

## ASX ANNOUNCEMENT

20 April 2023

# Highly positive outcome on study of U and Th levels at Caldeira Project

### Highlights

- A complete analysis of all previous exploration data (12,941 samples) was undertaken to understand the levels of Uranium (U) and Thorium (Th) across the Caldeira Project.
- Within the saprolitic clay zone containing the elevated REE, the Project's average U and Th values are 17ppm and 64 ppm respectively.
- U and Th values in the recovered REE carbonate product from SGS Geosol testwork were also low, having mean values of U = 21 ppm and Th = 22ppm.
- Levels of U and Th at the Caldeira Project are very low, with values that are typically lower than most other Ionic Clay REE deposits and significantly lower than hard rock rare earth projects.
- The dominant REE mineral in the source rock (trachyte) beneath the clay zone is Bastnaesite, a major source of REE worldwide and known to have lower levels of U & Th than other common REE minerals such as monazite or xenotime.
- Bastnaesite is a REE carbonate-fluoride mineral  $(REE)CO_3F$  and does not have U and Th in its composition, unlike Monazite. The mineral has been recognised as the main REE carbonate associated with the Poços de Caldas Alkaline Complex.

Meteoric Resources NL (ASX: MEI) (Meteoric or the Company) is pleased to update the market on its recent investigations into the Uranium (U) and Thorium (Th) levels at the Caldeira Rare Earth Project in Brazil..

**Executive Chairman, Andrew Tunks said,** "The low levels of radionuclides in Ionic Clay REE deposits is a well-established fact. In reality it is one of the key features, along with low mining and process costs, that make Ionic Clay REE deposits so economically attractive. Due to the fundamental physical and chemical properties of true Ionic Clay REE deposits, the most common radioactive contaminants are typically not adsorbed onto the clays during the weathering process.

*The levels of uranium and thorium in the REE enriched clays of the Caldeira Project are very low and there appears to be no preferential enrichment of radionuclides into the REE carbonate in the preliminary metallurgical testwork*

*This is another great outcome for Meteoric at Caldeira and shows we have an amazing project in our hands which continues to excite as we approach finalizing our Maiden resource estimate."*

## Background Information on Ionic Clay REE Deposits and Radionuclides (U & Th)

Geologically, the Caldeira REE Project is classified as an **Ionic Adsorption Clay REE Deposit**, which are characterised by the following key criteria:

- Clay-rich composition
- Weathering-related origin
- The REE's are **adsorbed** onto clay minerals and accumulate in the weathered soil or regolith layer
- Adsorbed REE are ionically attached to the clay minerals and can be liberated by washing in a weak solution of ammonium sulphate (or other metal salt) at near neutral pH
- Ionic Adsorption Clay REE Deposits are typically found near the surface, often at depths of less than 10 meters.
- The U and Th levels in Ionic Clay REE Deposits are typically low, as these elements are less soluble in hydrothermal fluids and are not preferentially adsorbed by clays during the weathering and leaching processes

### Uranium and Thorium Values at the Caldeira Project

During previous exploration of the Caldeira Project by JOGMEC, carried out between 2016 and 2019, a total of 12,941 samples were collected from shallow augur drilling and fused with lithium metaborate. The analyses were performed through inductively coupled plasma mass spectrometry (ICP-MS). Quantitative analyses included rare earth elements, in addition to Y, Co, Cu, Cs, Ga, Hf, Mo, Ni, Rb, Sn, Ta, **Th**, **Tl**, **U** and W.

**Table 1.** Summary data for 12,941 samples summarising their Uranium and Thorium values

Data	U (ppm)	Th (ppm)
Minimum	0.8	3.2
Maximum	1,513.6	1,547.5
Mean	16.7	63.5
Median	10.5	53.0

