14th November 2019

Petrographic Study Indicates Favourable Mineralogy - Laramie Rare Earths (REE) Project, Wyoming USA (Amended to incl JORC Table)

- **Initial petrographic analyses confirm REEs occur predominantly as the mineral allanite at the Company's newly secured 100% owned Laramie REE Project located in Wyoming, USA;**

- **Allanite crystals observed are generally relatively coarse grained (0.4mm to 2.5mm) with distinct mineral grains indicating potential for easy liberation from the syenite host rock;**

- **Zenith surface rock grab sampling returned REE mineralisation with TREO (Total Rare Earth Oxide) grades up to 0.60% whilst widespread, continuous REE mineralisation confirmed in all of nine recently announced systematic chip sample traverses (ZNC ASX Release 6th Nov 2019), including:**

  - **80m @ 0.40% TREO – Traverse A;**
  - **60m @ 0.39% TREO – Traverse B;**
  - **40m @ 0.35% TREO – Traverse C;**
  - **60m @ 0.37% TREO – Traverse D;**
  - **137m @ 0.37% TREO – Traverse E;**
  - **332m @ 0.26% TREO – Traverse F;**
  - **72m @ 0.33% TREO – Traverse G;**
  - **60m @ 0.34% TREO – Traverse H;**
  - **17m @ 0.24% TREO – Traverse I.**

- **Zenith has now identified three sampling areas 2 to 3km apart with strong values of high-value neodymium, praseodymium and dysprosium within a 30 sqkm monzonitic pluton part of a very large anorthosite complex, providing Zenith with the opportunity to define a very large-scale exploration target once initial first pass drill testing is completed;**

- **Wyoming is home to multiple existing major mining operations and the project area has excellent existing road and rail infrastructure; and**

- **Next steps include further mapping, surface sampling and geophysical surveying to establish the overall extent of the mineralised zone(s) and target highest grade areas for drill testing, along with further mineralogical and beneficiation studies.**

Corporate Details

ASX: ZNC

Issued Shares (ZNC)	212.8M*
Unlisted options	4.15M
Mkt. Cap. ($0.06)	A$13M
Cash (30th Sep 19)	A$0.64 M*
Debt	Nil

*1 for 6 Rights Issue Opened 5th Nov 19 to raise A$1.95M

Directors

Michael Clifford:
Managing Director

Mike Joyce:
Non-Exec Chairman

Stan Macdonald:
Non-Exec Director

Julian Goldsworthy:
Non-Exec Director

Graham Riley:
Non-Exec Director

Major Shareholders

HSBC Custody. Nom.	12.2%
J P Morgan	6.7%
Nada Granich	5.4%
Miquilini	4.3%
Abingdon	4.1%

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Zenith Minerals Limited ("Zenith" or "the Company") is very pleased to announce details from a petrological study conducted on REE mineralisation at its 100% owned Laramie REE Project. Zenith recently secured federal lode claims and state lease applications over the Laramie REE Project located in central Wyoming USA (Figure 1), as announced to the ASX 17th Oct 2019. Wyoming is home to multiple existing major mining operations (coal and uranium) and has local engineering and construction companies capable of supporting mine project development.

The project area has excellent existing infrastructure being located 3km from the national road network, 30km to interstate and 35km to rail, in addition Wyoming has abundant low-cost commercial electricity. Rare Element Resources (OTCQB: REEMF) are currently assessing the advanced Bear Lodge REE project in north east Wyoming.

