450); as well, I am a member in good standing of several other technical associations and societies, including:
 - Association of Professional Engineers and Geoscientists of Manitoba (membership # 20480).
 - Association of Professional Engineers and Geoscientists of British Columbia (Membership # 20333).
 - Professional Association of Geoscientists of Ontario (Membership # 1522).
 - Association of Professional Geoscientists of Nova Scotia (Licence to Practice # 167).
4. I have worked as a geoscientist in the various aspects of the exploration and mining portions of the minerals industry for over 40 years.
5. I am familiar with NI 43-101 and, by reason of education, experience and professional registration, I fulfil the requirements of a Qualified Person as defined in NI 43-101. My work experience includes exploration and operations (sampling and assaying programs, drilling programs, processing, underground mine planning and scheduling, mineral processing, quality control conducting, mineral resource and reserve estimations), and consulting geologist overseeing resource and reserve estimations for the projects, due diligence, preliminary economic assessments, pre-feasibility and feasibility studies for precious and base metals, and industrial and speciality minerals projects.
6. I have read NI 43-101 and this Technical Report has been prepared in compliance with the instrument.
7. I have not visited the Nechalacho Project.
8. This is the first Technical Report I have co-authored for the mineral property that is the subject of this Technical Report.
9. I am independent of Avalon Advanced Materials and Magmic Rare Earths according to the definition described in NI 43-101 and the Companion Policy 43-101 CP.
10. I am responsible for the preparation of Sections 2 to 6, and Section 19 of this Technical Report with Sections 15 through to 18 and Sections 20 through to 22 not applicable to this Technical Report.
11. As of the effective date of this Technical Report, to the best of my knowledge, information and belief, the Technical Report contains all scientific and technical information that is required to be disclosed to make this Technical Report not misleading.

Report Dated this 18th day of September, 2026 with an effective date of July 14, 2026.

“William J. Lewis” {signed and sealed as of the report date}

William J. Lewis, B.Sc., P.Geo.
Principal Geologist, Micon International Limited

APPENDIX I

GLOSSARY OF MINING AND OTHER RELATED TERMS

The following is a glossary of certain mining terms that may be used in this Technical Report.

A

Assay A chemical test performed on a sample of ores or minerals to determine the amount of valuable metals contained.

B

Base metal Any non-precious metal (e.g., copper, lead, zinc, nickel, etc.).

Bulk mining Any large-scale, mechanized method of mining involving many thousands of tonnes of ore being brought to surface per day.

Bulk sample A large sample of mineralized rock, frequently hundreds of tonnes, selected in such a manner as to be representative of the potential orebody being sampled. The sample is usually used to determine metallurgical characteristics.

By-product A secondary metal or mineral product recovered in the milling process.

C

Channel sample

A sample composed of pieces of vein or mineral deposit that have been cut out of a small trench or channel, usually about 10 cm wide and 2 cm deep.

Chip sample A method of sampling a rock exposure whereby a regular series of small chips of rock is broken off along a line across the face.

CIM Standards The CIM Definition Standards on Mineral Resources and Mineral Reserves adopted by CIM Council from time to time. The most recent update adopted by the CIM Council is effective as of May 10, 2014.

CIM The Canadian Institute of Mining, Metallurgy and Petroleum.

Concentrate A fine, powdery product of the milling process containing a high percentage of valuable metal.

Contact A geological term used to describe the line or plane along which two different rock formations meet.

Core The long cylindrical piece of rock, about an inch in diameter, brought to surface by diamond drilling.

Core sample One or several pieces of whole or split parts of core selected as a sample for analysis or assay.

Cross-cut A horizontal opening driven from a shaft and (or near) right angles to the strike of a vein or other orebody. The term is also used to signify that a drill hole is crossing the mineralization at or near right angles to it.

Cut-off grade The lowest grade of mineralized rock that qualifies as ore grade in a given deposit and is also used as the lowest grade below which the mineralized rock currently cannot be profitably exploited. Cut-off grades vary between deposits and commodity types

depending upon the amenability of the mineralization to extraction and upon production costs.

D

Deposit An informal term for an accumulation of mineralization or other valuable earth material of any origin.

Development drilling

Drilling to establish accurate estimates of mineral resources or reserves usually in an operating mine or advanced project.

Dilution Rock that is, by necessity, removed along with the ore in the mining process, subsequently lowering the grade of the ore.

Dip The angle at which a vein, structure or rock bed is inclined from the horizontal as measured at right angles to the strike.

E

Epithermal Hydrothermal mineral deposit formed within one kilometre of the earth's surface, in the temperature range of 50 to 200°C.

Epithermal deposit

A mineral deposit consisting of veins and replacement bodies, usually in volcanic or sedimentary rocks, containing precious metals or, more rarely, base metals.

Exploration Prospecting, sampling, mapping, diamond drilling and other work involved in searching for ore.

F

Face The end of a drift, cross-cut or stope in which work is taking place.

Fault A break in the Earth's crust caused by tectonic forces which have moved the rock on one side with respect to the other.

Flotation A milling process in which valuable mineral particles are induced to become attached to bubbles and float as others sink.