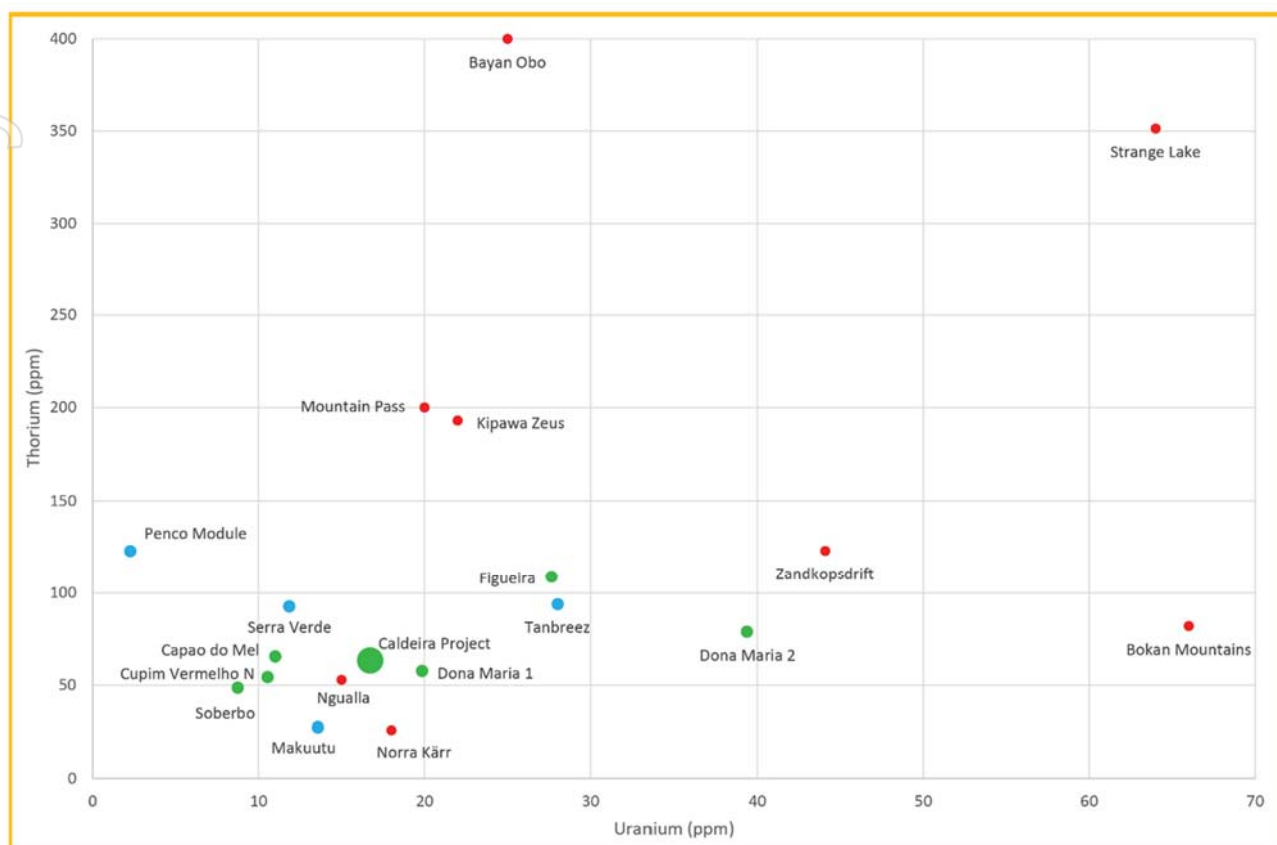
### Uranium and Thorium Values in Precipitated REE Carbonates at the Caldeira Project

Preliminary metallurgical testwork was undertaken by previous operators at SGS Geosol in Belo Horizonte Brazil in 2019 and the results of this work were released to the market ASX:MEI 20/12/2022. The metallurgical test work was carried out on samples split from a 200kg composite sample, which in turn was composed of a selection of 184 samples from 41 holes (100 x100m grid) across the Capo do Mel Prospect.

Using the optimised leach conditions from this initial metallurgical test work, four larger scale leaching tests were then completed to generate sufficient leach liquor for the recovery of REE carbonates by precipitation. The testwork was preliminary in nature and designed to test a variety of variables and their effect on REE recoveries. Following a simple impurity removal step, the REE were precipitated from the leach by raising the pH by adding commercial grade sodium carbonate, [Na<sub>2</sub>CO<sub>3</sub>] and the REE were recovered as a mixed carbonate concentrate after washing and filtering.

The subsequent four REE carbonate samples were then analysed by ICPMS and returned low levels of Uranium (range 19 to 23; ppm average = 21ppm) and Thorium (range 8-37 ppm; average = 23 ppm).