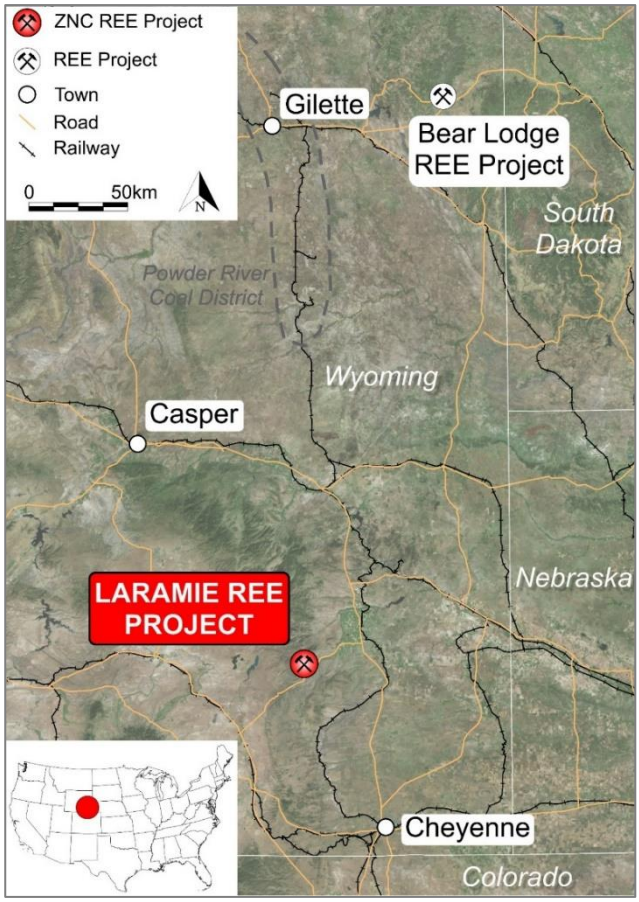
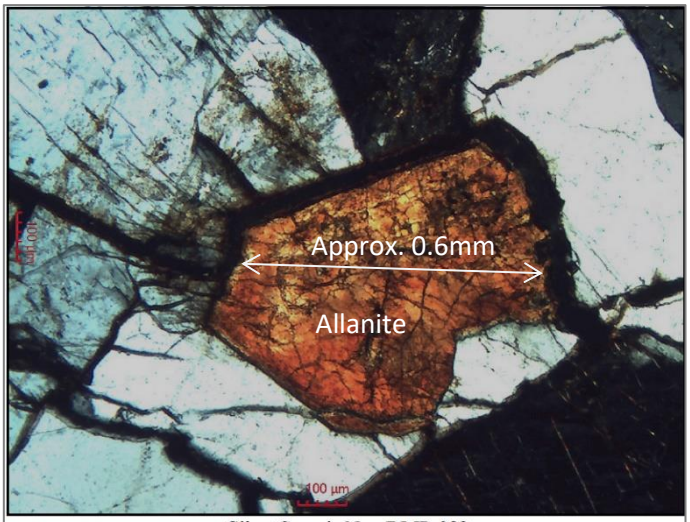


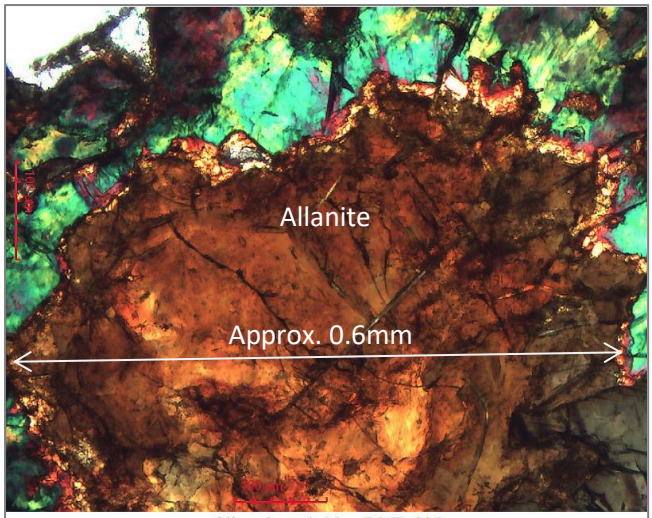
Figure 1: Laramie REE Project – Location Map

Petrographic Study

Petrographic analyses of four surface samples was carried out by DCM Science Laboratory Inc (DCM) of Colorado, USA. The study confirmed the bulk analyses and rock types of all four samples are essentially the same. The work confirmed the presence of the REE mineral allanite. Allanite occurs as relatively coarse grained (0.4mm to 2.5mm) generally distinct mineral grains (Figure 6). DCM reported that …."*the large size of the allanite crystals should facilitate liberation upon grinding*"……from the syenite host rock.



Client Sample No: **RMP-032**
Subhedral grain of brown allanite in quartz/feldspar – 50X PL



Client Sample No: **RMP-005**
Large grain of brown allanite rimmed in epidote – 100X PL

Results from Recent Sampling (Refer to ZNC ASX Release 6th Nov 2019)

As previously announced to the ASX on the 7th Oct 2019, initial rock grab sampling and mapping by Zenith in three key areas 2 to 3km apart returned up to 0.60% TREO (Figure 2).

