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ASX RELEASE

RC drill results confirms significant high grade HREE at Yttria within Ionic regolith-hosted zones, coincident with thick Scandium Oxide zones grading >100ppm

Highlights:

- Latest assays from RC drilling at Asra's **regolith-hosted Ionic REE[1] and Scandium-Oxide Zones at** the Mt Stirling Project, Leonora, Western Australia.
- Yttria is emerging as a significant **REE and Scandium Deposit** in a sought-after Tier 1 mining jurisdiction for Critical Minerals with consistent near surface REE zones up to **2182ppm TREYO** coincident with thick Scandium oxide zones up to 48m thick and high grades up to **174ppm Sc_2O_3**.
- Unique **62% high ratio of Heavy HREO** to Total TREO demonstrating the high value nature of the Yttria Rare Earth Oxide System.
- Consistent **low levels of Uranium and Thorium** associated with the mineralised intervals at 0.67ppm and 0.84ppm, respectively.

Rare Earth Element REE drill intercepts:

- MSC0269 - **7m @ 669ppm TREYO from 5m (76% HREO)** & 70ppm Sc_2O_3
  - **Including 1m @ <u>2182ppm</u> TREYO from 7m**
- MSC0289: **10m @ 712ppm TREYO from 5m (69% HREO)** & 60ppm Sc_2O_3
- MSC0212; **7m @ 650ppm TREYO from 6m (67% HREO)** & 103ppm Sc_2O_3
- MSC0194; **10m @ 616ppm TREYO from 14m (68% HREO)** & 81ppm Sc_2O_3
  - **Including 5m @ <u>1026ppm</u> TREYO from 14m**
- MSC0251; **7m @ 634ppm TREYO from 11m (64% HREO)** & 85ppm Sc_2O_3
- MSC0210: **8m @ 583ppm TREYO from 13m (71% HREO)** & 82ppm Sc_2O_3

Scandium Oxide Sc_2O_3 drill intercepts:

- MSC0212; **<u>48m</u> @ 90ppm Sc_2O_3 from 3m**
- MSC0249; **13m @ 115ppm Sc_2O_3 from 6m**
- MSC0175; **24m @ 100ppm Sc_2O_3 from 2m**
- MSC0176; **28m @ 111ppm Sc_2O_3 from 2m**
- MSC0214; **25m @ 102ppm Sc_2O_3 from 2m**
- MSC0245; **33m @ 82ppm Sc_2O_3 from 3m**

- ASRA's REE discovery is unique because it is shallow, has a very high ratio of 62% HREO to TREO and is in regolith, and not associated with primary REE-bearing minerals, that require high CAPEX for recovery.

[1] The terminology used in this report for the rare earth element follows the convention of the International Union of Pure and Applied Chemistry (IUPAC), whereby the LREE are defined as La, Ce, Pr, Nd and Sm, and the HREE as Eu, Gd, Tb, Dy, Ho, Er, Tm, Yb, Lu plus Y.

- Yttria is likely associated with a **plume track** that has been postulated to exist between Lynas' Rare Earths Mt Weld Carbonatite near Laverton, and Victory Metals North Stanmore alkaline intrusion, near Cue, in Western Australia.

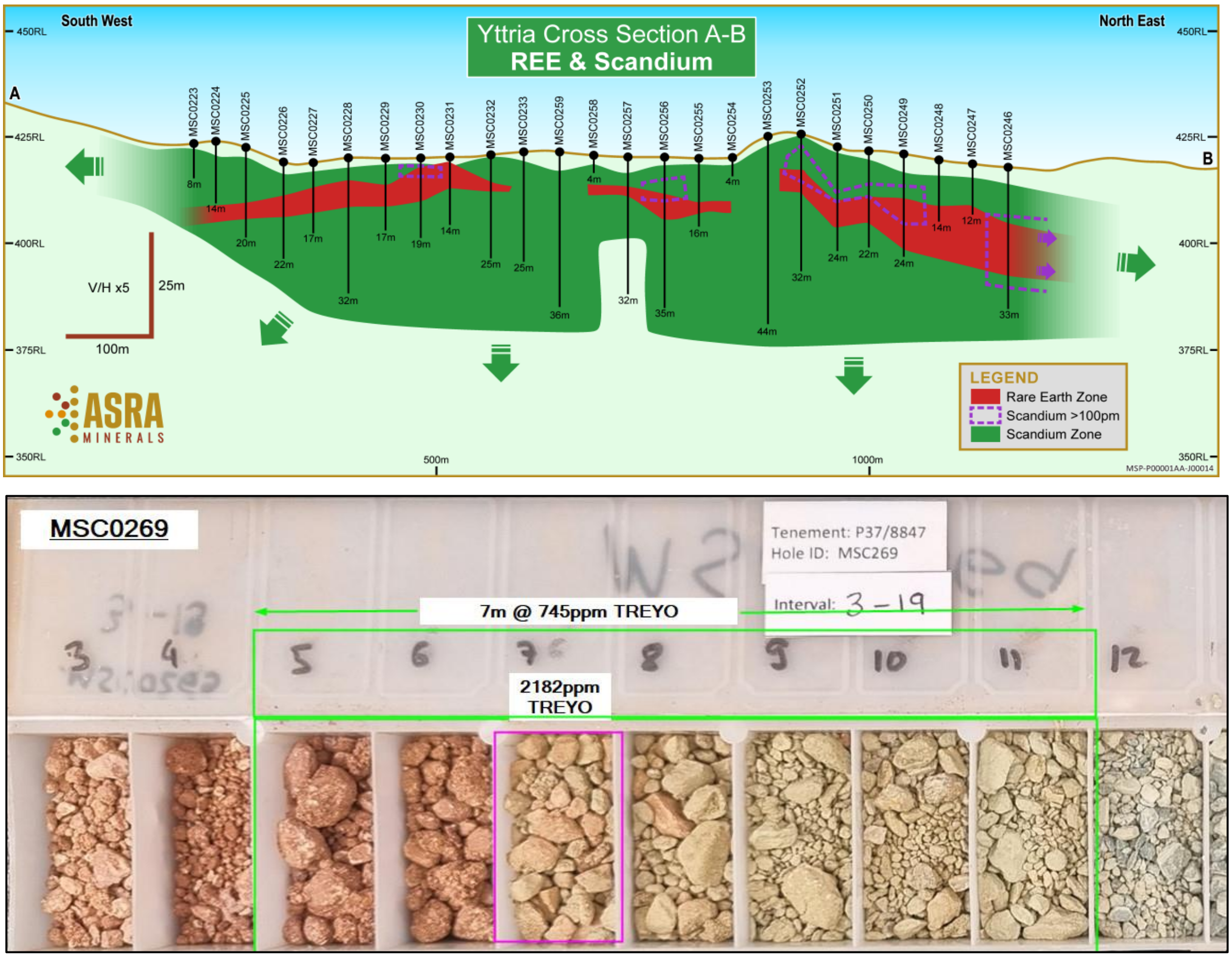


Figure 1 – Yttria Cross Section and RC Chips from high grade TREYO Hole MSC0269

Asra's next steps:

1. Assays from a further 160 drillholes at Yttria are still outstanding and will be progressively reported in the coming weeks.
2. Drilling to date has only tested 3.5km of the REE footprint and Asra plans to test strike continuity of REE and Scandium oxide across the full +20km strike potential at Mt Stirling within its current tenement holding, once all assays are received and interpreted.
3. Further drilling at Yttria has been prioritised and will target extensions of REE bearing clays in the regolith with Cerium (Ce/Ce* <1) being the associated indicator for ionic adsorption REE occurrences.
4. Selected drill samples will be added to the upgraded metallurgical samples being prepared for test work.

Asra's REE Technical Consultant, **Professor Ken Collerson**, the driving force behind the latest technical analysis and interpretation using detailed chemical signature comparisons with other known REE regolith (clay) - hosted deposits commented:

“The significance of these results shows the majority of Yttria assays are similar to other regolith-hosted systems seen throughout the highly prospective region.

However, what ASRA has discovered at Yttria is clay-bearing regolith with a low Ce/Ce* <1 , and a unique and significantly valuable heavy REEs ratio of 62% indicating a high content of valuable Dysprosium (Dy) and Terbium (Tb)”.

*What has also emerged from this discovery is the homogenous and large presence of significantly elevated **Scandium Oxide (Sc_2O_3)** throughout the entire regolith with values up to 174ppm.*

*This now reveals **potential economic levels of Scandium are pervasive throughout the entire regolith profile at Yttria**”. Interpretation of specific chemical ratios within the Yttria regolith assays shows that the mafic/ultramafic intrusion below Yttria is a comparatively rare **plume-generated alkaline intrusion**. This is a very significant discovery as it is believed that a structural ‘corridor of prospectivity’ exists **between Lynas’ Rare Earths Mt Weld Carbonatite near Laverton and Victory Metals North Stanmore alkaline intrusion near Cue[2,3]**.*

The scale and potential of the Yttria REE Discovery and its location close to infrastructure, has added significant value to Asra’s developing exploration strategy and further consummates its growing list of prospective mineralised zones, creating momentum for future development of Asra Resources”.

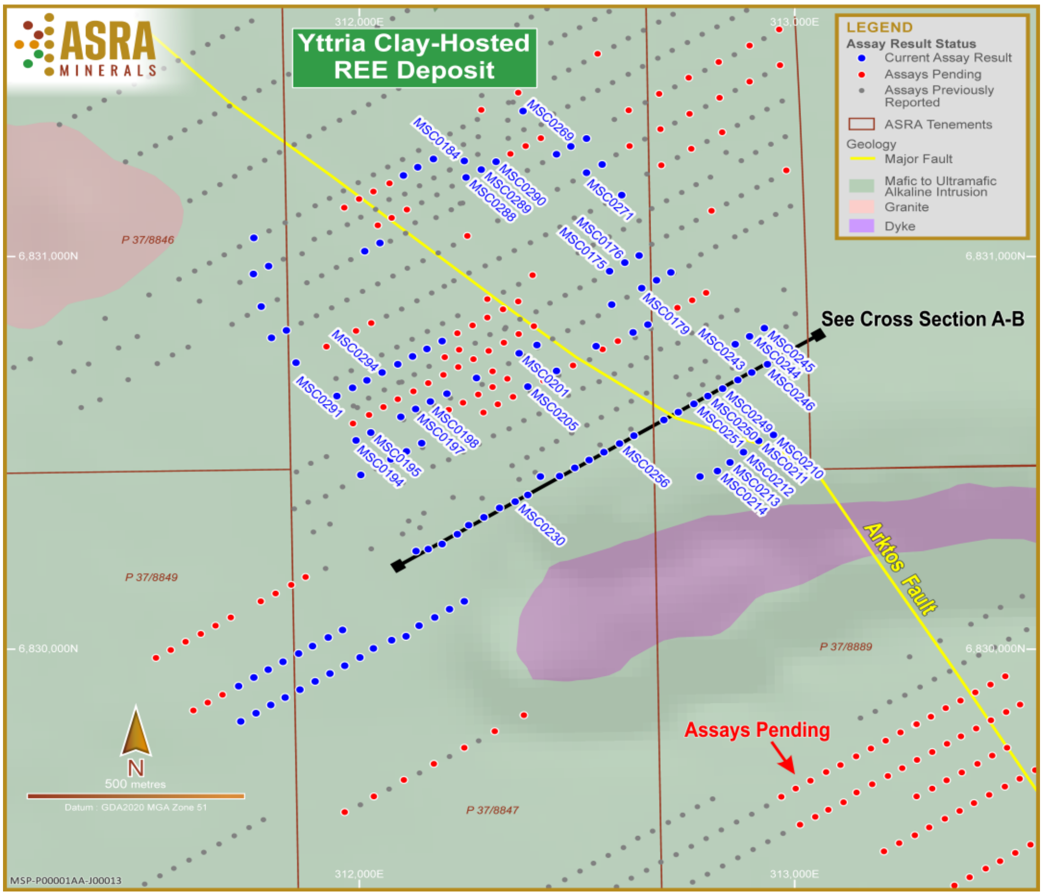
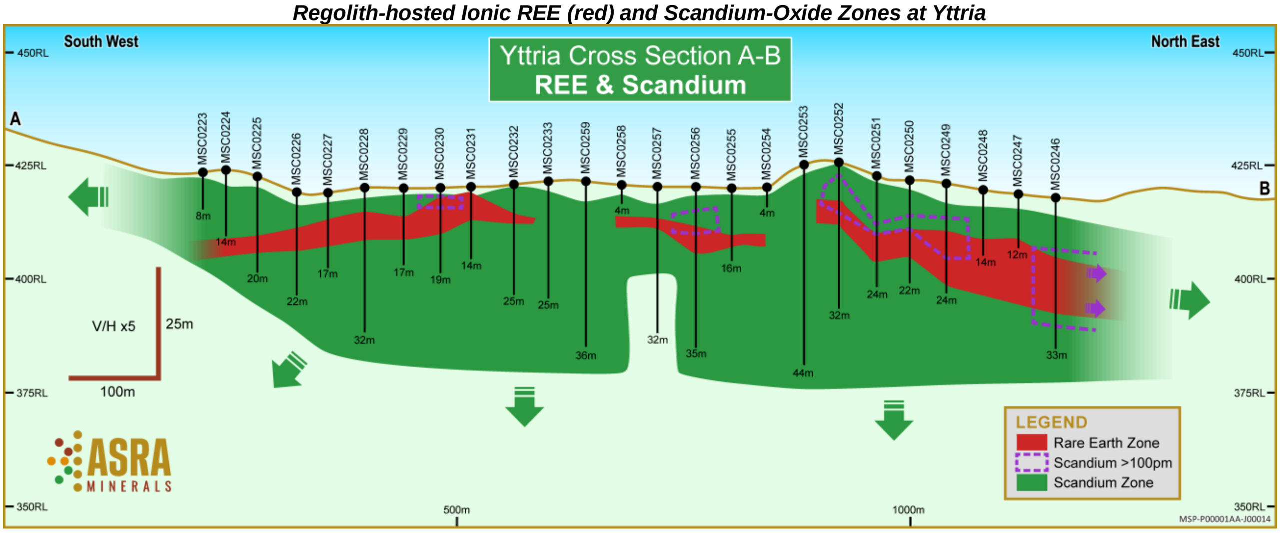


Figure 2 – Yttria Drill Hole Plan at the Mt Stirling Project

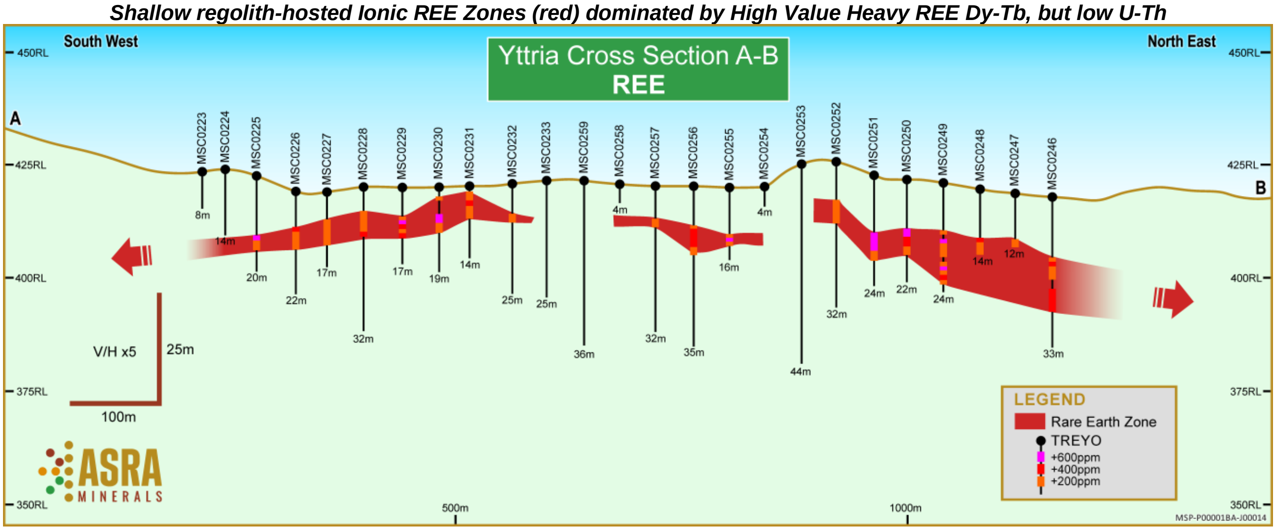
[2] Fiorentini, M.L., Choi, E., Giuliani, A., O’Neill, C.J., Maas, R., Pirajno, F., Foley, F., Stephen, 2020. Bushveld super plume drove Proterozoic magmatism and metallogenesis in Australia. Sci. Rep. 10 (1), 1–10."
[3] Refer to Victory Goldfields ASX announcement titled “Major Alkaline Igneous Complex Discovered” dated 10th August 2022.

The cross sections below at Yttria illustrates the shallow **Rare Earth Rich Oxide Zone (in red)** which sits within a broader coincident zone of **Scandium Oxide (green)**, which is extensive from 2m below surface and is open at depth and along strike.

Regolith-hosted Ionic REE (red) and Scandium-Oxide Zones at Yttria



Shallow regolith-hosted Ionic REE Zones (red) dominated by High Value Heavy REE Dy-Tb, but low U-Th



Highly Anomalous Scandium-Oxide enrichment from 2m below surface; Open in all Directions

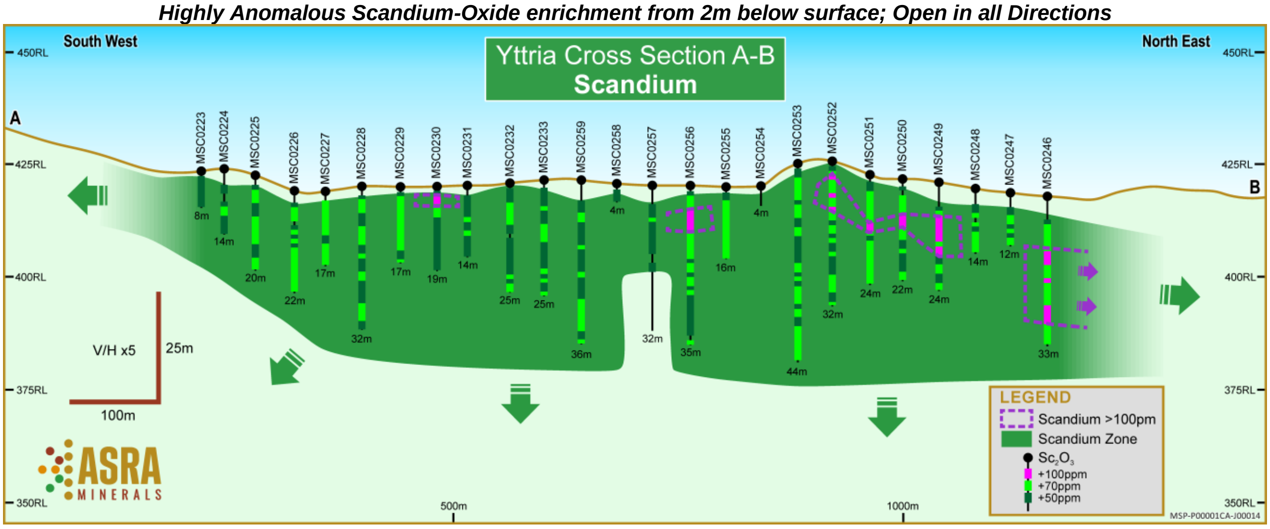


Figure 3 – Yttria Cross Section showing REE zones and Coincident Scandium Oxide

Asra Minerals Limited (ASX: ASR) is pleased to announce further exciting Rare Earth Element (REE) results from 113 drill holes resulting in significant REE [4] occurrences together with critical mineral, Scandium (Sc) at the company's Yttria regolith-hosted discovery at its Mt Stirling Project, located in the Eastern Goldfields of Western Australia.