## Comparison between Caldeira Project and other REE Projects



**Figure 1.** REO Projects around the world plotted by Uranium (ppm) and Thorium (ppm). Values for the Ionic Clay REE Caldeira Project (green Dots) are shown as Caldeira Project average U & Th values and also the average U & Th value for each drilled licence (Capao do Mel, Cupim Vermelho Norte, Dona Maria 1, Dona Maria 2, Figueira and Soberbo). Other Ionic clay deposits are blue. Primary REE deposits are shown by red circles. References for source of data on other projects is provided in Appendix A.

### Uranium Mining within the Pocos de Caldas Area

The Osamu Utsumi Uranium Mine in Pocos de Caldas area operated from 1982 to 1995, with the extraction of uranium ore from a small open pit and underground operation. Osamu Utsumi was operated by a state-owned company, Indústrias Nucleares do Brasil S.A. (INB). INB is a Brazilian government-owned company under the supervision of the National Nuclear Energy Commission (CNEN) and it is responsible for the exploration, mining, and processing of uranium in Brazil. The mine was small by international standards, producing approximately 1,200t of  $U_3O_8$  at a head grade between 670-1700 ppm.

The uranium ore was processed at an onsite mill to produce uranium concentrate, which was then used as fuel for Brazil's nuclear power plants. The Osamu Utsumi Uranium Mine and infrastructure remains under care and maintenance supervision by INB.

The primary uranium ore the Osamu Utsumi is pitchblende occurring within tabular breccia zones, within the intrusive rocks (syenites, phonolites, trachytes) forming the basement of the Poços de Caldas Alkaline Intrusive Complex. (Louriros and Santos – 1998 Ore Geology Reviews 3). **It is important to understand that this is a 'primary' uranium deposit that occurs in the rocks underlying the REE enriched saprolitic clays that are the target of the Company's Caldeira Ionic Clay REE project.**

The presence of the historical uranium mine has no significant effects on the continuation of primary industries within the Poços de Caldas Area where there are significant bauxite and clay mines and processing operations within close proximity to the excluded zone.