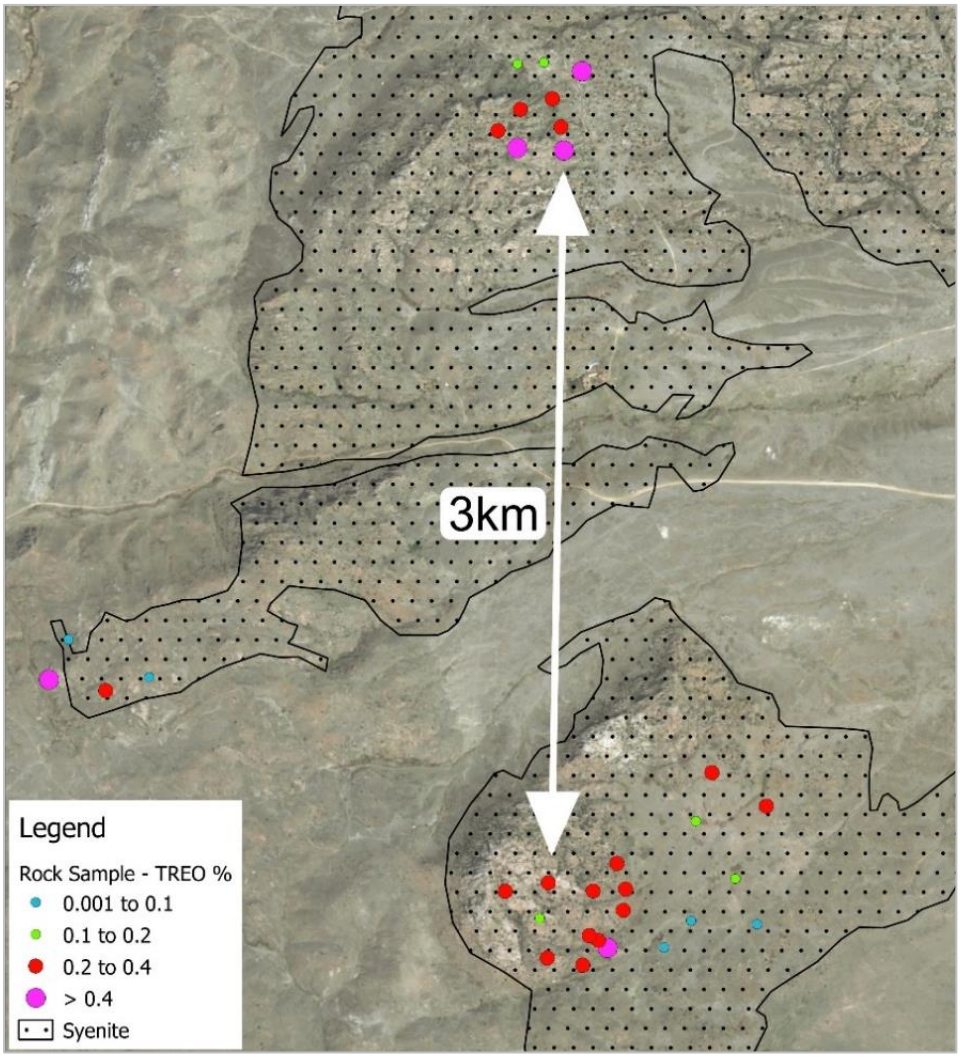


Figure 2: Laramie REE Project – Geochemical Results – Summary Map

Follow-up sampling included nine systematic rock chip sample traverses by Zenith with five traverses across portions of the north of the initial sampling area and four across the southern zone. All nine traverses returned consistent, strong REE mineralisation along their entire lengths (Figures 3 - 4), including:

- **80m @ 0.40% TREO – Traverse A;**
- **60m @ 0.39% TREO – Traverse B;**
- **40m @ 0.35% TREO – Traverse C;**
- **60m @ 0.37% TREO – Traverse D;**
- **137m @ 0.37% TREO – Traverse E;**
- **332m @ 0.26% TREO – Traverse F;**
- **72m @ 0.33% TREO – Traverse G;**
- **60m @ 0.34% TREO – Traverse H;**
- **17m @ 0.24% TREO – Traverse I.**