Asra Executive Chairman, Mr Paul Summers, provides the following update:

"There is little doubt as to the complexity of an understanding of REE's. We have espoused in the past as to the uniqueness of ASRA's REE discovery, the lack of Thorium and Uranium, the regolith and shallow nature of the REE occurrences and the very high ratio of HREO to TREO so far unmatched. However, the learning process continues as without an economic liberation of REE's the uniqueness of the occurrences means little.

Unlike some discoveries being announced in the elevated hunt for REE's, ASRA has been very open with its entire data, revealing the extent and geochemical variability of its discovery, the path it has taken, and the direction forward.

The past months have seen an extended period of gathering and understanding of data of which the new geological team have worked very hard to achieve and have arrived at an exciting turning point for the Company.

Prof Collerson has determined three milestones that provide ASRA with a definitive and positive path forward:

1. *Yttria is a regolith hosted, ionic REE deposit. Non-radioactive and potentially with a low CAPEX requirement, ionic clays are also the only type of deposit that contains important quantities of both light and heavy rare earth elements.*

   Only a handful of companies are currently making strides in exploring and developing ionic clay assets outside of China and Myanmar. Ionic Rare Earths' (ASX: IXR) Makuutu project in Uganda is among them with current mineral resource estimate of 532mt at 640ppm TREO, at a cut-off grade of 200ppm TREO-cerium-oxide.

   There are significant project and cost advantages associated with ionic clay projects like Yttria compared to the more common hard rock REE projects.

2. *The role of Cerium (Ce) during regolith oxidation as explained by Prof Collerson in his technical commentary below, details the importance of Ce/Ce* in sample selection and liberation process.*

3. *The presence of Sc throughout the entire regolith drilled so far has revealed values up to 174ppm* Sc_2O_3 *with a present average 74ppm. These numbers indicate that Sc occurs at economic levels throughout the entire regolith profile at Yttria. Sc's primary historical use has been as a super alloy to strengthen aluminum and protect it against corrosion. A small amount of Sc increases aluminum strength exponentially. Although Sc's primary use has been as an alloy with aluminum, solid oxide fuel cells are becoming an emerging growth area as are lightweight electric vehicles. Growing technology for storing energy and potential applications in the automotive industry will likely create opportunities for the market in the coming years.*

   Traditionally Scandium production has been limited in line with limited access to this resource, but the Sc market is expected to register a CAGR of over 10% by 2027. (Refer to https://www.reportlinker.com/p06420647/?utm_source=GNW).

[4] The terminology used in this report for the rare earth element follows the convention of the International Union of Pure and Applied Chemistry (IUPAC), whereby the LREE are defined as La, Ce, Pr, Nd and Sm, and the HREE as Eu, Gd, Tb, Dy, Ho, Er, Tm, Yb, Lu plus Y.

These advances in ASRA's understanding of its Mt Stirling REE project provides great confidence with our re-focus on metallurgy and the science of liberation of REE's and critical minerals.

Professor Ken Collerson's Technical Explanations:

Discovery of ionic clay hosted REE deposits requires both an understanding of nature of geochemistry of the basement lithologies below the regolith, as well as the behaviour of REEs during oxidation. Cerium (Ce) provides an important clue.

Oxidation at the Earth's surface enables Ce to occur as the mobile tetravalent state Ce^{4+}. As a result, in regolith profiles the uppermost weathering zone develops an excess of Ce (expressed as a positive Ce anomaly; expressed as Ce/Ce*>1)[1]. However, in deeper zones in the profile generally shows a Ce deficit (i.e. Ce/Ce* <1), because of Ce^{4+} loss. This process causes the concentration of HREEs to increase in deeper parts of the weathering profile.

The removal of tetravalent Ce^{4+} produces a strong 'negative' Ce anomaly relative to the neighbouring LREEs, La and Pr in the chondrite normalised plots. Chondrite normalisation is used to smooth out the variable concentrations in sequential plots caused by the 'Oddo-Harkins' effect, i.e., the fact that elements with even atomic numbers >5 are more stable and therefore, are more concentrated than elements with odd atomic numbers.

Most igneous rocks, show smooth Chondrite-normalised REE patterns extending from the LREE between lanthanum (La), cerium (Ce), praseodymium (Pr), neodymium (Nd) samarium (Sm), gadolinium (Gd) gadolinium (Gd), terbium (Tb), dysprosium (Dy), holmium (Ho), erbium (Er), thulium (Tm), ytterbium (Yb) to lutetium (Lu). Europium (Eu) in many igneous rocks shows a negative or positive spike in the shape of the REE pattern which is commonly interpreted to reflect plagioclase or fluorite removal or gain.

An example of a chondrite normalised plot for two samples from MSC0290, one from 10m the other from 16m are shown in Figure 4.

Both show smooth LREE depleted and HREE enriched profiles. However, the sample from the upper part of the regolith (MSC0290-10m) shows a positive spike in Ce that reflects gain of Ce^{4+}.

By contrast, the deeper sample (MSC0290-16m) shows a negative spike that reflects loss of Ce^{4+}. As a result, sample MSC0290-10m therefore has a Ce/Ce* of 12.5 while MSC0290-16m has a Ce/Ce* of 0.4.

Ce/Ce* ratios <1 reflect the loss of mobile Ce^{4+} from deeper parts of weathering profiles while Ce/Ce* ratios >1 reflect the gain of Ce^{4+} at shallower regolith levels.

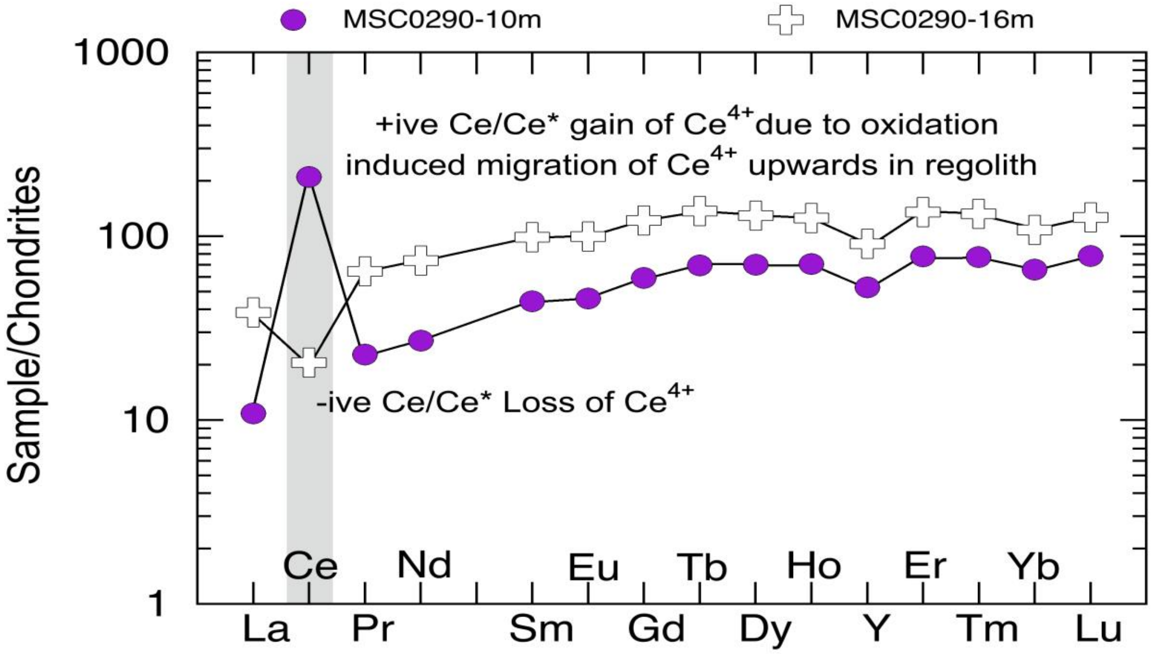


Figure 4 – Chondrite normalised plot showing variation in Ce anomalies in the upper part of the regolith profile (MSC0290 -10m) where the positive spike reflects gain of Ce4+, and in the deeper part of the profile (MSC0290-16m) where the negative Ce spike reflects loss of Ce4+.

This understanding has important metallurgical consequences, because REE leachable ionic clays and regolith's where REEs are also associated with hydroxyl complexes, typically have Ce/Ce* << 1 (see Figure 5).

TREYO concentrations versus Ce/Ce* anomaly, for all assayed samples from Yttria are plotted against comparative data for ionic clay mineralisation at Makuutu[5] in Uganda, and for ionic clay REE mineralisation in China, Brazil, Madagascar [6],[7] and Thailand[8].

Assays for the Yttria and Makuutu samples occupy overlapping fields, with the majority of samples plotting with Ce/Ce* <1 in the same quadrant as ionic clay REE mineralisation from China, Brazil, Madagascar and Thailand.

Note: samples with Ce/Ce* >1 with elevated TREYO concentrations, simply reflect the presence of high concentrations of low value Ce.

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[5] Date from ASX-IXR announcement Jan 6 2022).
[6] Moldoveanu G., & Papangelakis V. (2016) An overview of rare-earth recovery by ion-exchange leaching from ion-adsorption clays of various origins, Mineralogical Magazine. DOI: 10.1180/minmag.2016.080.051.
[7] Ram et al., (2019) Characterisation of a rare earth element and zirconium bearing ion-adsorption clay deposit in Madagascar. Chemical Geology 522:93-107).
[8] Sanematsuet al., (2013) Geochemical and mineralogical characteristics of ion-adsorption type REE mineralisation in Phuket, Thailand. Minerl Deposita 48: 437-451.

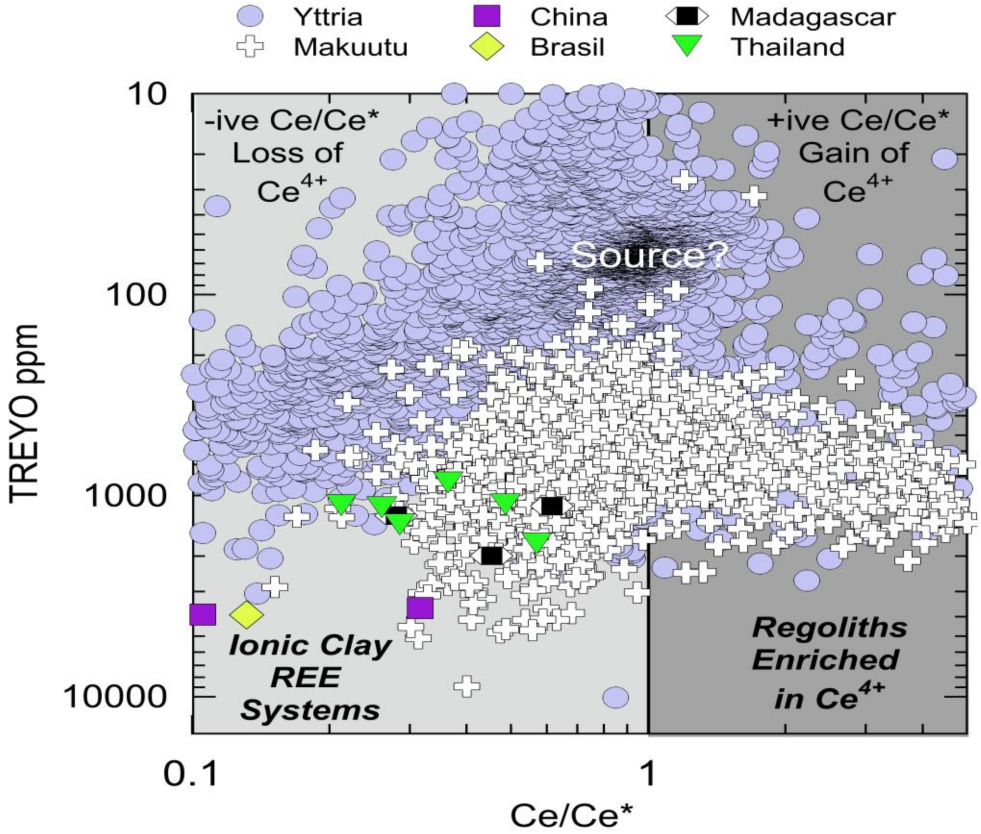

Figure 5 – Plot of total REE- Yttrium Oxide (TREYO) concentrations versus Ce/Ce* in Yttria and Makuutu mineralisation. Comparative data are also shown for ionic clay deposits in China, Brazil, Madagascar, Thailand.

The majority of Yttria assays have negative Ce/Ce* anomalies and are chemically similar to other regolith hosted ionic clay REE systems. However, the Yttria regolith with Ce/Ce* <1 , differs from many of the other global examples because of its extreme enrichment in heavy REEs, with a mean HREYO/TREYO ratio of 62%, indicating the presence of significant high value Dysprosium and Terbium DyTb.

The overlap of a significant number Yttria assays with a Ce/Ce* of ~1, a value typical of unoxidised primary igneous rocks, and TREYO concentration of ~ 80 ppm in Figure 5 is interpreted to reflect the composition of the primary mafic to ultramafic alkaline source intrusion for the Yttria REE enriched regolith.

Thus, the enrichment REYs in the regolith profile at Yttria from close to surface to 20m is entirely consistent with concentration profiles seen in ionic clay REE systems on other continents.

Below ~20m from surface at Yttria, the REYs basically emulate concentrations in the mafic to ultramafic alkaline source.

The presence of significantly elevated Sc throughout the entire regolith column averaging 74 ppm Sc_2O_3, but with values up to 174ppm Sc_2O_3, shows that Sc_2O_3 occurs at potentially at economic levels throughout the entire regolith profile at Yttria. Scandium behaviour therefore appears to be decoupled from the other REEs in the weathering profile.

The mean Nb/Ta ratio of 17.9, of more than 2000 Yttria regolith assays with Nb/Ta >13, unequivocally shows that the mafic to ultramafic intrusion below Yttria is a comparatively rare plume generated alkaline intrusion. This alkaline magmatic event was likely associated with an early Proterozoic plume track that has been postulated to exist between Lynas Rare Earths Mt Weld Carbonatite near Laverton and Victory Metals North Stanmore alkaline intrusion near Cue[9,10].

Such knowledge has added significant value to Asra's developing exploration model.

This announcement has been authorised for release by the Board.

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About Asra:

Asra Minerals' flagship Mt Stirling Project in Western Australia's Eastern Goldfields hosts 10 advanced gold prospects as well as a unique and abundant inventory of clean heavy rare earths elements and critical minerals.

Asra also has free-carried gold joint ventures in the WA Goldfields with Zuleika (ASX: ZAG) and Loyal Lithium (ASX: LLI) as well as a large equity holding in LLI.

Asra owns and manages the Tarmoola Pastoral Station underlying its Mt Stirling Project and also extends north and east to cover Red 5's KOTH Gold Operation (ASX: RED) and Aeris' Jaguar Mining Centre (ASX: AIS).

REE and Sc: A high ratio of heavy rare earths to total rare earths (0.65 to 1) and a lack of radioactivity distinguish the company's Yttria and Wishbone prospects which host all five of the most critical REEs: dysprosium, terbium, europium, neodymium, and yttrium, as well as significant anomalous concentrations of cobalt and scandium.

GOLD: Located near the mining towns of Leonora and Kalgoorlie, Mt Stirling has a current JORC compliant Mineral Resource of gold and neighbours Red 5's King of the Hills mine. The region has recently produced approximately 14Moz of gold from mines such as Tower Hills, Sons of Gwalia, Thunderbox, Harbour Lights and Gwalia. Mt Stirling is nearby to excellent infrastructure including road, rail, and mills.

[9]Fiorentini, M.L., Choi, E., Giuliani, A., O'Neill, C.J., Maas, R., Pirajno, F., Foley, F., Stephen, 2020. Bushveld super plume drove Proterozoic magmatism and metallogenesis in Australia. Sci. Rep. 10 (1), 1–10."

[10]Refer to Victory Goldfields ASX announcement titled "Major Alkaline Igneous Complex Discovered" dated 10thAugust 2022.

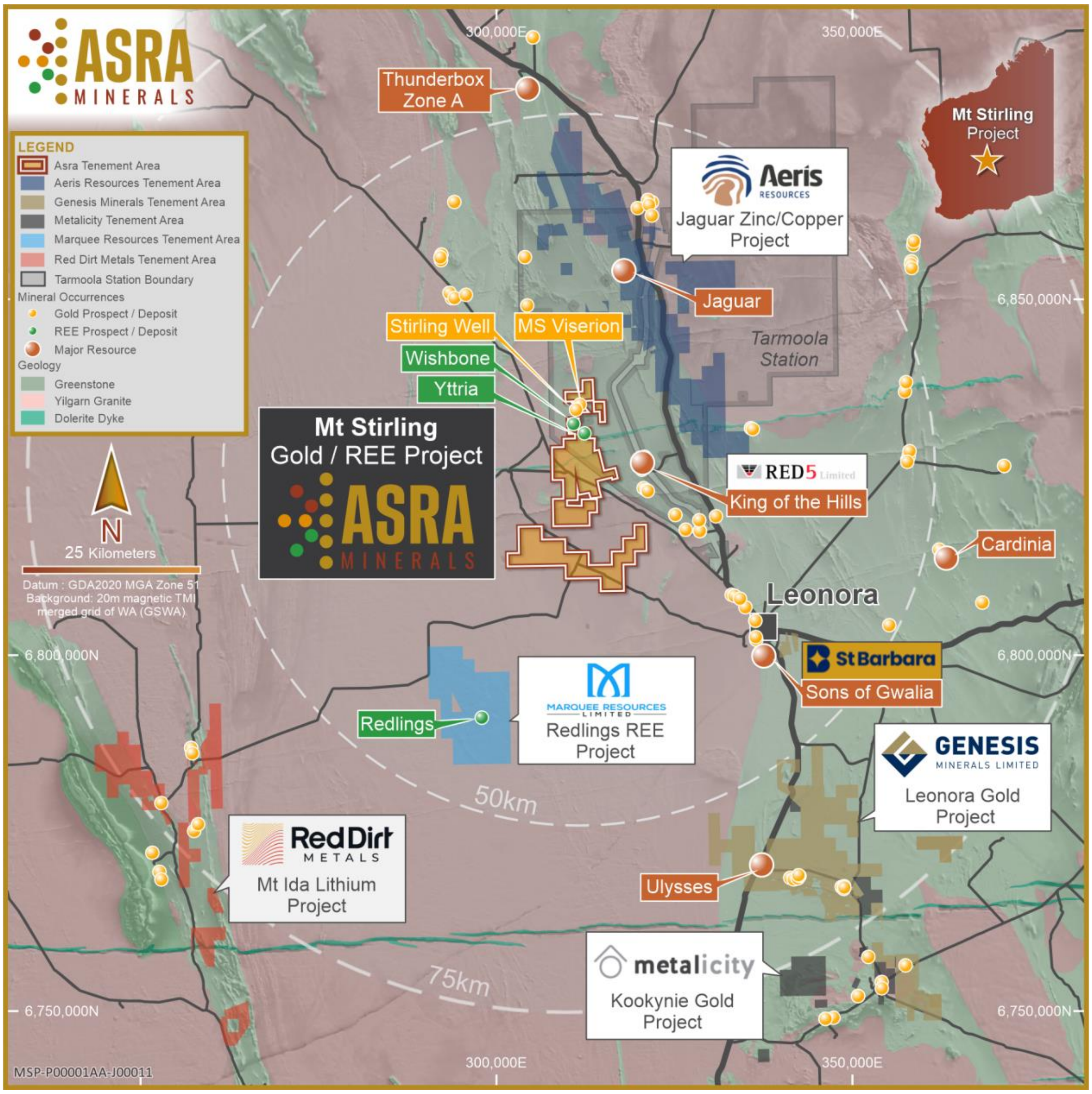

Figure 6 – Mt Stirling Project location in the northeastern Goldfields of Western Australia.