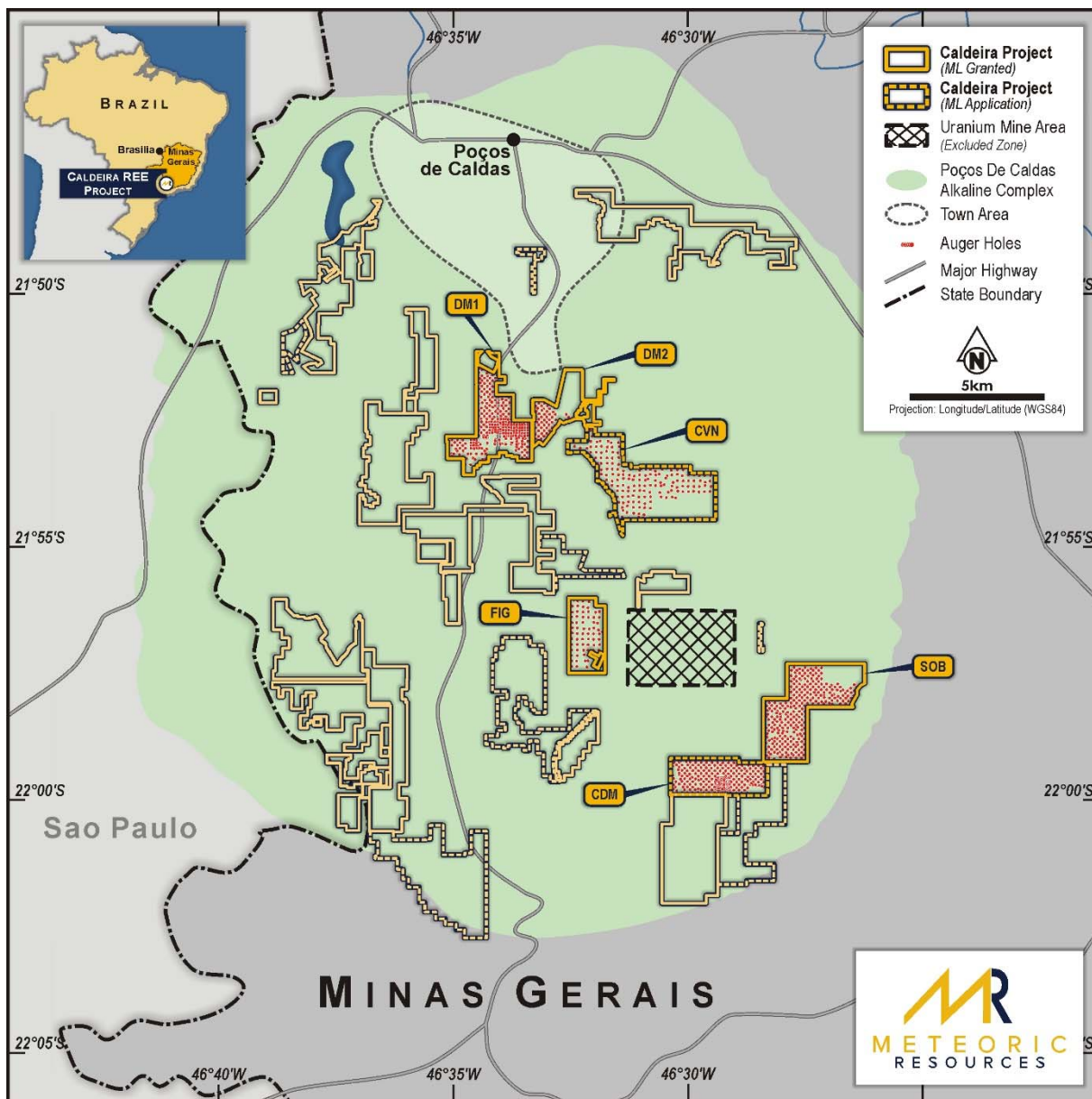


Figure 2. Relative location of the Osamu Utsumi uranium mine licence managed by INB.

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This release has been approved by the Board of Meteoric Resources NL.

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#### APPENDIX 1 – Reference for the Uranium and Thorium values in Figure 1

**Makuutu:** *Makuutu Project Stage 1 DFS Clarification, ASX Release, 24 March 2023.*

**Penco Module:** *NI 43-101 Technical Report, Preliminary Economic Assessment for Penco Module Project, Penco, Biobio Region, Chile, 2021*

**Serra Verde:** *Serra Verde Project – Mineral Resources & Mineral Reserves Estimated, RPA Feb 2015.*

**Strange Lake:** *Quest Rare Minerals LTD. NI 43-101 Technical Report for the updated Mineral resource Estimate for the Strange Lake Property of Québec, Canada, 2017*

**Zandkopsdrift:** *National Instrument 43-101 Independent Technical Report on the Results of a Preliminary Feasibility Study on the Zandkopsdrift Rare Earth Element and Manganese By-product Project in the Northern Cape Province of South Africa for Frontier Rare Earths Limited, 2015*

Prospects: **Bayan Obo, Bokan Mountains, Kipawa Zeus, Mountain Pass, Ngualla, Norra kärr, Tanbreez,**  
*Development of a Rare Earth Element Resource Database Management System, Entwicklung eines  
Datenbankmanagementsystems für Seltene Erdelement Ressourcen, Journal: Rheinisch-Westfälische Technische  
Hochschule Aachen, 2017*

#### Oxide conversion factor used.

Oxide	Conversion factor	Element
ThO <sub>2</sub>	0.87881	Th
U <sub>3</sub> O <sub>8</sub>	0.848	U
UO <sub>2</sub>	0.8815	U



Appendix 2 JORC Code, 2012 Edition – Table 1

Section 1 Sampling Techniques and Data (Criteria in this section apply to all succeeding sections.)