Fold Any bending or wrinkling of rock strata.

Footwall The rock on the underside of a vein or mineralized structure or deposit.

Fracture A break in the rock, the opening of which allows mineral-bearing solutions to enter. A "cross-fracture" is a minor break extending at more-or-less right angles to the direction of the principal fractures.

G

Grade Term used to indicate the concentration of an economically desirable mineral or element in its host rock as a function of its relative mass. With gold, this term may be expressed as grams per tonne (g/t) or ounces per tonne (opt).

H

Hangingwall The rock on the upper side of a vein or mineral deposit.

High grade Rich mineralization or ore. As a verb, it refers to selective mining of the best ore in a deposit.

Host rock The rock surrounding an ore deposit.

Hydrothermal Processes associated with heated or superheated water, especially mineralization or alteration.

I

Indicated Mineral Resource

An Indicated Mineral Resource is that part of a Mineral Resource for which quantity, grade or quality, densities, shape and physical characteristics are estimated with sufficient confidence to allow the application of Modifying Factors in sufficient detail to support mine planning and evaluation of the economic viability of the deposit. Geological evidence is derived from adequately detailed and reliable exploration, sampling and testing and is sufficient to assume geological and grade or quality continuity between points of observation. An Indicated Mineral Resource has a lower level of confidence than that applying to a Measured Mineral Resource and may only be converted to a Probable Mineral Reserve.

Inferred Mineral Resource

An Inferred Mineral Resource is that part of a Mineral Resource for which quantity and grade or quality are estimated on the basis of limited geological evidence and sampling. Geological evidence is sufficient to imply but not verify geological and grade or quality continuity. An Inferred Mineral Resource has a lower level of confidence than that applying to an Indicated Mineral Resource and must not be converted to a Mineral Reserve. It is reasonably expected that the majority of Inferred Mineral Resources could be upgraded to Indicated Mineral Resources with continued exploration.

Intrusive A body of igneous rock formed by the consolidation of magma intruded into other

K

km Abbreviation for kilometre(s). One kilometre is equal to 0.62 miles.

L

Leaching The separation, selective removal or dissolving-out of soluble constituents from a rock or ore body by the natural actions of percolating solutions.

Level The horizontal openings on a working horizon in a mine; it is customary to work mines from a shaft, establishing levels at regular intervals, generally about 50 m or more apart.

M

m Abbreviation for metre(s). One metre is equal to 3.28 feet.

Measured Mineral Resource

A Measured Mineral Resource is that part of a Mineral Resource for which quantity, grade or quality, densities, shape, and physical characteristics are estimated with confidence sufficient to allow the application of Modifying Factors to support detailed mine planning and final evaluation of the economic viability of the deposit. Geological evidence is derived from detailed and reliable exploration, sampling and testing and is sufficient to confirm geological and grade or quality continuity between points of observation. A Measured Mineral Resource has a higher level of confidence than that applying to either an Indicated Mineral Resource or an Inferred Mineral Resource. It may be converted to a Proven Mineral Reserve or to a Probable Mineral Reserve.

Metallurgy The science and art of separating metals and metallic minerals from their ores by mechanical and chemical processes.

Metamorphic Affected by physical, chemical, and structural processes imposed by depth in the earth's crust.

Mill A plant in which ore is treated and metals are recovered or prepared for smelting also, a revolving drum used for the grinding of ores in preparation for treatment.

Mine An excavation beneath the surface of the ground from which mineral matter of value is extracted.

Mineral A naturally occurring homogeneous substance having definite physical properties and chemical composition and, if formed under favourable conditions, a definite crystal form.

Mineral Claim/Concession

That portion of public mineral lands which a party has staked or marked out in accordance with federal or state mining laws to acquire the right to explore for and exploit the minerals under the surface.

Mineralization The process or processes by which mineral or minerals are introduced into a rock, resulting in a valuable or potentially valuable deposit.

Mineral Resource

A Mineral Resource is a concentration or occurrence of solid material of economic interest in or on the Earth's crust in such form, grade or quality and quantity that there are reasonable prospects for eventual economic extraction. The location, quantity, grade or

quality, continuity and other geological characteristics of a Mineral Resource are known, estimated or interpreted from specific geological evidence and knowledge, including sampling. Material of economic interest refers to diamonds, natural solid inorganic material, or natural solid fossilized organic material including base and precious metals, coal, and industrial minerals. The term mineral resource used in this report is a Canadian mining term as defined in accordance with NI 43-101 – Standards of Disclosure for Mineral Projects under the guidelines set out in the Canadian Institute of Mining, Metallurgy and Petroleum (the CIM), Standards on Mineral Resource and Mineral Reserves Definitions and guidelines adopted by the CIM Council on December 11, 2005 and recently updated as of May 10, 2014 (the CIM Standards).