Competent Person Statement

The information in this report relating to exploration results is based on information compiled, reviewed and relied upon by Emeritus Professor K.D. Collerson (KDC Geo Consulting). Professor Collerson BSc (Hons), PhD., FAusIMM has sufficient experience 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 'Australian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves'. Professor Collerson consents to the inclusion in the report of the matters based on information in the form and context in which it appears.

Cautionary Note Regarding Forward-Looking Statements

This news release contains “forward-looking information” within the meaning of applicable securities laws. Generally, any statements that are not historical facts may contain forward-looking information, and forward looking information can be identified by the use of forward-looking terminology such as “plans”, “expects” or “does not expect”, “is expected”, “budget” “scheduled”, “estimates”, “forecasts”, “intends”, “anticipates” or “does not anticipate”, or “believes”, or variations of such words and phrases or indicates that certain actions, events or results “may”, “could”, “would”, “might” or “will be” taken, “occur” or “be achieved.” Forward-looking information is based on certain factors and assumptions management believes to be reasonable at the time such statements are made, including but not limited to, continued exploration activities, Gold and other metal prices, the estimation of initial and sustaining capital requirements, the estimation of labour costs, the estimation of mineral reserves and resources, assumptions with respect to currency fluctuations, the timing and amount of future exploration and development expenditures, receipt of required regulatory approvals, the availability of necessary financing for the Project, permitting and such other assumptions and factors as set out herein. apparent inconsistencies in the figures shown in the MRE are due to rounding.

Forward-looking information is subject to known and unknown risks, uncertainties and other factors that may cause the actual results, level of activity, performance or achievements of the Company to be materially different from those expressed or implied by such forward-looking information, including but not limited to: risks related to changes in Gold prices; sources and cost of power and water for the Project; the estimation of initial capital requirements; the lack of historical operations; the estimation of labour costs; general global markets and economic conditions; risks associated with exploration of mineral deposits; the estimation of initial targeted mineral resource tonnage and grade for the Project; risks associated with uninsurable risks arising during the course of exploration; risks associated with currency fluctuations; environmental risks; competition faced in securing experienced personnel; access to adequate infrastructure to support exploration activities; risks associated with changes in the mining regulatory regime governing the Company and the Project; completion of the environmental assessment process; risks related to regulatory and permitting delays; risks related to potential conflicts of interest; the reliance on key personnel; financing, capitalisation and liquidity risks including the risk that the financing necessary to fund continued exploration and development activities at the Project may not be available on satisfactory terms, or at all; the risk of potential dilution through the issuance of additional common shares of the Company; the risk of litigation.

Although the Company has attempted to identify important factors that cause results not to be as anticipated, estimated or intended, there can be no assurance that such forward-looking information will prove to be accurate, as actual results and future events could differ materially from those anticipated in such information. Accordingly, readers should not place undue reliance on forward-looking information. Forward looking information is made as of the date of this announcement and the Company does not undertake to update or revise any forward-looking information this is included herein, except in accordance with applicable securities laws.

Appendix 1: Yttria Drillhole Collars

#	Hole ID	Easting GDA94	Northing GDA94	RL	Az	Dip	Depth (m)	Tenement	DrillCo
1	**MSC0175**	312575.0	6830961.0	416.5	0	-90	37	P37/8847	AAC
2	**MSC0176**	312610.0	6830983.0	417.5	0	-90	38	P37/8847	AAC
3	**MSC0177**	312643.0	6831001.0	418.6	0	-90	34	P37/8847	AAC
4	**MSC0178**	312580.0	6830876.0	418.0	0	-90	49	P37/8847	AAC
5	**MSC0179**	312649.0	6830918.0	417.4	0	-90	31	P37/8847	AAC
6	**MSC0180**	312683.0	6830938.0	418.0	0	-90	26	P37/8889	AAC
7	**MSC0181**	312716.0	6830958.0	418.4	0	-90	27	P37/8889	AAC
8	**MSC0182**	312629.0	6830805.0	419.2	0	-90	30	P37/8847	AAC
9	**MSC0183**	312663.0	6830825.0	419.0	0	-90	34	P37/8847	AAC
10	**MSC0184**	312241.0	6831242.0	414.3	0	-90	23	P37/8847	AAC
11	**MSC0185**	312012.0	6831012.0	418.4	0	-90	21	P37/8847	AAC
12	**MSC0186**	312047.0	6831033.0	417.9	0	-90	28	P37/8847	AAC
13	**MSC0187**	311757.0	6831046.0	418.0	0	-90	4	P37/8846	AAC
14	**MSC0188**	311756.0	6830954.0	419.8	0	-90	6	P37/8846	AAC
15	**MSC0189**	311791.0	6830974.0	418.1	0	-90	5	P37/8846	AAC
16	**MSC0190**	311774.0	6830871.0	420.8	0	-90	9	P37/8846	AAC
17	**MSC0191**	311797.6	6830791.4	423.4	0	-90	8	P37/8846	AAC
18	**MSC0192**	311831.9	6830810.3	422.0	0	-90	7	P37/8846	AAC
19	**MSC0193**	311854.0	6830728.0	421.7	0	-90	6	P37/8847	AAC
20	**MSC0194**	311992.0	6830530.0	423.7	0	-90	26	P37/8847	AAC
21	**MSC0195**	312026.0	6830550.0	421.8	0	-90	31	P37/8847	AAC
22	**MSC0196**	312095.0	6830590.0	420.1	0	-90	22	P37/8847	AAC
23	**MSC0197**	312129.0	6830610.0	418.0	0	-90	25	P37/8847	AAC
24	**MSC0198**	312163.0	6830629.0	418.6	0	-90	15	P37/8847	AAC
25	**MSC0199**	312201.0	6830649.0	421.5	0	-90	11	P37/8847	AAC
26	**MSC0200**	312269.0	6830689.0	421.8	0	-90	19	P37/8847	AAC
27	**MSC0201**	312367.0	6830752.0	418.9	0	-90	29	P37/8847	AAC
28	**MSC0202**	312408.0	6830773.0	417.8	0	-90	36	P37/8847	AAC
29	**MSC0203**	312544.0	6830770.0	420.0	0	-90	33	P37/8847	AAC
30	**MSC0204**	312453.0	6830707.0	419.0	0	-90	45	P37/8847	AAC
31	**MSC0205**	312387.0	6830667.0	419.6	0	-90	25	P37/8847	AAC
32	**MSC0206**	312143.0	6830523.0	420.7	0	-90	17	P37/8847	AAC
33	**MSC0207**	312108.0	6830502.0	422.3	0	-90	27	P37/8847	AAC
34	**MSC0208**	312072.0	6830482.0	424.0	0	-90	28	P37/8847	AAC
35	**MSC0209**	312003.0	6830442.0	427.4	0	-90	19	P37/8847	AAC
36	**MSC0210**	312952.0	6830544.0	422.0	0	-90	38	P37/8889	AAC
37	**MSC0211**	312918.0	6830529.0	422.0	0	-90	36	P37/8889	AAC
38	**MSC0212**	312883.0	6830500.0	423.4	0	-90	51	P37/8889	AAC
39	**MSC0213**	312852.0	6830474.0	422.7	0	-90	39	P37/8889	AAC
40	**MSC0214**	312823.0	6830452.0	421.4	0	-90	56	P37/8889	AAC
41	**MSC0215**	312783.0	6830438.0	423.2	0	-90	30	P37/8889	AAC
42	**MSC0216**	312241.0	6830120.0	423.6	0	-90	15	P37/8847	AAC
43	**MSC0217**	312207.0	6830100.0	421.2	0	-90	7	P37/8847	AAC
44	**MSC0218**	312173.0	6830079.0	424.0	0	-90	7	P37/8847	AAC

#	Hole ID	Easting GDA94	Northing GDA94	RL	Az	Dip	Depth (m)	Tenement	DrillCo
45	**MSC0219**	312137.0	6830058.0	425.3	0	-90	7	P37/8847	AAC
46	**MSC0220**	312107.0	6830031.0	427.2	0	-90	4	P37/8847	AAC
47	**MSC0221**	312074.0	6830021.0	430.3	0	-90	4	P37/8847	AAC
48	**MSC0222**	312032.0	6830000.0	431.6	0	-90	4	P37/8847	AAC
49	**MSC0223**	312130.0	6830248.0	423.3	0	-90	8	P37/8847	AAC
50	**MSC0224**	312158.0	6830253.0	423.5	0	-90	14	P37/8847	AAC
51	**MSC0225**	312190.0	6830266.0	421.3	0	-90	20	P37/8847	AAC
52	**MSC0226**	312225.0	6830291.0	418.4	0	-90	22	P37/8847	AAC
53	**MSC0227**	312251.0	6830314.0	419.3	0	-90	17	P37/8847	AAC
54	**MSC0228**	312286.0	6830334.0	420.2	0	-90	32	P37/8847	AAC
55	**MSC0229**	312322.0	6830358.0	419.9	0	-90	17	P37/8847	AAC
56	**MSC0230**	312358.0	6830374.0	420.2	0	-90	19	P37/8847	AAC
57	**MSC0231**	312387.0	6830391.0	420.2	0	-90	16	P37/8847	AAC
58	**MSC0232**	312416.0	6830438.0	421.5	0	-90	25	P37/8847	AAC
59	**MSC0233**	312460.0	6830439.0	420.7	0	-90	25	P37/8847	AAC
60	**MSC0234**	312001.0	6829977.0	430.4	0	-90	7	P37/8847	AAC
61	**MSC0235**	311966.0	6829956.0	430.2	0	-90	8	P37/8847	AAC
62	**MSC0236**	311932.0	6829936.0	430.0	0	-90	4	P37/8847	AAC
63	**MSC0237**	311898.0	6829916.0	430.5	0	-90	4	P37/8847	AAC
64	**MSC0238**	311863.0	6829895.0	432.4	0	-90	4	P37/8847	AAC
65	**MSC0239**	311829.0	6829875.0	432.9	0	-90	4	P37/8849	AAC
66	**MSC0240**	311796.0	6829856.0	432.3	0	-90	4	P37/8849	AAC
67	**MSC0241**	311762.0	6829835.0	432.2	0	-90	7	P37/8849	AAC
68	**MSC0242**	311727.0	6829814.0	435.1	0	-90	4	P37/8849	AAC
69	**MSC0243**	312864.0	6830775.0	420.8	0	-90	18	P37/8889	AAC
70	**MSC0244**	312897.0	6830795.0	421.0	0	-90	38	P37/8889	AAC
71	**MSC0245**	312931.0	6830816.0	421.7	0	-90	36	P37/8889	AAC
72	**MSC0246**	312938.0	6830724.0	417.7	0	-90	33	P37/8889	AAC
73	**MSC0247**	312902.0	6830703.0	418.7	0	-90	12	P37/8889	AAC
74	**MSC0248**	312870.0	6830684.0	419.1	0	-90	14	P37/8889	AAC
75	**MSC0249**	312835.0	6830662.0	420.7	0	-90	24	P37/8889	AAC
76	**MSC0250**	312801.0	6830643.0	421.2	0	-90	22	P37/8889	AAC
77	**MSC0251**	312769.0	6830623.0	422.1	0	-90	24	P37/8889	AAC
78	**MSC0252**	312733.0	6830602.0	425.5	0	-90	32	P37/8889	AAC
79	**MSC0253**	312700.0	6830582.0	425.0	0	-90	44	P37/8889	AAC
80	**MSC0255**	312631.0	6830542.0	420.0	0	-90	16	P37/8847	AAC
81	**MSC0256**	312598.0	6830522.0	420.0	0	-90	35	P37/8847	AAC
82	**MSC0257**	312562.0	6830500.0	420.1	0	-90	32	P37/8847	AAC
83	**MSC0258**	312528.0	6830480.0	420.4	0	-90	4	P37/8847	AAC
84	**MSC0259**	312495.0	6830460.0	421.0	0	-90	36	P37/8847	AAC
85	**MSC0260**	311961.0	6830047.0	434.3	0	-90	8	P37/8847	AAC
86	**MSC0261**	311928.0	6830028.0	435.0	0	-90	8	P37/8847	AAC
87	**MSC0262**	311892.0	6830006.0	435.0	0	-90	8	P37/8847	AAC
88	**MSC0263**	311860.0	6829987.0	435.8	0	-90	11	P37/8847	AAC
89	**MSC0264**	311824.0	6829966.0	436.9	0	-90	8	P37/8849	AAC

#	Hole ID	Easting GDA94	Northing GDA94	RL	Az	Dip	Depth (m)	Tenement	DrillCo
90	**MSC0265**	311790.0	6829946.0	434.8	0	-90	8	P37/8849	AAC
91	**MSC0266**	311757.0	6829926.0	434.0	0	-90	8	P37/8849	AAC
92	**MSC0267**	311722.0	6829904.0	435.1	0	-90	8	P37/8849	AAC
93	**MSC0268**	312453.0	6831259.0	415.7	0	-90	21	P37/8847	AAC
94	**MSC0269**	312486.0	6831279.0	415.5	0	-90	19	P37/8847	AAC
95	**MSC0270**	312522.0	6831299.0	412.4	0	-90	21	P37/8847	AAC
96	**MSC0271**	312522.0	6831212.0	418.0	0	-90	30	P37/8847	AAC
97	**MSC0272**	312558.0	6831233.0	416.8	0	-90	39	P37/8847	AAC
98	**MSC0273**	312603.0	6831155.0	414.2	0	-90	28	P37/8847	AAC
99	**MSC0278**	312376.0	6831369.0	413.1	0	-90	24	P37/8847	AAC
100	**MSC0279**	312101.0	6831205.0	416.5	0	-90	10	P37/8847	AAC
101	**MSC0280**	312134.0	6831226.0	416.9	0	-90	11	P37/8847	AAC
102	**MSC0281**	312170.0	6831247.0	414.1	0	-90	19	P37/8847	AAC
103	**MSC0288**	312245.0	6831200.0	415.2	0	-90	33	P37/8847	AAC
104	**MSC0289**	312280.0	6831220.0	416.0	0	-90	22	P37/8847	AAC
105	**MSC0290**	312314.0	6831240.0	416.0	0	-90	24	P37/8847	AAC
106	**MSC0291**	311948.0	6830643.0	421.0	0	-90	26	P37/8847	AAC
107	**MSC0292**	311984.0	6830664.0	421.0	0	-90	20	P37/8847	AAC
108	**MSC0293**	312017.0	6830683.0	420.0	0	-90	22	P37/8847	AAC
109	**MSC0294**	312052.0	6830703.0	418.8	0	-90	17	P37/8847	AAC
110	**MSC0295**	312088.0	6830724.0	416.2	0	-90	19	P37/8847	AAC
111	**MSC0296**	312122.0	6830744.0	416.1	0	-90	13	P37/8847	AAC
112	**MSC0297**	312155.0	6830763.0	417.8	0	-90	13	P37/8847	AAC
113	**MSC0298**	312190.0	6830783.0	418.9	0	-90	10	P37/8847	AAC

Appendix 2: Drillhole Assays >200ppm TREYO

The terminology used in this report for the rare earth element follows the convention of the International Union of Pure and Applied Chemistry (IUPAC), whereby the LREE are defined as La, Ce, Pr, Nd and Sm, and the HREE as Eu, Gd, Tb, Dy, Ho, Er, Tm, Yb, Lu plus Y.