Criteria	Commentary																																																																
<i>Sampling techniques</i>	<ul style="list-style-type: none"> <li>Holes were sampled using a powered auger drill rig (open hole). Each drill site was cleaned, removing leaves and roots at the surface. Tarps were placed on either side of the hole and samples of soil and saprolite were collected every 1m of advance, logged, photographed with subsequent bagging of the sample in plastic bags.</li> </ul>																																																																
<i>Drilling techniques</i>	<ul style="list-style-type: none"> <li>Powered auger drilling was employed. All holes are vertical and 4 inch in diameter. The maximum depth achievable with the powered auger was 20m, and this was only achievable if the hole did not encounter fragments of rocks/boulders etc. sitting within the weathered profile, and / or the water table.</li> </ul>																																																																
<i>Drill sample recovery</i>	<ul style="list-style-type: none"> <li>Auger sample recovery calculated as length of sample recovered per interval drilled.</li> <li>Generally, within range of 75% to 100%.</li> </ul>																																																																
<i>Logging</i>	<ul style="list-style-type: none"> <li>For every 1m drilled, the material was described in a drilling bulletin, and photographed.</li> <li>The sample description is made according to the tactile-visual characteristics, such as material (soil, colluvium, saprolite, rock fragments); material color; predominant particle size; presence of moisture; indicator minerals; extra observations. If the water level is reached, it will also be described.</li> </ul>																																																																
<i>Sub-sampling techniques and sample preparation</i>	<ul style="list-style-type: none"> <li>The auger drill samples undergo a physical preparation process:                             <ul style="list-style-type: none"> <li>Samples are weighed</li> <li>If the samples are wet, they will be dried for several days on rubber mats.</li> <li>Samples when dried will be passed through a screen (5mm).</li> <li>Homogenization occurs by agitation in bags, followed by screening to &lt;3mm.</li> <li>Fragments of rock or hardened clay that are retained in the sieves are fragmented with a 10kg manual disintegrator and a 1kg hammer, until 100% of the sample passes through the screening.</li> <li>The sample is homogenized again by agitation in bags.</li> <li>Sample then passes through a Jones 12 channel splitter, where 500g will be sent of to the lab (SGS_geosol laboratory in Vespasiano – Minas Gerais).</li> <li>Remaining samples are placed in 20 litre plastic buckets, clearly labelled by hole ID and depth, and stored on site.</li> </ul> </li> <li>All samples generated have identification that are registered in internal control spreadsheets. This identification is linked to the name of the hole and interval to which the sample belongs.</li> </ul>																																																																
<i>Quality of assay data and laboratory tests</i>	<ul style="list-style-type: none"> <li>Samples were analysed at SGS-Geosol laboratory, located in Vespasiano – MG.</li> <li>Duplicate samples are predetermined and identified in the splitting phase with two samples ~ 500g selected, receiving different identifications. Blank samples consist of milky quartz, two blank samples (100g each) are inserted in each batch. Two standard samples are inserted in each batch.</li> <li>After the physical preparation of the samples at Plant 2, in Poços de Caldas, batches with 43 samples are sent to the SGS-Geosol laboratory, located in Vespasiano – MG for splitting of the natural sample in a Jones type splitter to remove an aliquot and later, pulverization in a steel mill, 95% minus 150 mesh.</li> <li>The analytical methodologies used are identified by the codes IMS95A (determination by fusion with lithium metaborate - ICP MS) and ICM655 (2% ammonium sulfate leaching and reading by ICP OES / ICP MS).</li> <li>For fusion with lithium metaborate, graphite crucibles are used, in which initially 0.5 g of lithium metaborate, 0.1 g of pulverized sample and other 0.5 g of lithium metaborate are inserted. Heated up to 950 °C. Molten content is placed in beaker with 100ml solution of 2% tartaric acid (C4H6O6), 10% nitric acid (HNO3) and 88% purified water for homogenization. Two aliquots with 15ml each are transferred to test tubes and are sent for ICP analysis (analytical reference IMS95A).</li> <li>The analyses are performed through mass spectrometry with inductively coupled plasma (ICP-MS). In this procedure, the ions are separated according to the mass / charge ratio through transport under the action of electric and magnetic fields. Quantitative analyzes include rare earth elements, in addition to Y, Co, Cu, Cs, Ga, Hf, Mo, Ni, Rb, Sn, Ta, Th, Tl, U and W (ICP-MS-IMS-95<sup>a</sup> Detection limits are shown in the Table below).