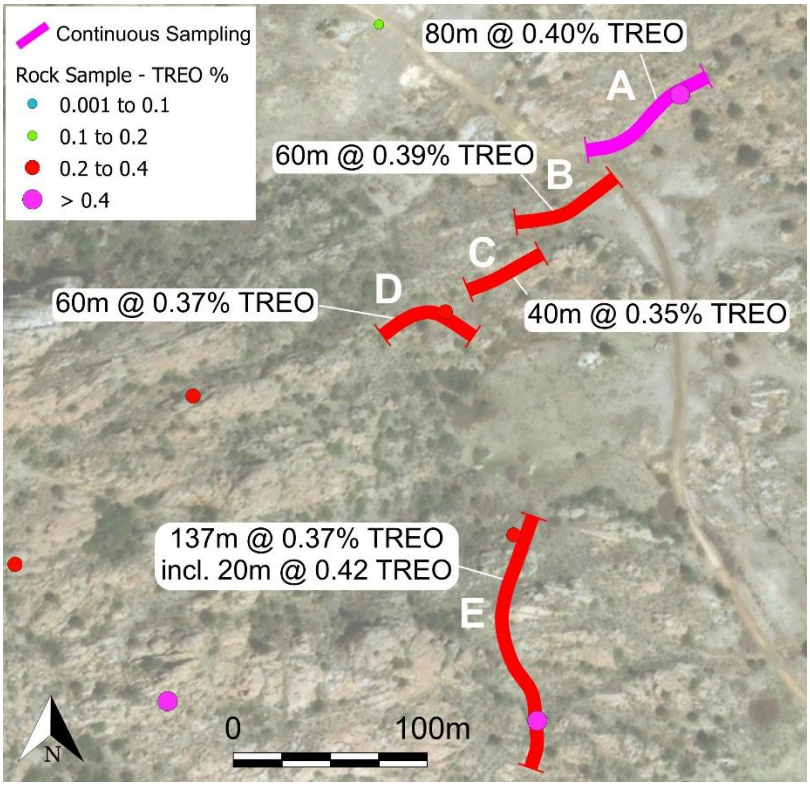


Figure 3: Laramie North - Systematic Chip Sample Traverse Results

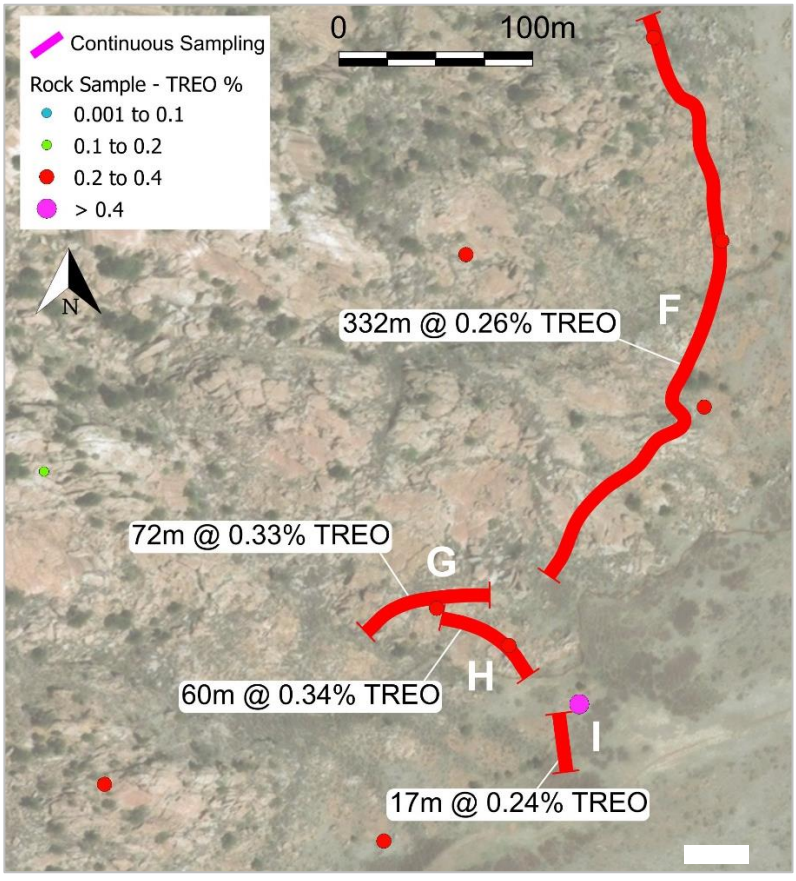


Figure 4: Laramie South - Systematic Chip Sample Traverse Results

Background on Rare Earth's (REE)

A renewed interest in REE projects has come about as a result of the recent US – China trade dispute. The USA has listed REE's as critical minerals in the federal report "A Federal Strategy to Ensure Secure and Reliable Supplies of Critical Minerals [1]". There is strong Federal US Government support to secure a stable domestic REE supply.