Hole_ID	From (m)	To (m)	TREYO ppm	HREO/ TREO	Sc_2O_3	La_2O_3	CeO_2	Pr_6O_{11}	Nd_2O_3	Sm_2O_3	Eu_2O_3	Gd_2O_3	Tb_4O_7	Dy_2O_3	Ho_2O_3	Er_2O_3	Tm_2O_3	Yb_2O_3	Lu_2O_3	Y_2O_3	Sample ID
MSC0175	13.0	14.0	272.99	0.53	110.44	21.23	35.99	10.44	47.59	13.34	4.57	14.87	2.43	15.03	2.90	8.22	1.38	8.15	1.38	85.46	MSR0568
MSC0175	14.0	15.0	240.34	0.60	119.64	14.43	29.97	7.36	34.64	10.37	3.86	13.02	2.28	14.81	2.94	8.58	0.83	5.50	0.94	90.80	MSR0569
MSC0175	18.0	19.0	357.34	0.79	85.89	10.85	24.94	4.69	23.91	9.46	4.62	19.36	3.69	27.20	6.20	18.75	0.87	5.03	0.93	196.83	MSR0574
MSC0176	9.0	10.0	276.73	0.34	136.51	30.84	67.44	12.44	56.10	15.42	5.13	13.95	2.19	11.94	2.08	5.71	0.86	5.29	0.73	46.61	MSR2916
MSC0176	10.0	11.0	216.97	0.44	127.31	20.99	43.73	8.35	38.02	11.06	3.52	10.05	1.72	10.39	1.87	5.58	2.75	14.35	2.56	42.03	MSR2917
MSC0176	11.0	12.0	486.31	0.65	92.03	36.83	40.66	13.17	61.00	17.05	6.86	27.20	4.66	30.76	6.39	18.64	1.11	7.44	1.22	213.34	MSR0578
MSC0176	14.0	15.0	201.72	0.47	125.77	13.02	49.01	6.85	29.04	8.38	3.00	8.91	1.69	11.30	2.10	6.29	1.19	7.47	1.15	52.32	MSR0581
MSC0176	15.0	16.0	301.14	0.43	107.37	30.02	41.03	15.46	66.60	17.86	6.07	17.06	2.71	15.49	2.66	7.26	1.93	11.39	1.85	63.75	MSR0582
MSC0176	16.0	17.0	419.90	0.49	116.57	37.76	53.31	18.00	82.11	22.73	8.10	24.44	3.98	23.99	4.34	12.12	1.21	7.34	1.23	119.24	MSR0583
MSC0176	17.0	18.0	221.64	0.57	99.70	16.30	33.04	6.52	31.03	8.98	3.43	11.51	2.03	13.08	2.51	7.43	1.67	9.41	1.67	73.02	MSR0584
MSC0176	18.0	19.0	275.96	0.70	116.57	15.25	21.87	6.45	30.56	9.25	3.83	14.64	2.63	18.13	3.70	11.03	1.43	7.54	1.39	128.26	MSR0585
MSC0176	19.0	20.0	268.64	0.67	104.30	13.96	22.60	7.15	35.46	10.40	4.00	15.10	2.48	15.72	3.22	9.40	0.70	4.04	0.72	123.69	MSR0586
MSC0177	10.0	11.0	210.69	0.55	50.62	8.43	56.63	3.94	18.43	6.52	2.39	9.23	1.68	11.44	2.54	7.54	1.13	6.49	1.15	73.15	MSR0591
MSC0178	12.0	13.0	216.95	0.20	70.56	5.49	148.64	2.85	12.71	3.87	1.30	4.21	0.80	5.11	1.05	3.18	0.72	4.18	0.61	22.22	MSR2975
MSC0178	15.0	16.0	250.73	0.59	85.89	20.29	35.87	6.58	31.49	8.93	3.38	13.60	2.25	14.00	3.17	8.64	1.07	6.02	0.93	94.48	MSR0599
MSC0178	16.0	17.0	222.70	0.59	88.96	19.70	30.59	5.50	26.94	7.65	2.92	12.10	2.02	12.85	2.90	8.04	0.61	3.46	0.56	86.86	MSR0600
MSC0180	10.0	11.0	240.19	0.61	75.16	12.78	47.17	4.80	22.74	7.22	2.70	10.17	1.91	11.94	2.67	7.67	3.32	16.74	2.64	85.72	MSR0611
MSC0180	11.0	12.0	918.75	0.47	62.89	114.11	122.84	38.30	172.62	37.22	12.35	47.03	6.82	40.86	9.47	25.61	1.07	6.27	0.98	283.19	MSR0613
MSC0180	12.0	13.0	205.78	0.59	72.09	13.02	33.54	5.32	25.43	7.83	2.84	10.66	1.94	12.51	2.69	7.73	0.93	5.37	0.81	75.18	MSR0614
MSC0181	10.0	11.0	351.24	0.31	64.42	17.01	190.40	5.16	21.81	6.89	2.44	8.46	1.54	9.88	2.25	6.31	2.04	11.84	1.84	63.37	MSR0619
MSC0181	11.0	12.0	373.45	0.61	79.76	20.76	65.35	7.88	37.44	12.41	4.63	16.71	3.18	21.58	4.88	14.18	4.55	26.30	4.08	129.53	MSR0620
MSC0181	12.0	13.0	550.25	0.66	93.56	39.29	21.50	18.24	82.81	25.97	9.53	32.96	6.70	44.99	10.31	30.87	1.99	11.22	1.79	212.07	MSR0621
MSC0181	13.0	14.0	282.70	0.68	72.09	18.65	12.41	8.30	38.72	12.18	4.44	16.14	3.12	21.00	4.85	14.07	0.82	4.58	0.77	122.67	MSR0622
MSC0182	8.0	9.0	278.20	0.57	82.83	14.89	66.46	5.57	25.89	7.80	2.92	10.75	2.06	14.12	3.34	9.86	2.08	12.87	1.81	97.78	MSR0628
MSC0182	9.0	10.0	406.25	0.52	93.56	42.10	61.05	14.26	63.10	16.00	5.92	20.17	3.63	22.95	5.05	15.21	1.50	8.75	1.22	125.34	MSR0629
MSC0182	10.0	11.0	246.85	0.69	78.23	20.64	11.29	6.69	30.44	8.65	3.40	13.14	2.51	16.41	3.69	11.23	0.72	3.85	0.53	113.66	MSR0630
MSC0183	9.0	10.0	242.08	0.33	78.23	6.33	127.75	3.96	17.85	6.26	2.31	6.74	1.48	9.93	2.04	6.17	0.55	3.51	0.45	46.73	MSR0635
MSC0184	4.0	5.0	539.20	0.64	69.02	38.00	61.91	13.53	62.98	19.48	7.68	29.28	5.56	36.38	7.89	23.21	5.28	31.66	4.59	191.75	MSR0643
MSC0184	5.0	6.0	770.19	0.71	69.02	64.15	15.72	21.14	96.81	28.06	11.26	46.22	8.59	56.01	12.83	38.88	3.79	21.86	3.26	341.60	MSR0644
MSC0184	6.0	7.0	619.51	0.71	70.56	53.13	11.10	16.91	78.38	22.15	9.07	39.42	7.01	44.07	9.95	29.16	3.04	15.60	2.41	278.11	MSR0645
MSC0184	7.0	8.0	563.03	0.74	59.82	57.23	7.69	12.20	57.39	14.49	6.30	32.73	5.32	34.55	8.44	25.39	2.64	11.15	1.79	285.73	MSR0646
MSC0184	8.0	9.0	559.65	0.78	52.15	53.83	10.01	8.43	40.59	9.16	4.27	29.51	4.48	29.61	8.19	24.24	0.98	4.22	0.68	331.44	MSR0647
MSC0184	9.0	10.0	310.58	0.81	65.95	28.50	8.13	3.07	15.28	3.48	1.51	11.39	1.52	10.33	3.21	9.90	0.49	2.56	0.41	210.80	MSR0648
MSC0185	8.0	9.0	229.95	0.37	56.75	25.45	63.63	8.58	37.67	9.60	3.25	10.77	1.65	9.79	1.86	5.33	0.81	5.60	0.76	45.21	MSR3120
MSC0185	10.0	11.0	245.45	0.36	36.81	22.40	81.44	8.07	35.34	9.71	3.50	10.92	1.85	10.83	2.13	5.98	0.51	2.93	0.44	49.40	MSR0653
MSC0185	12.0	13.0	305.46	0.51	72.09	29.55	59.21	9.13	40.94	11.60	4.56	16.71	2.81	17.10	3.49	10.07	0.73	5.31	0.77	93.46	MSR0655
MSC0185	16.0	17.0	216.78	0.50	58.29	25.57	41.52	6.10	27.53	7.39	2.73	10.49	1.72	9.64	1.99	5.42	0.26	1.75	0.25	74.42	MSR0659

Hole_ID	From (m)	To (m)	TREYO ppm	HREO/ TREO	Sc_2O_3	La_2O_3	CeO_2	Pr_6O_{11}	Nd_2O_3	Sm_2O_3	Eu_2O_3	Gd_2O_3	Tb_4O_7	Dy_2O_3	Ho_2O_3	Er_2O_3	Tm_2O_3	Yb_2O_3	Lu_2O_3	Y_2O_3	Sample ID
MSC0186	16.0	17.0	219.15	0.50	70.56	24.51	44.22	5.99	27.29	7.21	2.88	10.64	1.69	10.23	2.13	6.32	0.74	4.40	0.66	70.23	MSR0664
MSC0186	17.0	18.0	207.34	0.64	73.62	19.35	27.88	3.87	18.20	5.08	2.13	9.15	1.48	9.50	2.19	6.38	0.41	2.55	0.38	98.80	MSR0665
MSC0191	3.0	4.0	254.17	0.09	7.67	51.72	110.06	12.93	47.59	7.79	1.96	4.68	0.51	2.35	0.37	0.93	0.09	0.65	0.08	12.47	MSR3201
MSC0191	4.0	5.0	248.84	0.09	7.67	51.02	107.24	13.41	47.12	7.73	1.89	4.47	0.53	2.25	0.33	0.82	0.10	0.68	0.09	11.15	MSR3202
MSC0191	5.0	6.0	231.96	0.09	6.14	47.15	103.19	11.84	41.76	7.08	1.74	4.06	0.47	2.04	0.33	0.82	0.08	0.58	0.08	10.74	MSR3203
MSC0191	6.0	7.0	212.29	0.09	6.14	43.63	93.36	11.14	38.37	6.53	1.57	3.76	0.41	1.85	0.29	0.79	0.10	0.66	0.10	9.74	MSR3204
MSC0191	7.0	8.0	230.27	0.09	6.14	46.79	101.22	11.91	41.87	6.64	1.67	4.15	0.44	1.97	0.32	0.85	0.23	1.64	0.24	10.32	MSR3205
MSC0192	4.0	5.0	268.46	0.11	6.14	54.77	116.21	13.77	47.82	7.64	1.99	4.83	0.59	2.64	0.45	1.23	0.14	0.90	0.11	15.37	MSR3211
MSC0192	5.0	6.0	238.02	0.10	6.14	47.97	103.92	12.02	42.46	6.95	1.70	4.37	0.51	2.39	0.40	1.06	0.13	0.72	0.10	13.33	MSR3212
MSC0192	6.0	7.0	247.34	0.10	6.14	49.49	107.12	12.56	44.67	7.58	1.94	4.48	0.53	2.28	0.38	1.04	0.24	1.59	0.22	13.21	MSR3213
MSC0194	14.0	15.0	928.47	0.54	93.56	97.57	88.08	36.24	165.63	39.77	13.84	45.41	7.60	48.09	9.95	29.16	2.43	13.66	2.13	328.90	MSR3234
MSC0194	15.0	16.0	452.69	0.74	93.56	27.91	21.13	9.76	44.56	12.64	4.93	20.17	3.79	26.97	5.83	18.18	7.05	38.26	5.79	205.72	MSR3235
MSC0194	16.0	17.0	1381.54	0.69	88.96	89.13	99.87	32.74	159.79	48.01	18.87	74.46	12.94	86.77	18.67	54.09	3.28	18.56	2.75	661.62	MSR3236
MSC0194	17.0	18.0	742.37	0.64	84.36	57.47	68.79	20.78	97.04	26.21	9.85	36.54	6.03	40.51	8.41	24.70	8.58	43.84	6.63	287.00	MSR3237
MSC0194	18.0	19.0	1625.12	0.77	78.23	67.90	107.73	24.65	128.30	44.99	19.90	90.37	16.35	108.34	23.94	67.58	2.23	12.87	2.00	907.98	MSR3238
MSC0194	19.0	20.0	418.86	0.65	82.83	35.18	32.18	11.02	54.94	15.31	5.97	22.36	3.82	25.48	5.37	16.24	1.07	6.04	1.01	182.87	MSR3239
MSC0194	21.0	22.0	216.38	0.75	70.56	14.54	11.17	3.71	19.60	5.97	2.38	11.36	1.86	12.62	2.80	8.51	0.51	2.90	0.48	117.97	MSR3241
MSC0194	22.0	23.0	109.09	0.68	72.09	7.54	10.63	2.14	11.08	3.33	1.30	5.36	0.91	5.96	1.29	3.75	0.53	3.01	0.47	51.81	MSR3242
MSC0194	23.0	24.0	96.30	0.66	70.56	5.88	10.66	2.22	10.54	3.41	1.25	4.84	0.85	5.95	1.25	3.91	0.38	2.37	0.39	42.41	MSR3243
MSC0195	9.0	10.0	557.08	0.46	69.02	19.59	217.43	9.46	40.94	15.31	5.98	19.13	4.06	29.27	5.81	17.95	2.27	14.12	2.12	153.66	MSR3256
MSC0195	10.0	11.0	382.43	0.60	61.35	22.05	61.17	9.75	44.32	14.49	5.81	18.79	3.68	26.17	5.15	15.67	2.94	18.79	2.85	130.80	MSR3257
MSC0195	11.0	12.0	421.61	0.66	61.35	31.20	16.71	14.26	60.19	19.02	7.23	22.71	4.58	31.45	6.24	19.10	5.98	32.00	4.94	146.04	MSR3258
MSC0195	12.0	13.0	993.00	0.68	50.62	81.16	11.46	32.26	153.96	42.56	16.47	62.70	10.87	71.96	15.24	43.45	2.65	13.10	2.14	433.04	MSR3259
MSC0195	13.0	14.0	548.25	0.71	49.08	47.03	13.39	13.77	65.20	17.16	6.83	29.16	4.86	32.59	7.10	20.81	2.23	11.96	1.86	274.30	MSR3260
MSC0195	14.0	15.0	429.49	0.81	65.95	17.83	11.24	6.98	35.34	11.25	4.85	20.75	3.70	25.82	5.77	17.27	1.52	6.91	1.19	259.06	MSR3261
MSC0195	15.0	16.0	325.59	0.74	58.29	25.21	10.70	6.69	33.59	9.09	3.75	17.40	2.66	17.90	4.06	11.66	1.12	5.57	0.93	175.25	MSR3262
MSC0195	16.0	17.0	309.06	0.69	59.82	30.73	10.53	7.00	37.67	8.37	3.61	16.83	2.41	15.38	3.32	9.69	0.47	2.66	0.39	160.01	MSR3263
MSC0196	10.0	11.0	222.87	0.47	64.42	2.79	102.82	1.62	7.15	3.37	1.42	6.41	1.29	9.54	2.14	6.88	1.06	6.10	0.93	69.34	MSR3289
MSC0196	12.0	13.0	312.35	0.71	75.16	21.93	11.40	8.20	37.56	11.27	4.31	18.10	3.06	20.89	4.67	14.07	2.35	12.98	1.88	139.69	MSR3292
MSC0196	13.0	14.0	571.28	0.54	76.69	61.69	58.72	20.54	94.59	25.51	8.63	32.96	4.81	29.15	6.11	17.61	1.42	7.72	1.17	200.64	MSR3293
MSC0196	14.0	15.0	261.29	0.73	79.76	17.36	15.36	5.36	25.54	7.48	2.97	13.95	2.25	15.38	3.67	10.82	2.33	12.98	1.91	123.94	MSR3294
MSC0196	15.0	16.0	479.52	0.62	79.76	48.08	35.01	14.62	67.77	17.28	6.33	26.74	4.16	26.63	5.97	17.61	0.85	4.59	0.71	203.18	MSR3295
MSC0197	13.0	14.0	378.81	0.61	75.16	26.27	30.71	12.93	59.95	17.86	6.25	21.67	3.60	23.99	4.55	13.95	5.15	28.01	4.17	119.75	MSR3316
MSC0197	14.0	15.0	1033.88	0.64	85.89	71.30	95.57	29.24	135.30	42.32	15.55	65.01	11.16	73.68	14.43	43.34	1.20	6.79	1.02	427.96	MSR3317
MSC0197	15.0	16.0	264.16	0.60	69.02	22.52	27.27	7.70	37.56	11.07	4.14	16.37	2.45	15.95	3.16	9.69	0.87	4.98	0.76	99.69	MSR3318
MSC0197	16.0	17.0	214.69	0.56	81.29	22.17	26.16	6.45	30.68	8.30	3.01	12.91	1.81	11.94	2.34	7.19	0.45	2.97	0.48	77.84	MSR3319
MSC0198	8.0	9.0	278.31	0.63	79.76	9.98	49.01	5.90	26.94	9.91	3.62	13.14	2.52	18.13	4.07	12.35	1.43	8.68	1.13	111.50	MSR3337
MSC0198	9.0	10.0	214.03	0.66	99.70	10.24	17.07	6.02	28.23	10.17	3.46	12.22	2.35	15.61	3.28	9.69	0.94	6.05	0.84	87.88	MSR3338
MSC0198	11.0	12.0	216.36	0.89	76.69	3.13	4.03	1.66	9.27	5.35	2.57	11.48	2.28	16.76	3.70	12.01	2.64	15.03	2.14	124.32	MSR3340
MSC0198	12.0	13.0	791.35	0.50	92.03	90.19	85.99	32.98	146.96	39.08	12.69	42.30	6.35	36.27	7.29	20.81	4.13	23.00	3.30	240.01	MSR3341
MSC0198	13.0	14.0	1039.71	0.58	93.56	99.80	108.34	32.74	151.63	42.32	14.75	55.56	8.52	52.68	11.13	32.02	3.86	20.72	3.07	402.56	MSR3342
MSC0198	14.0	15.0	873.25	0.67	81.29	65.91	69.28	20.66	99.61	28.87	10.74	47.60	7.35	46.60	10.66	31.22	0.37	2.29	0.33	431.77	MSR3343