</li> </ul> <table border="1" style="width: 100%; border-collapse: collapse;"> <tbody> <tr> <td>Ce</td><td>0,1 - 10000 (ppm)</td> <td>Co</td><td>0,5 - 10000 (ppm)</td> <td>Cs</td><td>0,05 - 1000 (ppm)</td> <td>Cu</td><td>5 - 10000 (ppm)</td> </tr> <tr> <td>Dy</td><td>0,05 - 1000 (ppm)</td> <td>Er</td><td>0,05 - 1000 (ppm)</td> <td>Eu</td><td>0,05 - 1000 (ppm)</td> <td>Ga</td><td>0,1 - 10000 (ppm)</td> </tr> <tr> <td>Gd</td><td>0,05 - 1000 (ppm)</td> <td>Hf</td><td>0,05 - 500 (ppm)</td> <td>Ho</td><td>0,05 - 1000 (ppm)</td> <td>La</td><td>0,1 - 10000 (ppm)</td> </tr> <tr> <td>Lu</td><td>0,05 - 1000 (ppm)</td> <td>Mo</td><td>2 - 10000 (ppm)</td> <td>Nb</td><td>0,05 - 1000 (ppm)</td> <td>Nd</td><td>0,1 - 10000 (ppm)</td> </tr> <tr> <td>Ni</td><td>5 - 10000 (ppm)</td> <td>Pr</td><td>0,05 - 1000 (ppm)</td> <td>Rb</td><td>0,2 - 10000 (ppm)</td> <td>Sm</td><td>0,1 - 1000 (ppm)</td> </tr> <tr> <td>Sn</td><td>0,3 - 1000 (ppm)</td> <td>Ta</td><td>0,05 - 10000 (ppm)</td> <td>Tb</td><td>0,05 - 1000 (ppm)</td> <td>Th</td><td>0,1 - 10000 (ppm)</td> </tr> <tr> <td>Tl</td><td>0,5 - 1000 (ppm)</td> <td>Tm</td><td>0,05 - 1000 (ppm)</td> <td>U</td><td>0,05 - 10000 (ppm)</td> <td>W</td><td>0,1 - 10000 (ppm)</td> </tr> <tr> <td>Y</td><td>0,05 - 10000 (ppm)</td> <td>Yb</td><td>0,1 - 1000 (ppm)</td> <td></td><td></td> <td></td><td></td> </tr> </tbody> </table>	Ce	0,1 - 10000 (ppm)	Co	0,5 - 10000 (ppm)	Cs	0,05 - 1000 (ppm)	Cu	5 - 10000 (ppm)	Dy	0,05 - 1000 (ppm)	Er	0,05 - 1000 (ppm)	Eu	0,05 - 1000 (ppm)	Ga	0,1 - 10000 (ppm)	Gd	0,05 - 1000 (ppm)	Hf	0,05 - 500 (ppm)	Ho	0,05 - 1000 (ppm)	La	0,1 - 10000 (ppm)	Lu	0,05 - 1000 (ppm)	Mo	2 - 10000 (ppm)	Nb	0,05 - 1000 (ppm)	Nd	0,1 - 10000 (ppm)	Ni	5 - 10000 (ppm)	Pr	0,05 - 1000 (ppm)	Rb	0,2 - 10000 (ppm)	Sm	0,1 - 1000 (ppm)	Sn	0,3 - 1000 (ppm)	Ta	0,05 - 10000 (ppm)	Tb	0,05 - 1000 (ppm)	Th	0,1 - 10000 (ppm)	Tl	0,5 - 1000 (ppm)	Tm	0,05 - 1000 (ppm)	U	0,05 - 10000 (ppm)	W	0,1 - 10000 (ppm)	Y	0,05 - 10000 (ppm)	Yb	0,1 - 1000 (ppm)				
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Criteria	Commentary
<i>Verification of sampling and assaying</i>	<ul style="list-style-type: none"> <li>There are no twin holes drilled.</li> <li>There are no details around data entry procedures.</li> <li>There has been no adjustment to the REE assay results other than the accepted factors applied to report REO rather than REE.</li> </ul>
<i>Location of data points</i>	<ul style="list-style-type: none"> <li>All holes were picked up by Nortear Topografia e Projectos Ltda., planialtimetric topographic surveyors. The GPS South Galaxy G1 RTK GNSS was used, capable of carrying out data surveys and kinematic locations in real time (RTK-Real Time Kinematic), consisting of two GNSS receivers, a BASE and a ROVER. The horizontal accuracy, in RTK, is 8mm + 1ppm, and vertical 15mm + 1ppm.</li> <li>The coordinates were provided in following formats: Sirgas 2000 datum, and UTM WGS 84 datum - georeferenced to spindle 23S.</li> <li>For the generation of planialtimetric maps (DEM), drones were used control points in the field (mainly in a region with more dense vegetation), in addition to the auger drillholes.</li> </ul>
<i>Data spacing and distribution</i>	<ul style="list-style-type: none"> <li>Hole spacing varies across the prospect scale from a maximum of: 200m by 200m, infill drilled to 100m by 100m in some areas, with tighter spacing of 50m by 50m in the closest space areas.</li> <li>Given the substantial geographic extent and generally shallow, flat lying geometry of the mineralisation, the spacing and orientation are considered sufficient to establish the geologic and grade continuity.</li> <li>Samples are not composited.</li> </ul>
<i>Orientation of data in relation to geological structure</i>	<ul style="list-style-type: none"> <li>The mineralisation is flat lying and occurs within the saprolite/clay zone of a deeply developed regolith (reflecting topography and weathering). Vertical sampling from the powered auger holes is appropriate.</li> <li>As such, no sampling bias is believed to be introduced.</li> </ul>
<i>Sample security</i>	<ul style="list-style-type: none"> <li>Samples are removed from the field and transported back to Plant 2 sample preparation and sample storage facility of the company where they are checked and organized on wooden pallets in a covered shed. After checking, all samples are weighed then the samples undergo a physical preparation process including: drying, sieving, homogenisation, and finally splitting before being packed in plastic bags, packed into batches of 43 samples, and despatched to SGS-Geosol for analysis.</li> <li>The remaining sample is stored in 20 ltr plastic buckets, labelled with the name of the target, the hole name and sampled intervals. Samples are securely locked up in the storage shed.</li> </ul>
<i>Audits or reviews</i>	<ul style="list-style-type: none"> <li>There have been no audits. MEI is conducting an audit of previous assay results by re-assaying pulps and coarse reject from 4-5% of all historic samples at an umpire Lab.</li> </ul>