REE projects in production, development and exploration stages span a wide range of size and grade (Figure 5). Deposit size, grade, mineability and metallurgical performance are key factors in the economic viability of all mining projects but in the case of REE projects the type of REE minerals present are critically important.

The 17 chemical elements that occur together in the periodic table are referred to as rare earth elements (REE's). The group consists of yttrium and the 15 lanthanide elements (lanthanum, cerium, praseodymium, neodymium, promethium, samarium, europium, gadolinium, terbium, dysprosium, holmium, erbium, thulium, ytterbium, and lutetium)[2]. A project may have a very high content of total rare earth oxides (TREO) but what is more important is the proportion of highly valuable REE's such as neodymium, praseodymium and dysprosium. Notably it is those elements that are strongly anomalous in the regional reconnaissance sampling results from the Laramie REE project area.

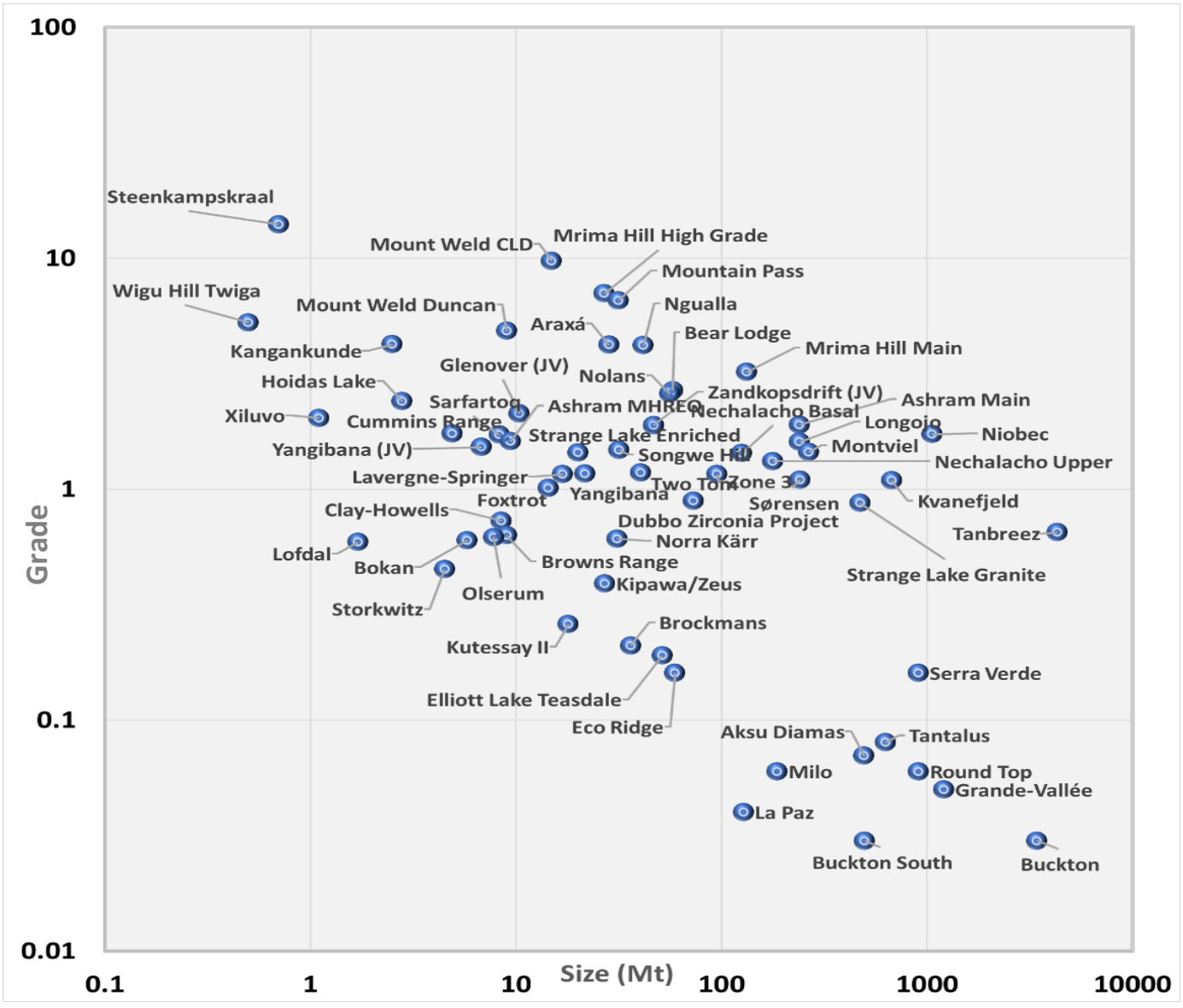


Figure 5: World REE Projects Size and Grade[3]

Laramie Project - Geology

The Laramie REE Project occurs within the Laramie Anorthosite Complex a Proterozoic massif consisting of three anorthositic intrusions, three syenitic to monzonitic intrusions and several smaller intrusions of leucogabbro and ferrodiorite[4] [5].