Hole_ID	From (m)	To (m)	TREYO ppm	HREO/ TREO	Sc_2O_3	La_2O_3	CeO_2	Pr_6O_{11}	Nd_2O_3	Sm_2O_3	Eu_2O_3	Gd_2O_3	Tb_4O_7	Dy_2O_3	Ho_2O_3	Er_2O_3	Tm_2O_3	Yb_2O_3	Lu_2O_3	Y_2O_3	Sample ID
MSC0199	9.0	10.0	285.79	0.83	93.56	8.88	8.98	3.78	19.71	7.61	3.26	14.29	2.67	18.82	4.39	13.61	2.64	16.17	2.25	158.74	MSR3354
MSC0199	10.0	11.0	412.86	0.67	69.02	15.13	64.98	7.24	36.39	13.80	5.41	21.32	4.05	27.77	6.09	18.41	0.70	4.26	0.64	186.68	MSR3355
MSC0200	0.0	1.0	212.37	0.42	21.47	28.73	50.73	7.30	29.39	6.53	1.99	7.64	1.18	7.55	1.68	5.08	1.10	6.48	0.99	56.00	MSR3356
MSC0200	1.0	2.0	275.04	0.48	18.41	36.00	47.42	9.51	39.77	9.46	2.95	11.13	1.78	11.59	2.61	8.23	1.03	6.15	0.92	86.48	MSR3357
MSC0200	2.0	3.0	199.62	0.67	42.95	17.36	17.44	4.91	21.23	5.76	2.02	8.86	1.56	10.48	2.49	7.34	1.03	6.08	0.86	92.19	MSR3358
MSC0201	2.0	3.0	216.27	0.40	84.36	25.10	47.17	8.84	39.07	10.48	3.68	10.88	1.75	10.18	1.83	5.79	1.30	8.41	1.14	40.64	MSR3378
MSC0201	3.0	4.0	453.01	0.36	107.37	53.01	118.17	18.97	78.50	19.83	6.60	19.71	3.12	17.90	3.33	9.95	1.86	12.87	1.69	87.50	MSR3379
MSC0201	4.0	5.0	376.91	0.53	104.30	31.31	67.32	12.08	52.02	14.38	4.85	17.06	3.12	21.23	4.41	13.72	2.91	19.47	2.55	110.48	MSR3380
MSC0201	5.0	6.0	501.23	0.58	93.56	34.36	89.43	12.56	57.62	16.35	6.20	23.74	4.45	31.91	6.77	21.15	2.75	17.54	2.42	173.98	MSR3381
MSC0201	6.0	7.0	439.91	0.67	81.29	28.38	49.14	9.35	45.37	12.99	5.26	21.90	4.07	29.27	6.63	21.04	1.48	9.35	1.39	194.29	MSR3382
MSC0201	7.0	8.0	241.71	0.64	90.50	18.30	28.74	5.49	26.48	7.77	3.05	12.91	2.26	16.53	3.55	11.09	0.89	5.76	0.86	98.04	MSR3383
MSC0201	12.0	13.0	214.76	0.68	84.36	12.20	26.78	3.88	19.48	5.84	2.36	9.98	1.61	11.48	2.67	8.59	0.93	5.47	0.77	102.73	MSR3388
MSC0202	11.0	12.0	371.03	0.46	85.89	40.34	58.47	16.07	67.88	17.28	5.33	17.29	2.78	17.90	3.71	10.57	2.01	11.84	1.65	97.91	MSR3418
MSC0202	12.0	13.0	300.49	0.73	78.23	16.30	17.81	6.80	31.03	9.84	3.88	16.14	3.07	21.92	4.83	14.41	1.30	7.29	1.10	144.77	MSR3419
MSC0204	13.0	14.0	228.55	0.56	84.36	16.42	32.06	7.14	34.06	10.04	3.38	12.68	2.09	14.35	2.77	8.11	0.98	5.53	0.83	78.10	MSR3492
MSC0205	15.0	16.0	229.10	0.57	93.56	13.14	52.70	4.55	21.81	6.61	2.52	10.71	1.86	13.43	2.90	8.24	1.79	11.30	1.48	76.07	MSR3541
MSC0205	16.0	17.0	268.32	0.72	113.50	12.43	31.20	4.66	20.30	6.93	2.73	12.68	2.36	18.25	4.43	12.46	1.98	13.21	1.76	122.93	MSR3542
MSC0205	17.0	18.0	571.62	0.35	84.36	27.44	275.16	11.01	46.54	12.64	4.53	16.71	3.05	21.69	5.07	13.84	2.42	15.60	2.14	113.78	MSR3543
MSC0205	18.0	19.0	548.70	0.48	78.23	54.06	106.38	19.21	84.21	23.08	7.96	27.66	4.58	30.41	6.30	16.92	2.92	17.65	2.58	144.77	MSR3545
MSC0205	19.0	20.0	578.21	0.59	81.29	55.24	55.03	17.88	83.51	24.00	8.51	31.47	5.49	34.89	7.61	21.84	3.72	20.15	3.14	205.72	MSR3641
MSC0205	20.0	21.0	662.64	0.80	78.23	36.59	19.16	10.73	51.44	16.93	6.74	32.27	5.90	41.43	10.16	30.07	0.78	4.78	0.72	394.94	MSR3642
MSC0205	22.0	23.0	444.87	0.87	78.23	15.48	12.41	3.41	18.55	6.63	3.06	19.25	3.32	23.53	6.00	18.18	0.49	3.02	0.42	311.13	MSR3644
MSC0206	6.0	7.0	229.67	0.50	61.35	8.90	78.86	3.66	17.38	6.03	2.29	8.40	1.69	12.05	2.61	7.19	2.11	13.32	1.80	63.37	MSR3552
MSC0206	7.0	8.0	335.28	0.69	65.95	24.04	23.09	8.55	38.49	10.82	4.37	17.87	3.02	21.58	5.17	14.29	2.12	13.89	1.93	146.04	MSR3553
MSC0206	8.0	9.0	347.19	0.65	67.49	26.50	21.37	10.90	48.87	13.34	5.05	19.83	3.42	23.64	5.21	14.98	1.76	9.99	1.36	140.96	MSR3554
MSC0206	9.0	10.0	331.12	0.73	61.35	24.75	16.34	6.87	32.78	9.03	3.80	16.60	2.83	19.63	4.90	13.72	1.34	6.30	0.81	171.44	MSR3555
MSC0206	10.0	11.0	348.01	0.73	58.29	34.24	11.74	6.66	32.89	7.91	3.05	16.94	2.46	15.95	3.95	10.93	0.46	2.37	0.34	198.10	MSR3556
MSC0207	5.0	6.0	359.06	0.58	75.16	10.31	101.47	5.16	24.84	8.14	3.27	14.29	2.31	15.61	3.71	10.12	2.32	14.69	1.86	140.96	MSR3569
MSC0207	6.0	7.0	510.38	0.59	64.42	27.21	93.11	12.81	58.55	17.97	6.46	25.82	4.36	29.04	6.56	17.38	1.16	7.08	0.94	201.91	MSR3570
MSC0207	7.0	8.0	199.94	0.70	64.42	17.01	8.57	5.17	24.03	6.15	2.46	10.19	1.79	11.82	2.82	8.15	2.16	12.98	1.82	84.83	MSR3571
MSC0207	8.0	9.0	346.45	0.75	85.89	21.23	9.53	8.07	38.26	11.04	4.36	19.71	3.28	22.95	5.54	15.55	0.64	4.05	0.64	181.60	MSR3572
MSC0208	9.0	10.0	200.58	0.31	78.23	9.45	102.82	3.76	17.50	4.44	1.36	4.71	0.79	5.02	1.09	3.43	2.36	13.32	1.96	28.57	MSR3601
MSC0208	10.0	11.0	486.11	0.46	67.49	12.20	200.23	6.37	31.03	11.11	4.36	17.29	3.46	23.99	5.40	16.58	2.80	15.60	2.38	133.34	MSR3602
MSC0208	11.0	12.0	464.26	0.59	70.56	26.04	80.21	12.20	55.64	16.70	6.20	22.59	4.26	28.92	6.51	19.33	1.60	11.08	1.56	171.44	MSR3603
MSC0208	12.0	13.0	351.66	0.57	53.68	38.00	12.53	14.98	67.65	17.74	6.09	20.52	3.19	20.89	4.38	13.15	0.99	5.49	0.85	125.21	MSR3605
MSC0208	14.0	15.0	244.71	0.77	55.22	14.07	12.41	3.93	20.76	6.27	2.58	12.33	2.15	14.23	3.60	10.66	0.95	5.34	0.82	134.61	MSR3607
MSC0209	14.0	15.0	205.59	0.31	50.62	13.96	95.69	5.13	20.88	6.09	2.23	6.26	1.15	7.33	1.55	4.65	0.72	4.50	0.65	34.80	MSR3636
MSC0210	7.0	8.0	338.59	0.73	87.43	29.32	19.90	5.67	29.74	7.79	3.21	16.83	2.39	14.92	3.37	9.67	0.58	4.18	0.53	190.49	MSR3654
MSC0210	8.0	9.0	209.37	0.25	75.16	11.85	110.19	4.97	23.21	6.68	2.14	6.40	1.13	7.07	1.36	4.05	0.25	1.89	0.26	27.94	MSR3655
MSC0210	13.0	14.0	140.15	0.74	88.96	6.50	12.65	2.36	11.09	3.97	1.57	6.02	1.11	7.61	1.52	4.71	4.81	30.97	4.25	41.02	MSR3660
MSC0210	14.0	15.0	781.61	0.76	85.89	42.69	11.94	18.73	88.30	26.90	10.45	42.53	7.88	54.97	11.91	35.68	5.11	32.68	4.53	387.32	MSR3661
MSC0210	15.0	16.0	858.34	0.71	73.62	51.84	21.87	23.08	114.31	34.21	12.81	48.29	8.93	60.37	12.60	37.74	5.55	33.48	4.70	388.59	MSR3662

Hole_ID	From (m)	To (m)	TREYO ppm	HREO/ TREO	Sc_2O_3	La_2O_3	CeO_2	Pr_6O_{11}	Nd_2O_3	Sm_2O_3	Eu_2O_3	Gd_2O_3	Tb_4O_7	Dy_2O_3	Ho_2O_3	Er_2O_3	Tm_2O_3	Yb_2O_3	Lu_2O_3	Y_2O_3	Sample ID
MSC0210	16.0	17.0	1093.80	0.68	92.03	79.75	28.01	32.26	159.79	46.15	17.50	67.43	11.29	71.39	14.89	44.02	3.85	22.77	3.25	491.45	MSR3663
MSC0210	17.0	18.0	838.54	0.65	81.29	66.85	23.59	27.43	135.30	39.89	14.18	53.37	8.60	53.14	10.80	30.65	2.39	13.55	1.98	356.84	MSR3664
MSC0210	18.0	19.0	461.09	0.76	76.69	26.97	11.68	9.36	46.54	14.38	5.92	26.16	4.52	29.84	6.45	19.55	0.98	5.25	0.76	252.71	MSR3665
MSC0210	19.0	20.0	232.78	0.75	81.29	15.25	10.21	4.52	22.39	6.53	2.73	12.33	1.95	12.85	2.88	8.32	0.81	4.37	0.64	126.99	MSR3666
MSC0210	20.0	21.0	258.59	0.66	79.76	27.44	17.69	6.10	28.93	7.29	2.74	12.56	1.81	11.20	2.52	7.07	0.11	0.92	0.13	132.07	MSR3668
MSC0211	19.0	20.0	640.48	0.66	118.11	43.86	51.35	17.40	81.88	25.74	9.54	37.34	6.29	41.43	9.22	25.96	1.44	8.43	1.23	279.38	MSR3706
MSC0211	20.0	21.0	234.63	0.64	90.50	15.72	22.48	6.26	29.51	9.40	3.65	13.95	2.46	15.95	3.48	9.72	0.74	4.43	0.63	96.26	MSR3708
MSC0211	22.0	23.0	255.61	0.70	76.69	19.00	18.79	5.55	26.59	7.80	3.10	13.60	2.34	15.84	3.70	10.51	0.42	2.31	0.33	125.72	MSR3710
MSC0212	6.0	7.0	427.16	0.63	125.77	27.56	18.30	15.46	74.18	22.15	7.57	24.44	4.07	25.02	5.50	16.24	3.11	19.47	2.82	161.28	MSR3731
MSC0212	7.0	8.0	488.73	0.71	130.38	23.69	21.25	13.29	63.10	20.41	7.19	26.05	4.61	31.10	7.04	21.73	5.78	35.19	5.12	203.18	MSR3732
MSC0212	8.0	9.0	994.48	0.65	113.50	51.72	103.19	25.13	124.80	39.31	14.29	55.21	9.37	62.09	14.32	42.31	5.27	32.68	4.62	410.18	MSR3733
MSC0212	9.0	10.0	901.05	0.61	111.97	59.11	107.36	25.61	120.14	38.03	13.26	47.14	8.20	54.86	12.03	36.36	8.91	53.41	8.04	308.59	MSR3734
MSC0212	10.0	11.0	1223.56	0.71	99.70	64.97	60.93	30.81	153.96	48.70	18.52	72.27	13.17	87.22	20.50	62.66	1.60	10.27	1.42	576.53	MSR3735
MSC0212	11.0	12.0	284.45	0.65	62.89	20.41	17.32	8.47	40.24	11.94	4.35	16.14	2.80	18.13	4.00	12.01	1.63	9.54	1.41	116.07	MSR3736
MSC0212	12.0	13.0	227.45	0.74	75.16	10.70	12.53	4.69	23.68	7.87	3.09	13.14	2.36	16.64	4.00	11.78	0.61	3.58	0.53	112.26	MSR3737
MSC0212	18.0	19.0	375.74	0.47	92.03	31.31	72.60	13.05	63.80	18.79	6.78	22.71	3.45	19.85	3.79	10.36	1.42	8.11	1.18	98.54	MSR3743
MSC0212	19.0	20.0	263.33	0.66	87.43	15.72	26.78	6.08	30.56	9.39	3.69	14.52	2.52	16.64	3.69	10.52	1.37	8.12	1.22	112.51	MSR3744
MSC0212	45.0	46.0	206.67	0.75	96.63	10.37	18.79	3.01	14.58	4.58	1.96	9.77	1.72	12.51	2.75	8.53	0.53	3.10	0.44	114.04	MSR3772
MSC0213	3.0	4.0	223.55	0.70	65.95	11.85	15.23	5.18	25.66	8.63	3.26	13.49	2.28	14.92	3.02	9.64	0.39	2.37	0.33	107.31	MSR3781
MSC0213	8.0	9.0	256.68	0.50	79.76	9.63	88.57	4.13	20.06	6.67	2.63	8.90	1.72	12.17	2.42	7.35	1.85	12.64	1.76	76.19	MSR3786
MSC0213	9.0	10.0	310.81	0.66	69.02	11.58	53.19	5.45	27.06	9.68	3.96	14.52	2.99	20.66	4.30	13.15	1.86	11.24	1.65	129.53	MSR3788
MSC0213	10.0	11.0	323.89	0.78	84.36	12.55	14.37	5.52	28.11	9.81	4.23	17.40	3.32	22.95	4.96	14.87	0.55	3.20	0.45	181.60	MSR3789
MSC0214	8.0	9.0	285.78	0.29	116.57	5.88	163.38	4.80	22.04	7.75	2.76	8.47	1.82	13.43	2.54	7.79	1.04	7.11	1.05	35.94	MSR3828
MSC0214	10.0	11.0	314.33	0.56	127.31	11.22	58.47	9.16	43.16	15.89	5.82	19.13	3.95	28.58	5.59	17.27	1.35	7.66	1.24	85.85	MSR3830
MSC0214	11.0	12.0	213.28	0.60	113.50	13.84	14.13	8.24	37.44	10.89	3.88	14.18	2.51	16.64	3.53	9.97	0.71	4.04	0.66	72.64	MSR3831
MSC0225	12.0	13.0	845.85	0.41	75.16	43.16	334.12	17.52	80.71	23.42	8.54	29.05	5.38	36.96	7.89	23.67	1.86	10.92	1.68	220.96	MSR3996
MSC0225	13.0	14.0	394.18	0.63	70.56	44.57	13.27	12.93	61.59	15.07	5.63	21.44	3.55	23.64	5.01	14.52	0.94	4.93	0.75	166.36	MSR3997
MSC0225	14.0	15.0	247.09	0.71	67.49	24.86	12.78	4.64	23.09	5.83	2.16	10.85	1.63	11.48	2.68	7.90	0.57	3.47	0.53	134.61	MSR3998
MSC0226	7.0	8.0	691.01	0.35	58.29	17.24	372.21	9.21	40.36	13.10	4.91	17.29	3.61	25.71	5.53	17.50	2.50	15.03	2.06	144.77	MSR4012
MSC0226	8.0	9.0	352.06	0.77	73.62	16.54	16.83	6.40	30.33	10.70	4.38	17.64	3.63	25.82	5.84	17.72	2.35	14.23	1.85	177.79	MSR4013
MSC0226	9.0	10.0	317.58	0.81	61.35	9.03	14.86	4.13	21.93	9.83	4.01	16.25	3.32	24.56	5.52	16.70	1.63	9.22	1.33	175.25	MSR4014
MSC0226	10.0	11.0	252.24	0.77	38.35	13.14	7.19	4.71	24.38	8.58	3.34	13.49	2.58	17.79	3.96	11.89	1.58	8.89	1.21	129.53	MSR4015
MSC0226	11.0	12.0	227.30	0.81	69.02	8.53	4.19	3.81	19.48	7.71	3.13	13.26	2.43	17.10	3.91	11.55	0.71	3.95	0.56	126.99	MSR4016
MSC0227	6.0	7.0	436.92	0.37	82.83	11.32	234.62	4.29	20.18	6.68	2.60	10.07	2.00	14.00	3.15	9.94	2.54	15.49	2.01	98.04	MSR4034
MSC0227	7.0	8.0	458.15	0.62	84.36	29.91	70.76	10.74	49.34	14.73	5.63	21.32	3.95	28.23	6.07	18.98	1.85	10.98	1.54	184.14	MSR4035
MSC0227	8.0	9.0	334.59	0.65	78.23	25.45	23.09	9.48	44.32	13.22	5.00	17.40	3.14	21.58	4.60	13.84	1.80	10.53	1.43	139.69	MSR4036
MSC0227	9.0	10.0	327.25	0.65	84.36	28.73	15.60	10.22	47.71	13.10	4.71	17.52	3.18	20.54	4.44	13.38	1.36	7.29	1.05	138.42	MSR4037
MSC0227	10.0	11.0	309.18	0.63	59.82	30.84	18.92	9.33	42.92	11.60	4.17	16.02	2.65	16.76	3.71	10.59	0.85	4.32	0.64	135.88	MSR4038
MSC0227	11.0	12.0	240.56	0.69	67.49	24.51	13.02	5.07	26.13	6.90	2.66	12.56	1.72	10.75	2.46	7.08	0.51	3.06	0.42	123.69	MSR4039
MSC0228	5.0	6.0	312.76	0.54	84.36	10.43	103.06	4.31	18.78	6.35	2.56	11.04	2.13	16.30	3.77	11.19	1.07	6.18	0.90	114.67	MSR4051
MSC0228	6.0	7.0	235.35	0.45	65.95	26.50	51.84	8.28	33.83	8.26	2.62	9.74	1.65	11.17	2.45	7.52	0.96	5.89	0.78	63.88	MSR4052
MSC0228	7.0	8.0	226.20	0.51	58.29	18.41	50.61	6.60	27.88	7.02	2.42	8.99	1.54	10.73	2.37	6.92	1.74	10.85	1.42	68.70	MSR4053