## Section 2 Reporting of Exploration Results (Criteria listed in the preceding section also apply to this section.)

Criteria	Commentary
<i>Mineral tenement and land tenure status</i>	<ul style="list-style-type: none"> <li>Listed in Appendix 3.</li> <li>Given the rich history of mining and current mining activity in the Pocos de Caldas there appears to be no impediments to obtaining a License to operate in the area.</li> </ul>
<i>Exploration done by other parties</i>	<ul style="list-style-type: none"> <li>The Caldeira Project has had significant exploration in the form of surface geochem across 30 granted mining concessions, plus: geologic mapping, topographic surveys, and powered auger (1,396 holes for 13,710m and 12,962 samples).</li> <li>Refer to body of the release for appraisal of previous exploration.</li> </ul>
<i>Geology</i>	<p>The Alkaline Complex of Poços de Caldas represents in Brazil one of the most important geological terrain which hosts deposits of ETR, bauxite, clay, uranium, zirconium, rare earths and leucite. The different types of mineralisation are products of a history of post-magmatic alteration and weathering, in the last stages of its evolution (Schorscher &amp; Shea, 1992; Ulbrich et al., 2005), described below:</p> <ol style="list-style-type: none"> <li>1) Deuteric post-magmatic alteration and incipient hydrothermal alteration: potassium metasomatism and zeolitization and, subordinately, formation of clays under oxidizing conditions, with hematitization and hydrated iron oxides;</li> <li>2) Hydrothermal alteration: piritization, strong potassium metasomatism, mobilization and concentration of U, Th, ETR, Zr and Mo;</li> <li>3) Emplacement of mafic-ultramafic dikes (lamprophyres);</li> <li>4) Development of lateritic surface and extensive saprolitization of the massif, supergenic remobilization and precipitation of uranium concentrations.</li> </ol>