REE's are reported to occur at the Laramie REE project predominantly as the mineral allanite hosted by clinopyroxene and hornblende syenites that are part of a very large differentiated Laramie anorthosite complex, providing Zenith with the opportunity to define a very large-scale exploration target once initial follow-up work is completed.

Competent Persons Statement

The information in this report that relates to Exploration Results is based on information compiled by Mr Michael Clifford, who is a Member of the Australian Institute of Geoscientists and an employee of Zenith Minerals Limited. Mr Clifford has sufficient experience which is relevant to the style of mineralisation and type of deposit under consideration and to the activity which he is undertaking to qualify as a Competent Person as defined in the 2012 Edition of the 'Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves'. Mr Clifford consents to the inclusion in the report of the matters based on his information in the form and context in which it appears.

References:

[1] As defined in Executive Order 13817, a critical mineral is "a mineral identified by the Secretary of the Interior [pursuant to the Executive Order] to be (i) a non-fuel mineral or mineral material essential to the economic and national security of the United States, (ii) the supply chain of which is vulnerable to disruption, and (iii) that serves an essential function in the manufacturing of a product, the absence of which would have significant consequences for our economy or our national security." 82 Fed. Reg. 60835; 2017; https://www.federalregister.gov/documents/2017/12/26/2017-27899/a-federal-strategy-to-ensure-secure-and-reliable-supplies-of-critical-minerals

[1] Department of the Interior, "Final List of Critical Minerals 2018," 83 Fed. Reg. 23295; 2018, https://www.federalregister.gov/documents/2018/05/18/2018-10667/final-list-of-critical-minerals-2018

[1] U.S. Geological Survey, "Mineral Commodity Summaries 2018," 2018, https://doi.org/10.3133/70194932

[2] https://geology.com/articles/rare-earth-elements/

[3] Source: http://www.techmetalsresearch.com/metrics-indices/tmr-advanced-rare-earth-projects-index/ updated where new information available by Zenith 29-05-2019 from Company ASX reports and from SEDAR for TSX listed entities .

[4] Frost, B.R., and Frost, C.D., 2014, Essentials of Igneous and Metamorphic Petrology, Cambridge University Press, published in November 2013, ISBN 978-1-107-02754-1.

[5] Frost, C.D., Frost, B.R., Lindsley, D.H., Chamberlain, K.R., Swapp, S.M., Scoates, J.S., 2010, Geochemical and isotopic evolution of the anorthositic plutons of the Laramie anorthosite complex: explanations for variations in silica activity and oxygen fugacity of massif anorthosites. Canadian Mineralogist, v. 48, 925-946.

14th November 2019

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Section 1 Sampling Techniques and Data

(Criteria in this section apply to all succeeding sections.)

Criteria	JORC Code explanation	Commentary
Sampling techniques	*Nature and quality of sampling (e.g. cut channels, random chips, or specific specialised industry standard measurement tools appropriate to the minerals under investigation, such as down hole gamma sondes, or handheld XRF instruments, etc.). These examples should not be taken as limiting the broad meaning of sampling.*	Individual grab rock samples and systematic traverse chip samples along measured lines with samples taken every 1m and composited up to 20m in length, were collected by hand, at the surface, from in-situ outcrops. Mineralogical samples were taken from four (4) separate grab samples that were considered representative of the syenite host rock sequence from sampling areas shown on Figure 2. Thin sections of competent rock samples were cut and polished to provide a petrologist from DCM Science Laboratory Inc (DCM) of Colorado, USA with slice of rock that could be examined under a microscope.
	Include reference to measures taken to ensure sample representivity and the appropriate calibration of any measurement tools or systems used.	Grab samples are believed to be representative of the outcrops they come from based on visual inspection by a geologist using a hand lens.
	Aspects of the determination of mineralisation that are Material to the Public Report. In cases where 'industry standard' work has been done this would be relatively simple (e.g. 'reverse circulation drilling was used to obtain 1 m samples from which 3 kg was pulverised to produce a 30 g charge for fire assay'). In other cases more explanation may be required, such as where there is coarse gold that has inherent sampling problems. Unusual commodities or mineralisation types (e.g. submarine nodules) may warrant disclosure of detailed information.	1-2kg rock samples were collected by a geologist, samples were broken using a hammer from outcrop. Rock samples were crushed in the laboratory and then pulverised before analysis.
Drilling techniques	*Drill type (e.g. core, reverse circulation, open-hole hammer, rotary air blast, auger, Bangka, sonic, etc.) and details (e.g. core diameter, triple or standard tube, depth of diamond tails, face-sampling bit or other type, whether core is oriented and if so, by what method, etc.).*	No Drilling
Drill sample recovery	*Method of recording and assessing core and chip sample recoveries and results assessed.*	No Drilling
	Measures taken to maximise sample recovery and ensure representative nature of the samples.	No Drilling