Hole_ID	From (m)	To (m)	TREYO ppm	HREO/ TREO	Sc_2O_3	La_2O_3	CeO_2	Pr_6O_{11}	Nd_2O_3	Sm_2O_3	Eu_2O_3	Gd_2O_3	Tb_4O_7	Dy_2O_3	Ho_2O_3	Er_2O_3	Tm_2O_3	Yb_2O_3	Lu_2O_3	Y_2O_3	Sample ID
MSC0228	8.0	9.0	337.84	0.62	69.02	34.95	20.39	11.57	49.22	12.06	4.19	16.14	2.68	18.82	4.26	12.58	1.88	11.61	1.60	135.88	MSR4054
MSC0228	9.0	10.0	440.72	0.54	72.09	65.44	20.27	18.61	79.31	18.44	6.22	23.05	3.55	22.72	4.78	13.61	3.24	19.13	2.66	139.69	MSR4055
MSC0228	10.0	11.0	592.87	0.70	79.76	58.64	15.85	15.83	71.38	18.79	6.80	31.35	5.15	35.92	8.29	25.27	0.69	3.75	0.55	294.62	MSR4056
MSC0229	6.0	7.0	257.96	0.67	90.50	28.03	10.21	6.60	32.43	9.06	3.24	13.95	1.98	13.43	2.97	7.72	2.80	15.71	2.42	107.43	MSR4085
MSC0229	7.0	8.0	809.79	0.45	81.29	38.94	324.30	12.20	55.52	17.39	6.31	25.36	4.33	34.20	7.10	19.33	2.96	16.74	2.57	242.55	MSR4087
MSC0229	8.0	9.0	610.32	0.57	79.76	45.27	111.66	15.46	67.77	21.10	7.27	28.24	4.66	35.12	7.31	20.13	1.91	10.40	1.64	232.39	MSR4088
MSC0229	9.0	10.0	394.40	0.65	78.23	33.19	30.34	10.76	49.80	14.96	5.39	19.94	3.20	23.18	4.99	13.15	2.68	14.12	2.33	166.36	MSR4089
MSC0229	10.0	11.0	550.85	0.70	78.23	44.80	16.21	14.98	66.72	21.10	7.65	30.66	4.76	34.77	7.54	19.44	0.56	3.04	0.50	278.11	MSR4090
MSC0230	2.0	3.0	347.93	0.43	104.30	23.22	122.23	8.12	34.76	10.96	3.74	13.37	2.34	18.02	3.77	10.41	0.54	3.23	0.53	92.70	MSR4099
MSC0230	6.0	7.0	1029.48	0.59	70.56	38.35	273.93	15.10	70.33	25.74	9.93	40.00	7.05	55.89	12.60	34.08	3.92	22.55	3.49	416.53	MSR4103
MSC0230	7.0	8.0	772.03	0.56	67.49	62.86	112.64	22.96	107.07	33.16	11.55	40.92	6.62	47.74	9.84	25.16	2.25	11.73	1.96	275.57	MSR4104
MSC0230	8.0	9.0	448.31	0.72	67.49	32.60	12.08	11.67	53.42	16.70	6.23	24.67	3.94	28.81	6.40	16.70	0.96	4.77	0.78	228.58	MSR4105
MSC0230	9.0	10.0	218.87	0.71	67.49	14.78	12.21	4.82	23.79	6.95	2.68	11.41	1.63	12.51	2.75	7.16	0.53	2.55	0.43	114.67	MSR4107
MSC0231	1.0	2.0	200.47	0.46	35.28	24.39	42.87	6.56	27.29	6.20	1.93	7.65	1.18	7.94	1.56	5.09	2.39	15.14	2.01	48.26	MSR4118
MSC0231	2.0	3.0	454.20	0.56	64.42	27.79	96.06	10.69	49.22	14.84	5.63	22.01	3.88	26.17	5.37	17.27	2.67	16.74	2.19	153.66	MSR4119
MSC0231	3.0	4.0	565.79	0.52	62.89	37.06	128.98	15.22	71.15	20.87	8.16	29.97	5.20	33.28	6.53	20.35	1.90	11.50	1.64	173.98	MSR4120
MSC0231	4.0	5.0	319.17	0.74	65.95	16.18	25.92	5.76	27.64	8.91	3.66	15.79	2.91	20.66	4.43	14.64	1.69	10.70	1.54	158.74	MSR4121
MSC0231	5.0	6.0	267.98	0.71	65.95	15.36	19.90	6.02	28.23	8.87	3.52	13.95	2.61	18.48	3.83	12.35	1.47	8.14	1.18	124.07	MSR4122
MSC0231	6.0	7.0	281.31	0.73	69.02	20.99	10.02	6.58	31.49	8.08	3.27	15.45	2.52	16.76	3.69	11.66	0.47	2.63	0.39	147.31	MSR4123
MSC0232	7.0	8.0	349.06	0.80	70.56	7.68	44.71	2.43	11.63	4.20	1.93	11.26	2.28	18.59	4.42	15.09	0.98	5.84	0.85	217.15	MSR4141
MSC0232	8.0	9.0	210.74	0.75	75.16	12.43	19.53	3.01	13.41	3.64	1.56	7.94	1.36	10.18	2.34	7.92	0.27	1.79	0.26	125.09	MSR4142
MSC0243	11.0	12.0	249.93	0.78	119.64	13.60	4.48	5.26	23.44	8.46	3.19	13.72	2.60	18.59	4.20	13.15	4.63	24.14	4.04	106.42	MSR4247
MSC0243	12.0	13.0	672.13	0.82	104.30	26.62	6.63	11.39	54.59	20.41	8.67	38.50	6.95	49.69	11.36	33.16	4.27	22.89	3.64	373.35	MSR4248
MSC0243	13.0	14.0	775.25	0.65	95.10	45.27	103.43	17.28	81.18	25.97	9.83	40.46	6.83	46.71	10.63	30.87	4.72	26.65	4.13	321.28	MSR4249
MSC0243	14.0	15.0	706.02	0.70	87.43	45.97	34.27	18.85	87.13	28.18	10.67	42.65	7.54	52.10	11.39	33.62	1.76	9.14	1.47	321.28	MSR4250
MSC0243	15.0	16.0	287.30	0.77	81.29	14.19	6.77	5.94	29.51	10.88	4.24	17.98	2.94	19.97	4.66	12.92	1.27	6.39	1.06	148.58	MSR4251
MSC0243	16.0	17.0	281.30	0.69	88.96	19.82	7.63	8.19	38.72	11.83	4.14	16.94	2.54	16.87	3.57	10.22	0.91	4.52	0.77	134.61	MSR4252
MSC0243	17.0	18.0	252.92	0.71	85.89	19.12	8.29	6.51	31.96	8.33	3.08	14.29	1.98	12.40	2.83	7.88	0.74	4.07	0.66	130.80	MSR4253
MSC0244	20.0	21.0	225.91	0.68	84.36	7.46	18.55	5.56	29.51	10.78	4.36	14.87	2.93	20.89	3.95	14.41	2.30	14.58	2.00	73.78	MSR4275
MSC0244	21.0	22.0	276.17	0.73	85.89	8.81	14.86	6.08	32.54	11.83	4.88	19.25	3.39	24.68	4.87	17.15	1.60	10.49	1.46	114.29	MSR4276
MSC0245	22.0	23.0	249.06	0.58	73.62	22.52	13.39	9.85	46.07	12.76	4.64	16.37	2.67	15.84	3.08	9.27	0.62	4.18	0.57	87.24	MSR4317
MSC0245	27.0	28.0	201.21	0.77	78.23	12.20	9.51	3.41	16.80	4.58	1.84	9.14	1.40	9.12	2.15	6.72	0.57	3.70	0.57	119.50	MSR4322
MSC0246	13.0	14.0	295.33	0.81	150.32	7.42	21.25	2.95	17.03	6.92	3.18	14.64	2.79	19.28	4.35	13.84	3.30	19.36	2.82	156.20	MSR4345
MSC0246	14.0	15.0	608.52	0.62	102.77	52.66	31.08	20.30	97.74	27.13	10.03	36.77	6.12	37.64	7.71	23.78	1.23	7.61	1.09	247.63	MSR4347
MSC0246	15.0	16.0	219.60	0.64	81.29	12.20	31.82	4.81	23.21	7.21	2.76	10.37	1.87	12.51	2.66	8.62	2.54	15.71	2.30	81.02	MSR4348
MSC0246	16.0	17.0	348.04	0.70	92.03	11.21	49.01	5.35	27.76	10.95	4.52	18.21	3.59	24.79	5.36	17.15	1.38	8.84	1.18	158.74	MSR4349
MSC0246	17.0	18.0	228.97	0.50	96.63	16.89	34.03	8.80	41.99	13.22	4.57	13.26	2.45	15.72	2.92	9.00	1.22	8.11	1.06	55.75	MSR4350
MSC0246	20.0	21.0	201.80	0.56	99.70	15.13	14.13	7.96	38.96	11.83	4.16	13.02	2.45	15.84	3.07	9.48	1.78	10.37	1.56	52.07	MSR4353
MSC0246	21.0	22.0	236.79	0.75	90.50	10.81	10.69	4.87	25.19	8.58	3.53	14.06	2.62	17.79	3.92	12.58	1.40	8.02	1.23	111.50	MSR4354
MSC0246	22.0	23.0	220.07	0.71	87.43	13.60	6.71	5.67	28.93	8.70	3.52	13.26	2.31	15.03	3.25	10.10	1.45	7.79	1.22	98.54	MSR4355
MSC0246	23.0	24.0	278.28	0.63	84.36	23.69	11.35	9.54	46.19	12.64	4.52	16.48	2.62	16.07	3.41	10.62	1.72	9.39	1.44	108.58	MSR4356
MSC0246	24.0	25.0	235.71	0.75	111.97	11.06	13.76	4.30	23.33	7.54	3.30	14.18	2.56	17.33	3.91	12.46	0.62	3.37	0.52	117.47	MSR4357

Hole_ID	From (m)	To (m)	TREYO ppm	HREO/ TREO	Sc_2O_3	La_2O_3	CeO_2	Pr_6O_{11}	Nd_2O_3	Sm_2O_3	Eu_2O_3	Gd_2O_3	Tb_4O_7	Dy_2O_3	Ho_2O_3	Er_2O_3	Tm_2O_3	Yb_2O_3	Lu_2O_3	Y_2O_3	Sample ID
MSC0247	10.0	11.0	344.18	0.62	78.23	9.44	74.56	6.08	29.04	10.56	4.11	15.10	3.15	22.38	4.96	16.01	3.25	21.75	3.01	120.77	MSR4377
MSC0247	11.0	12.0	433.93	0.65	70.56	20.88	49.75	11.33	53.89	18.09	6.66	25.70	4.80	32.25	7.07	22.18	0.41	2.77	0.38	177.79	MSR4378
MSC0248	10.0	11.0	534.68	0.50	81.29	9.77	216.20	5.62	27.53	10.87	4.30	17.87	3.73	27.20	6.17	19.78	2.24	14.92	2.14	166.36	MSR4390
MSC0248	11.0	12.0	271.57	0.74	70.56	12.78	8.27	7.33	32.66	10.81	3.91	15.68	3.08	21.23	4.74	15.21	2.01	11.61	1.73	120.51	MSR4391
MSC0248	12.0	13.0	318.11	0.73	70.56	20.64	6.89	8.72	39.31	11.16	4.25	18.56	3.31	21.46	5.01	15.21	1.68	8.31	1.22	152.39	MSR4392
MSC0248	13.0	14.0	286.75	0.67	79.76	25.57	9.18	8.82	39.31	10.51	4.04	17.64	3.07	19.51	4.55	13.72	0.31	1.99	0.30	128.26	MSR4393
MSC0249	10.0	11.0	219.75	0.70	174.86	3.66	43.61	2.25	11.55	4.87	2.00	8.46	1.79	13.54	3.08	9.85	0.89	5.88	0.77	107.56	MSR4404
MSC0249	12.0	13.0	945.19	0.57	115.04	45.15	228.48	19.45	86.31	26.90	9.90	38.27	7.28	49.58	11.01	34.53	2.12	13.55	1.83	370.81	MSR4407
MSC0249	13.0	14.0	340.35	0.60	92.03	15.25	61.30	8.36	39.19	13.68	5.17	17.64	3.48	23.18	4.67	14.18	2.58	15.94	2.19	113.53	MSR4408
MSC0249	14.0	15.0	353.09	0.75	113.50	13.96	17.32	7.36	36.39	13.22	5.28	20.52	4.00	27.77	5.81	17.72	2.86	17.19	2.41	161.28	MSR4409
MSC0249	15.0	16.0	495.18	0.65	110.44	34.24	40.05	13.65	64.62	19.71	7.44	28.47	5.13	32.94	6.96	20.93	1.26	6.71	1.00	212.07	MSR4410
MSC0249	17.0	18.0	390.94	0.69	56.75	36.59	17.57	9.98	46.42	12.52	4.83	21.55	3.53	22.38	4.88	13.95	3.87	22.09	3.15	167.63	MSR4412
MSC0249	18.0	19.0	750.35	0.59	96.63	87.49	50.98	26.34	111.16	30.03	10.98	39.77	7.17	46.48	9.70	28.59	1.95	11.13	1.59	287.00	MSR4413
MSC0249	19.0	20.0	279.87	0.74	76.69	15.36	10.56	6.45	30.68	10.52	4.22	17.06	3.25	21.58	4.73	14.07	1.86	8.71	1.30	129.53	MSR4414
MSC0249	20.0	21.0	523.35	0.65	58.29	55.82	37.59	13.17	63.22	15.31	5.91	28.58	4.28	25.48	5.85	16.47	0.59	2.98	0.45	247.63	MSR4415
MSC0249	21.0	22.0	204.15	0.74	69.02	17.83	9.95	3.48	16.91	4.19	1.75	9.91	1.32	8.24	1.98	5.44	0.42	2.37	0.35	120.01	MSR4416
MSC0250	10.0	11.0	899.20	0.40	93.56	77.17	288.67	25.73	116.29	28.53	9.69	33.54	5.30	32.25	6.62	19.21	4.91	32.23	4.45	214.61	MSR4430
MSC0250	11.0	12.0	703.00	0.60	78.23	51.25	83.29	21.02	92.49	30.15	11.10	38.27	7.62	50.73	10.40	32.59	3.84	21.98	3.18	245.09	MSR4431
MSC0250	12.0	13.0	610.43	0.68	76.69	52.77	17.81	17.64	83.05	25.74	9.87	38.15	7.03	44.99	9.68	28.59	3.19	16.74	2.47	252.71	MSR4432
MSC0250	13.0	14.0	535.54	0.75	67.49	31.43	9.77	12.56	62.40	20.29	8.10	33.89	5.92	38.79	8.49	25.39	1.56	7.85	1.16	267.95	MSR4433
MSC0250	14.0	15.0	417.08	0.76	65.95	26.27	15.23	7.39	41.41	11.04	4.54	20.86	3.29	20.54	4.66	14.07	0.86	4.95	0.68	241.28	MSR4434
MSC0250	15.0	16.0	209.97	0.75	70.56	14.78	8.71	3.81	20.41	5.72	2.24	9.80	1.61	10.33	2.28	7.27	0.62	3.99	0.57	117.85	MSR4435
MSC0251	11.0	12.0	199.65	0.81	133.44	7.49	8.66	2.88	14.46	4.75	1.92	7.71	1.53	10.34	2.21	7.10	3.64	23.12	3.13	100.70	MSR4454
MSC0251	12.0	13.0	1075.97	0.43	90.50	54.06	448.37	15.95	74.07	20.87	7.91	28.82	5.66	39.14	8.40	27.22	3.95	25.73	3.43	312.40	MSR4455
MSC0251	13.0	14.0	709.82	0.60	64.42	43.63	82.92	20.90	103.11	32.93	12.35	38.96	7.67	49.81	9.66	29.62	3.65	20.38	2.80	251.44	MSR4456
MSC0251	14.0	15.0	731.66	0.73	78.23	47.97	23.46	16.43	83.75	24.93	10.06	41.84	7.61	49.47	10.31	30.53	4.10	25.96	3.48	351.76	MSR4457
MSC0251	15.0	16.0	864.25	0.54	75.16	50.31	201.46	19.81	96.34	29.68	11.19	37.81	7.30	48.89	9.87	30.65	2.28	12.18	1.68	304.78	MSR4458
MSC0251	16.0	17.0	480.94	0.73	76.69	36.47	19.16	10.33	52.14	13.80	5.65	26.28	4.58	30.07	6.51	19.55	1.22	6.63	0.92	247.63	MSR4459
MSC0251	17.0	18.0	372.77	0.65	73.62	40.58	42.13	7.74	33.13	7.29	2.87	14.41	2.36	15.03	3.47	10.75	0.50	2.87	0.41	189.22	MSR4460
MSC0252	8.0	9.0	288.45	0.48	93.56	6.22	103.92	4.66	24.14	10.12	3.80	13.26	2.67	18.59	3.87	12.24	2.12	14.92	2.01	65.91	MSR4476
MSC0252	9.0	10.0	288.69	0.53	87.43	9.03	73.95	6.72	32.78	13.10	4.71	15.68	3.20	21.81	4.50	14.18	2.19	14.80	2.07	69.97	MSR4477
MSC0252	10.0	11.0	254.79	0.65	102.77	14.31	12.23	8.52	39.77	13.68	4.88	17.64	3.41	23.07	4.83	15.21	1.93	10.81	1.57	82.92	MSR4478
MSC0252	11.0	12.0	329.66	0.65	96.63	18.30	26.53	9.28	45.49	14.15	5.28	21.44	3.66	23.87	5.43	16.24	0.95	4.98	0.74	133.34	MSR4479
MSC0252	12.0	13.0	223.32	0.69	79.76	15.13	13.27	5.74	27.99	7.37	2.77	12.68	1.93	11.94	2.90	8.29	0.72	3.94	0.59	108.07	MSR4480
MSC0252	13.0	14.0	199.53	0.65	59.82	18.88	10.49	5.81	27.76	6.53	2.36	11.36	1.58	9.53	2.26	6.51	0.33	2.02	0.28	93.85	MSR4481
MSC0255	10.0	11.0	422.44	0.62	82.83	40.11	27.52	13.65	62.40	16.12	5.75	22.01	3.33	20.89	4.85	14.64	3.84	22.55	3.51	161.28	MSR4562
MSC0255	11.0	12.0	718.31	0.55	78.23	55.94	115.47	21.75	104.27	28.64	10.81	41.15	6.53	42.23	9.60	29.04	1.07	5.84	0.86	245.09	MSR4563
MSC0255	12.0	13.0	252.23	0.67	75.16	24.39	15.72	5.81	28.93	7.49	2.92	12.10	1.78	11.24	2.84	8.60	0.43	2.60	0.40	126.99	MSR4564
MSC0256	8.0	9.0	291.09	0.39	128.84	20.64	110.31	7.00	30.79	9.14	3.19	10.71	1.92	12.40	2.73	8.48	1.93	11.96	1.61	58.29	MSR4577
MSC0256	9.0	10.0	689.86	0.34	101.23	77.64	253.05	20.30	84.21	19.48	6.56	24.09	3.78	23.87	4.77	14.07	3.70	22.89	3.21	128.26	MSR4578
MSC0256	10.0	11.0	647.73	0.54	88.96	71.66	54.17	27.18	113.72	29.92	9.93	35.73	6.35	41.78	8.58	26.19	3.59	21.64	3.01	194.29	MSR4579
MSC0256	11.0	12.0	660.45	0.55	85.89	82.80	23.46	29.60	128.30	32.47	10.90	41.61	6.82	43.27	9.00	26.76	2.44	12.87	1.89	208.26	MSR4580