Criteria	Commentary
	5) The REE mineralisation focused on in this release is of the Ionic Clay type as evidenced by development within the saprolite/clay zone of the weathering profile of the Alkaline granite basement as well as enriched HREE composition.
<i>Drill hole Information</i>	<ul style="list-style-type: none"> <li>• Drill hole information for all 1,396 powered auger holes drilled by previous explorers is presented in Appendix 1.</li> </ul>
<i>Data aggregation methods</i>	<ul style="list-style-type: none"> <li>• Appendix 1 lists Mineralised Intercepts for all powered auger holes drilled by previous explorers. For simplicity the mineralised intercepts reported are a weighted average grade of the entire drill hole. No top-cuts have been employed and no restriction on the amount of internal dilution. Inspection of the assay table shows there are only 26 samples of 12,964 total samples which are &lt;500 ppm TREO, therefore it is effectively a 500ppm bottom cut.</li> <li>• No Metal Equivalents are used.</li> </ul>
<i>Relationship between mineralisation widths and intercept lengths</i>	<ul style="list-style-type: none"> <li>• The mineralisation is flat lying (reflecting topography and weathering) and occurs within the saprolite/clay zone of a deeply developed regolith. As the drilling is vertical, down hole intervals are assumed to be true widths.</li> </ul>
<i>Diagrams</i>	<ul style="list-style-type: none"> <li>• A tenement location plan, regional geology map, and a type cross section are presented in the main body.</li> </ul>
<i>Balanced reporting</i>	<ul style="list-style-type: none"> <li>• Collar information and Significant Intercepts for all drill holes from the project are reported in Appendix 1.</li> </ul>
<i>Other substantive exploration data</i>	<ul style="list-style-type: none"> <li>• A report on preliminary metallurgical testwork of material from Dona Maria I and a nearby pit was presented in the data package. A review is underway and will be released to the ASX as soon as completed.</li> </ul>
<i>Further work</i>	<ul style="list-style-type: none"> <li>• Proposed work is discussed in the body of the text.</li> </ul>

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### Appendix 3 - Licence details

Process	Phase	Owner	Area (ha)
814.251/1971	Mining Concession	Mineração Perdizes Ltda	124.35
814.860/1971	Mining Concession	Mineração Zelândia Ltda	341.73
815.006/1971	Mining Concession	Mineração Perdizes Ltda	717.52
815.274/1971	Mining Request	Companhia Geral de Minas	739.73
815.645/1971	Mining Concession	Companhia Geral de Minas	366.02
815.681/1971	Mining Concession	Mineração Zelândia Ltda	766.54
815.682/1971	Mining Concession	Companhia Geral de Minas	575.26
816.211/1971	Mining Concession	Mineração Perdizes Ltda	796.55
817.223/1971	Mining Concession	Mineração Daniel Togni Loureiro Ltda	772.72
820.352/1972	Mining Concession	Mineração Zelândia Ltda	26.40
820.353/1972	Mining Concession	Mineração Zelândia Ltda	529.70
820.354/1972	Mining Concession	Mineração Zelândia Ltda	216.49
813.025/1973	Mining Request	Mineração Perdizes Ltda	943.74
808.556/1974	Mining Concession	Mineração Perdizes Ltda	204.09
811.232/1974	Mining Concession	Mineração Perdizes Ltda	524.40
809.359/1975	Mining Concession	Companhia Geral de Minas	317.36
803.459/1975	Mining Concession	Mineração Perdizes Ltda	24.02
804.222/1975	Mining Request	Mineração Perdizes Ltda	403.65
807.899/1975	Mining Request	Companhia Geral de Minas	948.92
808.027/1975	Mining Concession	Companhia Geral de Minas	600.76
809.358/1975	Mining Concession	Companhia Geral de Minas	617.23
830.391/1979	Mining Request	Mineração Perdizes Ltda	7.30
830.551/1979	Mining Request	Togni S A Materiais Refratários	528.88
830.000/1980	Mining Request	Mineração Perdizes Ltda	203.85
830.633/1980	Mining Request	Mineração Zelândia Ltda	35.25
831.880/1991	Mining Request	Mineração Zelândia Ltda	84.75
835.022/1993	Mining Concession	Mineração Perdizes Ltda	73.50
835.025/1993	Mining Concession	Mineração Perdizes Ltda	100.47
831.092/1983	Mining Concession	Mineração Perdizes Ltda	171.39
830.513/1979	Mining Request	Mineração Monte Carmelo Ltda	457.27