Mineral Reserve

A Mineral Reserve is the economically mineable part of a Measured and/or Indicated Mineral Resource. It includes diluting materials and allowances for losses, which may occur when the material is mined or extracted and is defined by studies at Pre-Feasibility or Feasibility level as appropriate that include application of Modifying Factors. Such studies demonstrate that, at the time of reporting, extraction could reasonably be justified. The reference point at which Mineral Reserves are defined, usually the point where the ore is delivered to the processing plant, must be stated. It is important that, in all situations where the reference point is different, such as for a saleable product, a clarifying statement is included to ensure that the reader is fully informed as to what is being reported. The public disclosure of a Mineral Reserve must be demonstrated by a Pre-Feasibility Study or Feasibility Study.

N

NI 43-101

National Instrument 43-101 is a national instrument for the Standards of Disclosure for Mineral Projects within Canada. The Instrument is a codified set of rules and guidelines for reporting and displaying information related to mineral properties owned by, or explored by, companies which report these results on stock exchanges within Canada. This includes foreign-owned mining entities who trade on stock exchanges overseen by the Canadian Securities Administrators (CSA), even if they only trade on Over-The-Counter (OTC) derivatives or other instrumented securities. The NI 43-101 rules and guidelines were updated as of June 30, 2011.

O

Open Pit/Cut A form of mining operation designed to extract minerals that lie near the surface. Waste or overburden is first removed, and the mineral is broken and loaded for processing. The mining of metalliferous ores by surface-mining methods is commonly designated as open-pit mining as distinguished from strip mining of coal and the quarrying of other non-metallic materials, such as limestone and building stone.

Outcrop An exposure of rock or mineral deposit that can be seen on surface, that is, not covered by soil or water.

Oxidation A chemical reaction caused by exposure to oxygen that results in a change in the chemical composition of a mineral.

P

Plant A building or group of buildings in which a process or function is carried out; at a mine site it will include warehouses, hoisting equipment, compressors, maintenance shops, offices and the mill or concentrator.

Plunge Plunge refers to the downward angle and direction of a linear structure. Most commonly it is used to measure the direction and angle of the plunge of a fold axis or hinge.

Probable Reserve

A Probable Mineral Reserve is the economically mineable part of an Indicated, and in some circumstances, a Measured Mineral Resource. The confidence in the Modifying Factors applying to a Probable Mineral Reserve is lower than that applying to a Proven Mineral Reserve.

Proven Reserve

A Proven Mineral Reserve is the economically mineable part of a Measured Mineral Resource. A Proven Mineral Reserve implies a high degree of confidence in the Modifying Factors.

Pyrite A common, pale-bronze or brass-yellow, mineral composed of iron and sulphur. Pyrite has a brilliant metallic luster and has been mistaken for gold. Pyrite is the most wide-spread and abundant of the sulphide minerals and occurs in all kinds of rocks.

Q

Qualified Person

Conforms to that definition under NI 43-101 for an individual: (a) to be an engineer or geoscientist with a university degree, or equivalent accreditation, in an area of geoscience, or engineering, related to mineral exploration or mining; (b) has at least five years' experience in mineral exploration, mine development or operation or mineral project assessment, or any combination of these, that is relevant to his or her professional degree or area of practice; (c) to have experience relevant to the subject matter of the mineral project and the Technical Report; (d) is in good standing with a professional association; and (e) in the case of a professional association in a foreign jurisdiction, has a membership designation that (i) requires attainment of a position of responsibility in their profession that requires the exercise of independent judgement; and (ii) requires (A.) a favourable confidential peer evaluation of the individual's character, professional judgement, experience, and ethical fitness; or (B.) a recommendation for membership by at least two peers, and demonstrated prominence or expertise in the field of mineral exploration or mining.

R

Reclamation The restoration of a site after mining or exploration activity is completed.

S

Shoot	A concentration of mineral values; that part of a vein or zone carrying values of ore grade.
Stockpile	Broken ore heaped on surface, pending treatment or shipment.
Strike	The direction, or bearing from true north, of a vein or rock formation measure on a horizontal surface.
Stringer	A narrow vein or irregular filament of a mineral or minerals traversing a rock mass.

T

Terrain	A terrain in geology, in full a tectonostratigraphic terrain, is a fragment of crustal material formed on, or broken off from, one tectonic plate and accreted or "sutured" to crust lying on another plate.
Tonne	A metric ton of 1,000 kilograms (2,205 pounds).

U

Underground

Mining	Is the process of extracting rock from underground using a network of tunnels and openings, often called stopes. This mining is generally more expensive with lower production rates due to the use of smaller equipment than open pit/ open cast mining at the surface.
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V

Vein	A fissure, fault or crack in a rock filled by minerals that have travelled upwards from some deep source.
Volcanogenic	Formed by processes directly connected with volcanism: specif., said of mineral deposits (massive sulphides, exhalites, banded iron formations) considered to have been produced through volcanic agencies and demonstrably associated with volcanic phenomena.

W

Wall rocks	Rock units on either side of an orebody. The hanging wall and footwall rocks of a mineral deposit or orebody.
Waste	Unmineralized, or sometimes mineralized, rock that is not minable at a profit.
Working(s)	May be a shaft, quarry, level, open-cut, open pit, or stope etc. Usually noted in the plural.

Z

Zone	An area of distinct mineralization.
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