Hole_ID	From (m)	To (m)	TREYO ppm	HREO/ TREO	Sc_2O_3	La_2O_3	CeO_2	Pr_6O_{11}	Nd_2O_3	Sm_2O_3	Eu_2O_3	Gd_2O_3	Tb_4O_7	Dy_2O_3	Ho_2O_3	Er_2O_3	Tm_2O_3	Yb_2O_3	Lu_2O_3	Y_2O_3	Sample ID
MSC0256	12.0	13.0	514.41	0.68	90.50	39.41	33.29	13.53	61.93	17.86	6.76	30.54	4.86	31.33	6.98	20.24	0.96	4.74	0.71	241.28	MSR4581
MSC0256	13.0	14.0	290.85	0.65	81.29	32.25	15.23	7.72	37.09	8.86	3.45	17.29	2.34	14.12	3.20	8.87	0.82	4.36	0.64	134.61	MSR4582
MSC0256	14.0	15.0	281.28	0.57	84.36	48.32	17.20	8.41	39.19	8.12	3.09	15.79	1.98	11.94	2.76	7.57	0.66	3.60	0.53	112.13	MSR4583
MSC0257	7.0	8.0	452.46	0.44	75.16	35.77	151.09	10.45	43.51	10.67	3.92	15.68	2.63	17.67	3.78	11.13	1.64	8.59	1.32	134.61	MSR4613
MSC0257	8.0	9.0	351.10	0.61	59.82	44.68	23.09	11.33	46.77	10.81	4.01	16.37	2.73	18.36	4.04	12.35	0.61	3.06	0.49	152.39	MSR4614
MSC0268	6.0	7.0	698.72	0.65	39.88	53.60	73.70	16.79	75.70	21.57	8.29	33.89	6.33	44.42	9.38	29.04	3.33	18.90	2.81	300.97	MSR4758
MSC0268	7.0	8.0	688.52	0.67	61.35	56.53	59.21	16.79	76.05	20.99	8.20	35.50	6.34	42.01	9.10	27.44	2.52	14.58	2.15	311.13	MSR4759
MSC0268	8.0	9.0	479.37	0.66	64.42	53.83	8.98	15.10	67.07	17.74	6.83	28.82	5.06	33.05	6.71	20.01	1.37	6.75	1.06	206.99	MSR4760
MSC0268	9.0	10.0	287.73	0.73	69.02	26.62	6.15	6.75	31.03	8.26	3.37	17.17	2.85	18.71	4.17	12.35	0.63	3.12	0.51	146.04	MSR4761
MSC0268	15.0	16.0	263.33	0.68	69.02	27.44	7.87	7.39	32.31	8.67	3.33	13.83	2.33	15.15	3.20	9.51	1.53	8.79	1.33	120.64	MSR4768
MSC0268	16.0	17.0	348.53	0.67	69.02	34.95	24.08	8.54	38.14	9.90	3.62	16.37	2.78	18.94	4.10	12.46	2.08	12.07	1.76	158.74	MSR4769
MSC0268	17.0	18.0	401.88	0.62	59.82	36.36	46.07	10.91	47.12	12.99	4.96	20.40	3.68	25.02	5.22	16.12	0.48	3.17	0.49	168.90	MSR4770
MSC0269	5.0	6.0	139.69	0.91	84.36	2.06	1.98	1.06	5.35	1.86	0.74	3.23	0.59	4.35	0.97	3.11	9.31	60.12	8.76	36.19	MSR4779
MSC0269	6.0	7.0	1169.22	0.73	81.29	40.58	87.95	26.46	121.30	40.70	15.21	55.90	11.47	86.88	19.02	63.69	12.33	67.52	9.70	510.50	MSR4780
MSC0269	7.0	8.0	2182.71	0.73	75.16	166.53	35.01	57.63	255.44	75.49	29.84	126.79	23.41	160.68	34.59	102.34	3.08	16.97	2.80	1092.11	MSR4781
MSC0269	8.0	9.0	539.62	0.77	61.35	43.16	8.66	11.10	48.64	12.76	5.09	23.63	4.22	30.64	7.18	24.13	1.23	5.84	0.94	312.40	MSR4782
MSC0269	9.0	10.0	290.63	0.74	53.68	23.46	7.82	6.46	30.09	7.57	2.92	13.83	2.21	14.58	3.45	10.83	0.71	3.60	0.56	162.55	MSR4783
MSC0269	10.0	11.0	191.39	0.74	65.95	15.83	8.96	3.56	16.56	4.21	1.67	8.36	1.29	8.39	2.00	6.24	0.54	2.96	0.45	110.35	MSR4784
MSC0269	11.0	12.0	169.46	0.71	65.95	18.76	9.48	2.85	13.88	3.43	1.27	6.49	0.96	6.24	1.48	4.59	0.32	2.00	0.30	97.40	MSR4785
MSC0270	15.0	16.0	410.91	0.56	76.69	43.51	48.03	13.89	61.35	15.89	5.36	20.29	3.35	22.15	4.60	14.87	1.10	5.78	0.89	149.85	MSR4810
MSC0270	16.0	17.0	350.29	0.46	87.43	47.03	63.39	12.32	54.47	12.64	4.33	16.48	2.43	14.92	2.99	9.08	1.39	7.06	1.05	100.70	MSR4811
MSC0270	17.0	18.0	495.62	0.55	67.49	68.96	59.95	15.10	66.37	14.61	5.08	22.13	3.15	19.97	4.34	12.81	0.48	2.86	0.44	199.37	MSR4812
MSC0270	18.0	19.0	212.00	0.36	47.55	34.36	55.03	7.96	31.84	6.35	1.99	7.53	1.01	6.00	1.26	3.97	0.37	2.20	0.32	51.81	MSR4813
MSC0271	9.0	10.0	1158.48	0.26	84.36	152.46	454.51	43.25	172.62	35.83	9.91	32.96	4.76	28.35	5.35	17.61	2.73	15.49	2.31	180.33	MSR4825
MSC0271	10.0	11.0	406.23	0.49	84.36	38.94	92.62	12.20	51.79	12.64	4.01	15.79	2.61	17.44	3.64	12.46	1.90	10.33	1.59	128.26	MSR4827
MSC0271	13.0	14.0	216.98	0.65	78.23	16.18	14.86	6.40	28.93	8.67	3.11	11.76	2.16	15.38	3.07	10.39	1.69	9.95	1.49	82.92	MSR4830
MSC0271	15.0	16.0	206.20	0.66	69.02	19.12	12.14	5.75	26.13	6.95	2.60	10.72	1.68	12.40	2.60	7.28	1.02	5.67	0.85	91.31	MSR4832
MSC0271	16.0	17.0	240.15	0.72	65.95	19.47	10.47	5.35	25.78	6.92	2.56	12.22	1.95	13.77	2.92	9.95	1.32	6.21	1.00	120.26	MSR4833
MSC0272	4.0	5.0	461.19	0.47	84.36	11.18	192.86	5.61	23.91	9.11	3.34	14.87	2.95	19.17	4.41	14.18	2.00	13.21	2.17	142.23	MSR4852
MSC0272	5.0	6.0	420.90	0.62	73.62	17.36	85.13	8.46	34.76	12.87	4.52	19.13	3.69	23.53	5.25	16.58	2.25	14.80	2.41	170.17	MSR4853
MSC0272	6.0	7.0	219.01	0.69	76.69	14.54	21.01	4.93	20.76	6.74	2.31	10.50	1.96	12.05	2.81	9.06	1.21	7.96	1.33	101.85	MSR4854
MSC0272	7.0	8.0	387.21	0.27	61.35	9.80	238.31	5.28	21.11	7.54	2.37	8.85	1.74	10.95	2.31	7.26	1.07	7.69	1.21	61.72	MSR4855
MSC0272	8.0	9.0	268.19	0.64	33.74	12.78	29.36	7.79	33.94	12.06	3.98	15.33	2.88	18.25	3.84	12.58	1.86	12.98	2.01	98.54	MSR4856
MSC0272	10.0	11.0	281.31	0.67	85.89	11.07	41.40	5.97	25.31	9.80	3.48	15.10	3.07	19.17	4.25	13.38	1.92	13.21	2.19	112.01	MSR4858
MSC0272	11.0	12.0	249.64	0.69	82.83	13.49	20.64	6.43	26.59	9.45	3.45	14.87	2.93	18.36	3.99	12.69	1.76	11.36	1.91	101.72	MSR4859
MSC0272	12.0	13.0	227.42	0.68	81.29	14.43	14.50	6.60	27.53	9.16	3.18	13.49	2.55	15.26	3.28	10.15	1.34	8.11	1.35	96.51	MSR4860
MSC0272	13.0	14.0	250.09	0.60	59.82	30.84	10.40	9.64	38.02	10.49	3.45	14.64	2.51	14.12	2.99	8.86	1.06	6.26	1.05	95.75	MSR4861
MSC0272	15.0	16.0	318.35	0.72	82.83	26.62	25.55	5.84	25.31	6.27	2.29	13.37	1.89	10.77	2.74	7.81	0.82	4.22	0.72	184.14	MSR4863
MSC0273	15.0	16.0	377.09	0.56	76.69	36.94	37.10	13.53	61.00	18.09	6.39	23.63	3.96	25.25	4.91	14.52	2.06	12.30	1.84	115.56	MSR4904
MSC0273	16.0	17.0	448.14	0.56	55.22	42.45	55.16	14.62	64.73	19.02	6.75	26.28	4.38	27.89	5.61	16.58	2.38	14.12	2.14	146.04	MSR4905
MSC0273	17.0	18.0	258.69	0.63	12.27	17.94	34.40	6.44	27.64	8.42	2.98	12.91	2.31	16.99	3.68	11.44	1.68	10.31	1.63	99.94	MSR4907
MSC0273	18.0	19.0	253.58	0.56	7.67	22.17	34.76	8.64	35.69	9.79	3.41	12.68	2.22	15.38	3.28	10.18	1.52	9.08	1.36	83.43	MSR4908

ASRA MINERALS

Hole_ID	From (m)	To (m)	TREYO ppm	HREO/ TREO	Sc_2O_3	La_2O_3	CeO_2	Pr_6O_{11}	Nd_2O_3	Sm_2O_3	Eu_2O_3	Gd_2O_3	Tb_4O_7	Dy_2O_3	Ho_2O_3	Er_2O_3	Tm_2O_3	Yb_2O_3	Lu_2O_3	Y_2O_3	Sample ID
MSC0273	19.0	20.0	201.01	0.64	**9.20**	14.07	23.95	5.41	22.74	6.75	2.49	10.04	1.79	12.62	2.81	8.80	1.29	7.45	1.16	79.62	MSR4909
MSC0278	1.0	2.0	435.10	0.62	**46.02**	46.68	43.61	11.95	51.55	12.52	4.54	20.75	3.29	21.92	4.88	14.41	2.01	11.17	1.68	184.14	MSR4919
MSC0278	2.0	3.0	470.71	0.70	**47.55**	50.78	13.27	12.08	52.84	12.99	5.03	25.13	4.01	26.86	6.14	17.84	2.36	12.18	1.89	227.31	MSR4920
MSC0278	3.0	4.0	240.55	0.74	**46.02**	24.39	10.11	4.19	18.43	4.53	1.64	10.05	1.54	10.57	3.02	9.07	1.16	5.10	0.85	135.88	MSR4921
MSC0281	4.0	5.0	204.25	0.74	**53.68**	10.12	13.64	3.89	18.55	6.01	2.23	10.02	1.71	11.94	2.73	8.37	1.15	6.40	0.97	106.54	MSR4970
MSC0281	5.0	6.0	291.47	0.55	**41.41**	10.93	91.88	4.10	19.01	6.11	2.41	9.80	1.75	12.62	2.91	9.13	1.36	8.44	1.17	109.85	MSR4971
MSC0281	6.0	7.0	415.56	0.58	**42.95**	26.97	67.07	11.27	51.90	15.89	5.57	20.29	3.66	25.59	5.56	17.38	2.78	18.11	2.57	140.96	MSR4972
MSC0281	7.0	8.0	379.63	0.63	**53.68**	29.20	16.71	13.41	62.05	18.09	6.37	22.82	4.03	26.17	5.48	16.12	2.35	13.89	1.98	140.96	MSR4973
MSC0281	8.0	9.0	384.68	0.71	**58.29**	28.03	19.29	9.06	42.46	12.64	4.78	21.21	3.56	24.68	5.56	17.15	2.44	14.01	2.04	177.79	MSR4974
MSC0281	9.0	10.0	299.42	0.64	**58.29**	31.66	11.71	9.01	43.74	10.41	3.61	15.56	2.28	14.69	3.39	10.25	1.34	7.32	1.10	133.34	MSR4975
MSC0288	3.0	4.0	225.72	0.61	**41.41**	17.24	29.11	6.45	28.46	7.89	2.80	11.03	1.96	13.43	2.99	9.23	1.36	8.44	1.14	84.19	MSR4989
MSC0288	4.0	5.0	449.68	0.43	**65.95**	65.68	56.51	21.51	92.26	21.57	6.78	23.40	3.46	20.54	4.01	11.32	1.58	9.55	1.30	110.23	MSR4990
MSC0288	5.0	6.0	264.56	0.59	**56.75**	26.50	22.36	8.72	39.31	10.49	3.57	13.83	2.35	15.49	3.39	10.44	1.42	8.46	1.33	96.89	MSR4991
MSC0288	6.0	7.0	295.69	0.52	**58.29**	34.01	33.29	11.53	50.15	12.52	4.04	14.87	2.43	15.38	3.28	10.04	1.35	8.35	1.25	93.21	MSR4992
MSC0288	7.0	8.0	290.93	0.51	**52.15**	29.79	41.27	11.12	47.82	12.06	3.92	13.95	2.36	15.15	3.18	9.63	1.32	8.56	1.26	89.53	MSR4993
MSC0288	8.0	9.0	341.61	0.48	**52.15**	37.65	53.31	13.53	58.32	14.96	4.59	16.14	2.65	16.53	3.53	10.97	1.48	9.77	1.43	96.77	MSR4994
MSC0288	9.0	10.0	337.03	0.50	**53.68**	37.29	42.50	13.53	59.72	15.54	5.03	17.75	2.94	18.13	3.85	11.66	1.64	10.38	1.55	95.50	MSR4995
MSC0288	10.0	11.0	409.64	0.60	**55.22**	36.94	38.20	13.53	59.02	16.35	5.52	21.21	3.73	24.33	5.41	16.58	2.34	14.46	2.16	149.85	MSR4996
MSC0288	11.0	12.0	516.85	0.63	**55.22**	46.79	34.64	16.43	73.83	19.60	6.72	27.32	4.65	30.76	6.88	20.81	2.75	17.31	2.63	205.72	MSR4997
MSC0288	12.0	13.0	679.54	0.68	**52.15**	57.47	36.97	18.24	83.98	22.73	8.12	35.96	5.94	39.71	8.95	27.67	3.54	19.81	3.13	307.32	MSR4998
MSC0288	13.0	14.0	670.20	0.74	**49.08**	53.71	30.10	12.32	60.42	16.35	6.38	33.77	5.26	34.66	8.34	24.59	3.02	15.49	2.62	363.19	MSR4999
MSC0288	14.0	15.0	219.49	0.65	**49.08**	19.70	22.60	5.07	23.56	6.38	2.26	10.63	1.58	10.00	2.31	6.71	0.86	5.06	0.80	101.97	MSR5000
MSC0288	15.0	16.0	300.82	0.68	**50.62**	23.92	26.66	6.43	30.33	8.12	3.01	14.41	2.32	15.15	3.59	10.89	1.35	7.41	1.22	146.04	MSR5001
MSC0289	5.0	6.0	503.43	0.85	**58.29**	15.83	11.93	6.69	29.74	11.43	4.99	23.97	4.98	37.19	8.90	27.44	3.60	21.41	3.25	292.08	MSR5025
MSC0289	6.0	7.0	1181.03	0.59	**58.29**	68.96	271.48	21.14	94.01	28.41	10.22	50.02	9.79	61.98	13.86	42.08	5.94	31.43	4.39	467.32	MSR5026
MSC0289	7.0	8.0	754.47	0.69	**58.29**	32.13	96.31	13.65	66.48	25.51	9.32	42.07	8.80	57.50	12.60	39.11	5.98	33.02	4.66	307.32	MSR5027
MSC0289	8.0	9.0	729.95	0.69	**67.49**	36.12	77.76	15.34	70.92	25.51	10.02	40.80	7.08	54.63	11.43	32.93	4.80	28.70	4.06	309.86	MSR5028
MSC0289	9.0	10.0	614.77	0.75	**62.89**	20.41	21.87	13.89	69.87	26.90	9.39	40.11	8.30	53.14	11.29	35.22	5.37	29.61	4.00	265.41	MSR5029
MSC0289	10.0	11.0	885.52	0.70	**59.82**	56.06	16.34	25.49	123.64	40.01	13.26	58.55	10.87	64.84	14.20	43.80	6.40	33.82	4.89	373.35	MSR5030
MSC0289	11.0	12.0	1099.79	0.68	**58.29**	81.27	12.53	34.55	173.79	50.91	17.04	76.42	13.17	75.75	16.27	48.03	6.76	33.71	4.98	454.62	MSR5031
MSC0289	12.0	13.0	645.90	0.63	**62.89**	64.62	11.33	23.56	111.74	27.71	8.88	39.65	6.53	37.19	8.26	24.36	3.33	16.06	2.35	260.33	MSR5032
MSC0289	13.0	14.0	419.79	0.69	**58.29**	34.13	15.85	10.79	54.82	14.26	4.78	24.78	4.01	23.41	5.37	15.89	2.11	9.96	1.51	198.10	MSR5033
MSC0289	14.0	15.0	283.74	0.65	**58.29**	31.90	11.10	7.91	40.12	9.02	3.01	15.91	2.27	12.85	3.00	8.67	1.13	5.27	0.77	130.80	MSR5034
MSC0290	6.0	7.0	218.32	0.74	**88.96**	3.54	33.41	2.11	11.78	5.47	2.24	11.12	2.34	15.95	3.65	11.37	1.75	9.58	1.39	102.61	MSR5049
MSC0290	7.0	8.0	381.52	0.61	**87.43**	2.94	122.84	2.48	14.35	7.80	3.21	16.02	3.48	23.64	5.42	17.15	2.60	14.01	2.07	143.50	MSR5050
MSC0290	8.0	9.0	288.96	0.78	**87.43**	3.20	35.50	2.51	14.70	8.07	3.13	15.56	3.42	23.30	5.32	16.92	2.58	14.23	2.09	138.42	MSR5051
MSC0290	9.0	10.0	364.85	0.49	**76.69**	3.03	158.46	2.55	14.46	7.60	2.95	13.60	2.95	19.74	4.42	14.18	2.17	12.07	1.77	104.89	MSR5052
MSC0290	10.0	11.0	415.94	0.64	**79.76**	32.02	32.43	13.29	58.44	15.31	4.91	20.75	3.99	25.36	5.80	17.95	2.68	14.58	2.09	166.36	MSR5053
MSC0290	11.0	12.0	347.87	0.69	**82.83**	12.20	50.36	5.97	28.81	10.45	3.80	17.75	3.67	23.87	5.48	17.15	2.58	13.89	2.05	149.85	MSR5054
MSC0290	12.0	13.0	480.00	0.85	**84.36**	8.06	20.76	4.59	25.54	12.06	5.02	26.16	5.45	36.04	8.58	26.87	3.85	20.95	3.04	273.03	MSR5055
MSC0290	13.0	14.0	260.94	0.82	**96.63**	3.72	17.57	2.60	14.70	7.97	3.43	15.79	2.80	22.61	4.81	14.29	2.18	13.21	1.93	133.34	MSR5056
MSC0290	14.0	15.0	373.75	0.85	**82.83**	5.71	12.41	3.81	21.69	11.32	4.64	23.05	4.92	32.36	7.31	23.10	3.47	19.13	2.73	198.10	MSR5058