	Whether a relationship exists between sample recovery and grade and whether sample bias may have occurred due to preferential loss/gain of fine/coarse material.	No Drilling
Logging	*Whether core and chip samples have been geologically and geotechnically logged to a level of detail to support appropriate Mineral Resource estimation, mining studies and metallurgical studies.*	Rock samples were subject to petrographic study and photographed
	Whether logging is qualitative or quantitative in nature. Core (or costean, channel, etc.) photography.	Qualitative logging with quantitative mineral size measurements under a microscope
	The total length and percentage of the relevant intersections logged.	No Drilling
Sub-sampling techniques and sample preparation	*If core, whether cut or sawn and whether quarter, half or all core taken.*	No Drilling
	If non-core, whether riffled, tube sampled, rotary split, etc. and whether sampled wet or dry.	No Drilling
	For all sample types, the nature, quality and appropriateness of the sample preparation technique.	Samples were cut and polished thin sections were prepared at DCM Science Laboratory Inc (DCM) of Colorado, USA.
	Quality control procedures adopted for all sub-sampling stages to maximise representivity of samples.	Samples were inspected and described in hand specimen by an experienced petrologist before section blocks were cut.
Sub-sampling techniques and sample preparation - continued	*Measures taken to ensure that the sampling is representative of the in situ material collected, including for instance results for field duplicate/second-half sampling.*	Grab sampling was selective based on geological observations.
	Whether sample sizes are appropriate to the grain size of the material being sampled.	Each sample was 1kg to 2kg in weight which is appropriate to test for the grain size of material.
Quality of assay data and laboratory tests	*The nature, quality and appropriateness of the assaying and laboratory procedures used and whether the technique is considered partial or total.*	No new assays this release – petrographic descriptions only
	For geophysical tools, spectrometers, handheld XRF instruments, etc., the parameters used in determining the analysis including instrument make and model, reading times, calibrations factors applied and their derivation, etc.	No geophysical tools used this sampling program
	Nature of quality control procedures adopted (e.g. standards, blanks, duplicates, external laboratory checks) and whether acceptable levels of accuracy (i.e. lack of bias) and precision have been established.	No new assays this release – petrographic descriptions only

Verification of sampling and assaying	*The verification of significant intersections by either independent or alternative company personnel.*	Two consulting company personnel have observed the assayed samples
	The use of twinned holes.	No drilling
	Documentation of primary data, data entry procedures, data verification, data storage (physical and electronic) protocols.	Field data were all recorded in field note books and sample record books and then entered into a digital database
	Discuss any adjustment to assay data.	No adjustments were made.
Location of data points	*Accuracy and quality of surveys used to locate drill holes (collar and down-hole surveys), trenches, mine workings and other locations used in Mineral Resource estimation.*	Sample location is based on GPS coordinates +/-5m accuracy
	Specification of the grid system used.	The grid system used to compile data was NAD27 Zone 13 N.
Location of data points - continued	*Quality and adequacy of topographic control.*	Topography control is +/- 10m.
Data spacing and distribution	*Data spacing for reporting of Exploration Results.*	All samples are from areas shown on Figure 2 and Table 1 of ASX Release 17th Oct 2019.
	Whether the data spacing and distribution is sufficient to establish the degree of geological and grade continuity appropriate for the Mineral Resource and Ore Reserve estimation procedure(s) and classifications applied.	The data alone will not be used to estimate mineral resource or ore reserve
	Whether sample compositing has been applied.	No new assays this release – petrographic descriptions only
Orientation of data in relation to geological structure	*Whether the orientation of sampling achieves unbiased sampling of possible structures and the extent to which this is known, considering the deposit type.*	Rock samples were taken of selected outcrops that were considered representative of varying rock types.
	If the relationship between the drilling orientation and the orientation of key mineralised structures is considered to have introduced a sampling bias, this should be assessed and reported if material.	No drilling
Sample security	*The measures taken to ensure sample security.*	Samples were kept in numbered bags until delivered to the laboratory
Audits or reviews	*The results of any audits or reviews of sampling techniques and data.*	Sampling techniques are consistent with industry standards

Section 2 Reporting of Exploration Results

(Criteria listed in the preceding section also apply to this section.)

Criteria	*JORC Code explanation*	Commentary
Mineral tenement and land tenure status	*Type, reference name/number, location and ownership including agreements or material issues with third parties such as joint ventures, partnerships, overriding royalties, native title interests, historical sites, wilderness or national park and environmental settings.*	The Laramie REE Project is located within applications for State of Wyoming Mineral Leases. The leases will either be held via Zenith's consultant on bare trust for Zenith or via Zenith's wholly owned USA subsidiary. Federal lode mining claims have been claim staked. Sampling has been carried out under an exploration permit issued by the State of Wyoming.
	The security of the tenure held at the time of reporting along with any known impediments to obtaining a licence to operate in the area.	As above. The leases are applications with no known impediment to future granting of exploitation rights. Federal claims are current and considered validly staked.
Exploration done by other parties	*Acknowledgment and appraisal of exploration by other parties.*	Zenith's consultant undertook rock sampling within the region as part of a uranium exploration program to follow-up on information provided by a retired geologist.
Geology	*Deposit type, geological setting and style of mineralisation.*	Based on the initial site visit and academic papers referenced in this ASX release the geological setting and geochemical association at the Laramie REE project is that of a large scale anorthosite complex. REE elements are hosted within syenite that is part of that complex.
Drill hole Information	*A summary of all information material to the understanding of the exploration results including a tabulation of the following information for all Material drill holes:*	No drilling
	o easting and northing of the drill hole collar	
	o elevation or RL (Reduced Level – elevation above sea level in metres) of the drill hole collar	
	o dip and azimuth of the hole	
	o down hole length and interception depth	
	o hole length.	
	If the exclusion of this information is justified on the basis that the information is not Material and this exclusion does not detract from the understanding of the report, the Competent Person should clearly explain why this is the case.	
Data aggregation methods	*In reporting Exploration Results, weighting averaging techniques, maximum and/or minimum grade truncations (e.g. cutting of high grades) and cut-off grades are usually Material and should be stated.*	No high-grade cutting
	Where aggregate intercepts incorporate short lengths of high grade results and longer lengths of low grade results, the procedure used for such aggregation should be stated and some typical examples of such aggregations should be shown in detail.	No aggregation used

Data aggregation methods - continued	*The assumptions used for any reporting of metal equivalent values should be clearly stated.*	No metal equivalents used.
Relationship between mineralisation widths and intercept lengths	*These relationships are particularly important in the reporting of Exploration Results.*	No drilling
	If the geometry of the mineralisation with respect to the drill hole angle is known, its nature should be reported.	No drilling
	If it is not known and only the down hole lengths are reported, there should be a clear statement to this effect (e.g. 'down hole length, true width not known').	No drilling
Diagrams	*Appropriate maps and sections (with scales) and tabulations of intercepts should be included for any significant discovery being reported These should include, but not be limited to a plan view of drill hole collar locations and appropriate sectional views.*	Refer to descriptions and diagrams in body of text
Balanced reporting	*Where comprehensive reporting of all Exploration Results is not practicable, representative reporting of both low and high grades and/or widths should be practiced to avoid misleading reporting of Exploration Results.*	All results reported on Figure 2 and Table 1 of ASX Release dated 17th October 2019.
Other substantive exploration data	*Other exploration data, if meaningful and material, should be reported including (but not limited to): geological observations; geophysical survey results; geochemical survey results; bulk samples – size and method of treatment; metallurgical test results; bulk density, groundwater, geotechnical and rock characteristics; potential deleterious or contaminating substances.*	Nil at this stage
Further work	*The nature and scale of planned further work (e.g. tests for lateral extensions or depth extensions or large-scale step-out drilling).*	Further mapping and sampling along with more detailed and metallurgical test work is planned leading to drill targets.
	Diagrams clearly highlighting the areas of possible extensions, including the main geological interpretations and future drilling areas, provided this information is not commercially sensitive.	Refer to figures in body of report.