Hole_ID	From (m)	To (m)	TREYO ppm	HREO/ TREO	Sc_2O_3	La_2O_3	CeO_2	Pr_6O_{11}	Nd_2O_3	Sm_2O_3	Eu_2O_3	Gd_2O_3	Tb_4O_7	Dy_2O_3	Ho_2O_3	Er_2O_3	Tm_2O_3	Yb_2O_3	Lu_2O_3	Y_2O_3	Sample ID
MSC0290	15.0	16.0	406.97	0.78	70.56	10.72	15.48	7.22	39.31	16.93	6.41	27.89	5.81	36.61	7.86	24.70	3.73	19.81	2.88	181.60	MSR5059
MSC0290	17.0	18.0	223.21	0.80	84.36	4.89	13.88	3.10	15.86	7.22	2.78	13.26	2.63	17.56	3.99	12.12	1.74	9.79	1.49	112.89	MSR5061
MSC0291	7.0	8.0	216.86	0.84	65.95	7.83	6.92	2.40	12.13	4.50	1.83	10.71	1.98	13.31	3.14	9.81	1.40	7.64	1.18	132.07	MSR5075
MSC0291	8.0	9.0	1045.33	0.74	64.42	57.35	50.12	23.44	106.96	32.82	11.55	56.94	10.50	69.89	15.58	47.68	6.72	37.01	5.74	513.04	MSR5076
MSC0291	9.0	10.0	576.91	0.74	50.62	31.20	29.60	12.81	58.55	17.86	6.59	31.12	5.69	36.15	8.14	25.16	3.45	18.22	2.83	289.54	MSR5078
MSC0291	10.0	11.0	256.89	0.72	53.68	18.06	10.45	6.19	29.86	8.07	2.94	14.98	2.38	14.46	3.28	9.63	1.23	6.14	0.97	128.26	MSR5079
MSC0291	11.0	12.0	225.05	0.69	59.82	19.70	11.73	5.40	25.66	6.41	2.32	12.45	1.81	10.99	2.46	7.26	0.93	4.67	0.74	112.51	MSR5080
MSC0292	1.0	2.0	250.21	0.75	47.55	17.47	6.67	5.44	25.08	7.08	2.61	13.14	2.29	14.81	3.38	10.30	1.52	8.32	1.30	130.80	MSR5096
MSC0292	2.0	3.0	574.68	0.75	56.75	32.95	24.57	12.32	56.92	16.58	6.39	29.05	5.03	34.09	8.17	25.84	3.27	18.33	2.74	298.43	MSR5098
MSC0292	3.0	4.0	507.76	0.70	59.82	29.55	48.52	11.08	50.50	14.96	5.82	25.36	4.32	29.27	6.85	21.38	2.72	15.14	2.27	240.01	MSR5099
MSC0292	4.0	5.0	571.06	0.76	62.89	30.96	22.85	12.32	56.69	16.47	6.15	28.35	4.99	33.63	7.86	25.04	3.22	17.65	2.65	302.24	MSR5100
MSC0292	5.0	6.0	299.35	0.76	59.82	15.25	14.99	5.58	26.94	8.00	3.10	14.41	2.43	16.53	4.00	12.81	1.59	8.61	1.31	163.82	MSR5101
MSC0292	6.0	7.0	335.44	0.75	61.35	18.65	17.81	6.75	31.49	9.14	3.48	16.60	2.72	17.79	4.36	13.84	1.71	9.37	1.41	180.33	MSR5102
MSC0292	7.0	8.0	210.78	0.70	62.89	13.72	14.50	4.92	23.44	6.49	2.42	11.02	1.69	10.98	2.61	8.15	1.02	5.44	0.86	103.50	MSR5103
MSC0293	2.0	3.0	261.05	0.69	61.35	19.47	21.50	5.65	27.06	7.40	2.86	13.14	2.23	15.26	3.52	11.24	1.53	9.43	1.39	119.37	MSR5119
MSC0293	3.0	4.0	360.64	0.69	61.35	24.16	39.31	6.91	33.13	9.82	3.90	17.29	2.99	20.20	4.52	14.75	1.91	12.30	1.83	167.63	MSR5120
MSC0293	4.0	5.0	351.68	0.73	59.82	19.70	17.57	8.34	38.02	11.38	4.36	17.64	3.29	22.95	5.20	17.50	2.54	16.85	2.54	163.82	MSR5121
MSC0293	5.0	6.0	455.91	0.70	61.35	41.28	8.82	12.56	58.55	15.07	5.75	27.43	4.27	27.54	6.23	18.87	2.28	12.07	1.82	213.34	MSR5122
MSC0293	6.0	7.0	294.47	0.79	59.82	23.92	9.42	4.12	19.60	5.14	1.99	11.99	1.71	11.06	2.90	8.78	0.90	4.33	0.67	187.95	MSR5123
MSC0294	5.0	6.0	663.28	0.70	49.08	21.23	108.22	9.04	44.56	15.89	6.21	29.51	5.46	36.38	8.02	26.76	3.67	20.27	2.99	325.09	MSR5145
MSC0294	6.0	7.0	583.03	0.59	46.02	18.41	151.09	9.60	44.09	15.89	5.97	23.51	4.67	32.25	6.69	23.21	3.27	19.36	2.79	222.23	MSR5146
MSC0294	7.0	8.0	589.46	0.66	58.29	32.02	57.00	16.07	71.97	24.12	8.63	32.50	6.74	42.69	8.51	28.82	4.03	24.25	3.53	228.58	MSR5147
MSC0294	8.0	9.0	493.84	0.70	61.35	30.84	14.74	15.22	68.35	21.45	7.73	30.31	5.90	36.27	7.34	23.90	3.23	18.79	2.76	206.99	MSR5148
MSC0294	9.0	10.0	531.68	0.78	58.29	29.08	8.88	10.85	51.90	15.19	5.98	29.16	5.18	33.05	7.37	23.78	2.92	14.12	2.13	292.08	MSR5149
MSC0294	10.0	11.0	382.11	0.77	59.82	25.92	9.57	7.55	35.81	9.29	3.43	18.44	2.93	18.13	4.26	13.95	1.66	7.74	1.19	222.23	MSR5150
MSC0295	5.0	6.0	383.34	0.64	59.82	33.54	44.84	8.95	40.47	10.33	3.78	17.87	3.05	19.05	4.07	13.04	1.56	7.72	1.09	173.98	MSR5163
MSC0295	6.0	7.0	225.22	0.70	59.82	23.81	8.83	4.92	23.44	5.53	1.92	10.36	1.54	9.88	2.33	7.72	0.94	4.77	0.75	118.48	MSR5164
MSC0296	2.0	3.0	207.47	0.63	49.08	19.94	19.41	5.44	25.08	6.01	2.23	9.75	1.61	10.52	2.41	7.14	0.97	6.21	0.86	89.91	MSR5180
MSC0296	4.0	5.0	206.69	0.55	59.82	32.60	5.98	8.31	37.79	7.63	2.42	9.96	1.34	7.75	1.83	5.47	0.74	4.54	0.69	79.62	MSR5182
MSC0296	5.0	6.0	508.04	0.66	72.09	79.63	10.58	11.88	58.79	11.25	4.09	23.40	2.81	16.64	4.26	12.46	1.52	7.88	1.25	261.60	MSR5183
MSC0296	6.0	7.0	823.10	0.70	50.62	83.03	34.40	18.61	89.46	22.73	8.50	39.65	6.22	39.14	9.00	26.64	3.59	22.43	3.18	416.53	MSR5184
MSC0296	7.0	8.0	435.05	0.74	50.62	36.59	9.94	9.11	43.27	12.29	4.61	21.78	3.73	24.79	5.92	18.07	2.44	15.49	2.24	224.77	MSR5185

ASRA MINERALS

JORC Code, 2012 Edition – Table 1

Section 1 Sampling Techniques and Data

Criteria	JORC Code explanation	Commentary
Sampling techniques	• *Nature and quality of sampling (eg 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.* • *Include reference to measures taken to ensure sample representivity and the appropriate calibration of any measurement tools or systems used.* • *Aspects of the determination of mineralisation that are Material to the Public Report.*	• Assay results reported in this document at Asra's Yttria REE and Scandium Deposit are from Reverse Circulation drilling (RC). • Reverse circulation drilling (for Au) was used to obtain 1m samples for laboratory analysis. • Samples were dispatched to LabWest in Perth for analysis by their MMA-04 methodology: LabWest's sample preparation regime (Code PREP-01) has been devised to ensure conformity with accepted statistical sampling approaches. After reception and sorting, RC drill samples are dried at 110°C. Samples greater than ~700g are fine-crushed to less than 2mm, before being rotary-split to ~500g. A coarse duplicate is taken from every 40th sample for analysis. Samples are then pulverised to minus 75µm. Pulveriser bowls are routinely cleaned with a barren charge between samples. Soil, Aircore, RAB, samples <3kg. Sort, dry, split, pulverize to -75µm.
Drilling techniques	• *Drill type (eg core, reverse circulation, open-hole hammer, rotary air blast, auger, Bangka, sonic, etc) and details (eg 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).*	• RC drilling was carried out utilising a face sampling bit with holes generally 155mm in diameter.
Drill sample recovery	• *Method of recording and assessing core and chip sample recoveries and results assessed.* • *Measures taken to maximise sample recovery and ensure representative nature of the samples.* • *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.*	• Drill chips were taken by sieving each 1m sample and any zones of poor recovery were noted in both drillers logs or geologist notes. • Drilling was paused at 1m sampling intervals to reduce any smearing of results and sampling equipment routinely cleaned to avoid any contamination.
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.* • *Whether logging is qualitative or quantitative in nature. Core (or costean, channel, etc) photography.* • *The total length and percentage of the relevant intersections logged.*	• Sieved RC chips were collected for each 1m interval and logged and photographed for later interpretation and reference. • All geological logging is qualitative in nature. • No geotechnical logging was conducted.
Sub-sampling techniques and	• *If core, whether cut or sawn and whether quarter, half or all core taken.* • *If non-core, whether riffled, tube sampled, rotary split, etc. and whether sampled wet or dry.* • *For all sample types, the nature, quality and appropriateness of the sample*	• No drill core undertaken. • Resultant RC sample size of 3-5kg considered appropriate for 1m samples. • Wherever possible, RC samples were taken dry via a rotary onboard

Criteria	JORC Code explanation	Commentary
sample preparation	*preparation technique.* • *Quality control procedures adopted for all sub-sampling stages to maximise representivity of samples.* • *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.* • *Whether sample sizes are appropriate to the grain size of the material being sampled.*	splitter. • QA/QC data of the Asra drilling includes insertion and subsequent checks of periodical standards. • Certified Reference Materials (CRM's) are included and analyzed in each batch of sample.
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.* • *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.* • *Nature of quality control procedures adopted (eg standards, blanks, duplicates, external laboratory checks) and whether acceptable levels of accuracy (ie lack of bias) and precision have been established.*	• LabWest laboratories inserted check samples for each batch of samples analysed and reports these accordingly with all results. • The laboratory QAQC has been assessed in respect of the RC chip sample assays and it has been determined that the levels of accuracy and precision relating to the samples are acceptable. • Rare Earth element (and multi element) analysis have been obtained utilising LabWest's MMA-04 technique. This involves coupling of microwave assisted, HF based digestion with Induced Coupled Plasma-Mass Spectrometry (ICP-MS) determination.
Verification of sampling and assaying	• *The verification of significant intersections by either independent or alternative company personnel.* • *The use of twinned holes.* • *Documentation of primary data, data entry procedures, data verification, data storage (physical and electronic) protocols.* • *Discuss any adjustment to assay data.*	• Drill intercepts have been tabulated in this re[port using a 200ppm TREYO cut-off, with up to 2m of material which may be just under the 200ppm cutoff, yet still mineralised with either REE and/or Scandium Oxide. • Intercepts were cross checked by Asra's REE Consultant and Competent Person, Professor Ken Collerson. • Several RC holes of this reported drill program were designed to be close to previously drilled Vacuum drillholes at Yttria to check variability. • Original LabWest assay files were supplied to Asra's database manager, MaxGeo, and merged in their DataShed software with matching sample numbers and hole-from-to data supplied by Asra. • Terminology used in this report for the rare earth element follows the convention of the International Union of Pure and Applied Chemistry (IUPAC), whereby the LREE are defined as La, Ce, Pr, Nd and Sm, and the HREE as Eu, Gd, Tb, Dy, Ho, Er, Tm, Yb, Lu plus Y. • Elemental analysis was recalculated to Oxide values for the purpose of standard reporting of REE's.
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.* • *Specification of the grid system used.* • *Quality and adequacy of topographic control.*	• Drill hole collars were located using a handheld GPS system referenced to MGA Zone 51 Datum GDA 94. Accuracy of the handled GPS devices is within +/-5m. • Collar elevations were further enhanced by pressing an SRTM topographic digital terrain surface (Shuttle Radar Topographic Mission)

Criteria	JORC Code explanation	Commentary
		data onto the drillhole plan and assigning a more representative topographic level value. • Drillholes will be surveyed more accurately using the 'ANT' differential GPS system supplied by the Precision Mining and Drilling company and will be sub centimeter accuracy,
Data spacing and distribution	• *Data spacing for reporting of Exploration Results.* • *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.* • *Whether sample compositing has been applied.*	• Drill spacing is based on a 80m x 40m grid pattern with some infill to 40m x 40m. • Samples were not composited.
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.* • *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.*	• The drill grid is orientated 330 degrees to align with the general geological strike. • The Regolith hosted REE mineralisation is more vertically variable, and not necessarily aligned with regional geological strike.
Sample security	• *The measures taken to ensure sample security.*	• Drill samples were collected at the drill site in calico bags at Yttria, Mt Stirling, by Asra personnel. • Samples were transported from site to LabWest laboratory in Perth by Asra employees/contractors. • A sample submission form containing laboratory instructions was submitted to the laboratory.
Audits or reviews	• *The results of any audits or reviews of sampling techniques and data.*	• A thorough review of sampling techniques has been performed internally by Asra but an independent audit is yet to be implemented. • The entire historical drillhole database at Mt Stirling has recently been reconstructed using Max Geo's DataShed database system. This has involved significant due diligence, ground truthing and verification of sample quality for ongoing work. • Further QA/QC work is ongoing with a campaign of additional field duplicate sampling underway ay Yttria.

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 security of the tenure held at the time of reporting along with any known impediments to obtaining a licence to operate.*	• Drilling was carried on valid Western Australian Prospecting Licenses 100% owned by Asra Minerals and are in good standing. • PL's 37/8845, /8846, /8847, and /8899.
Exploration done by other parties	• *Acknowledgment and appraisal of exploration by other parties.*	• In 2022, Asra completed various vacuum auger drilling (AV) and RC drilling campaigns across parts of the Mt Stirling area. • To date, 1317 AV holes for 16,516m has been completed. • No other historical drilling work has been done on the licenses.
Geology	• *Deposit type, geological setting and style of mineralisation.*	• Tenements are located within the Leonora District of the Kalgoorlie terrane, approximately 30 km northwest of Leonora in Western Australia. • Geologically, the project sits within the Archean Norseman-Wiluna Greenstone Belt. • The area is moderately well exposed and contains many minor gold occurrences and old workings along with several significant economic gold discoveries in the surrounding Leonora District, including the King of the Hills, Sons of Gwalia, Tower Hill and Harbour Lights deposits. • The Mt Stirling project areas are within the older (pre-2817 Ma) Leonora stratigraphy which consists of tholeiitic and komatiitic basalts, with minor interbedded sedimentary units. • The rocks are affected by amphibolite to upper greenschist metamorphism, with metamorphic grade increasing toward the contact with the Raeside Batholith. • The Leonora Inlier is divided by a number of large shear zones including the Ursus and Tarmoola Shear Zones within the main northwest-trending greenstone package, and the Gwalia (Poker) Shear Zone on the eastern margin of the Raeside Batholith. • The Rare Earth mineralisation at Yttria is associated within clays within the Regolith profile. • The origin of the rare earths are still not fully understood and is subjects to ongoing investigation and research by Asra. • The discovery also represents a homogenous and large presence of significantly elevated Scandium Oxide (Sc_2O_3) throughout the entire regolith. Potential economic levels of Scandium are pervasive throughout the entire regolith profile at Yttria. • Interpretation of specific chemical ratios within the Yttria regolith assays

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<table>
<tr><th>Criteria</th><th>JORC Code explanation</th><th>Commentary</th></tr>
<tr><td></td><td></td><td>suggest that the mafic/ultramafic intrusion below Yttria is a comparatively rare plume-generated alkaline intrusion.</td></tr>
<tr><td>Drill hole Information</td><td>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:
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.</td><td>A full table of drillhole collar details and significant drill intercepts is included in this report.
Not required.</td></tr>
<tr><td>Data aggregation methods</td><td>In reporting Exploration Results, weighting averaging techniques, maximum and/or minimum grade truncations (eg cutting of high grades) and cut-off grades are usually Material and should be stated.
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.
The assumptions used for any reporting of metal equivalent values should be clearly stated.</td><td>Elemental assay values received by LabWest were recalculated to REE industry standard oxide equivalents using the following arithmetic formulas:
<table>
<tr><th>La</th><th>Ce</th><th>Pr</th><th>Nd</th><th>Sm</th><th>Eu</th><th>Gd</th><th>Tb</th><th>Dy</th><th>Ho</th><th>Er</th><th>Tm</th><th>Yb</th><th>Lu</th><th>Y</th><th>Sc</th></tr>
<tr><td>1.1727729</td><td>1.2284000</td><td>1.2081628</td><td>1.1663831</td><td>1.1595682</td><td>1.1434844</td><td>1.1526175</td><td>1.1761800</td><td>1.1476866</td><td>1.1455000</td><td>1.1435000</td><td>1.1421000</td><td>1.1387000</td><td>1.1371000</td><td>1.2699000</td><td>1.5338364</td></tr>
<tr><td>La2O3</td><td>CeO2</td><td>Pr6O11</td><td>Nd2O3</td><td>Sm2O3</td><td>Eu2O3</td><td>Gd2O3</td><td>Tb4O7</td><td>Dy2O3</td><td>Ho2O3</td><td>Er2O3</td><td>Tm2O3</td><td>Yb2O3</td><td>Lu2O3</td><td>Y2O3</td><td>Sc2O3</td></tr>
</table>
Ratios of Total/Heavy/Light/Magnet REE have been reported according to IUPAC standards as tabled below:
<table>
<tr><td>Total HREYO</td><td>Eu2O3 Gd2O3 Tb4O7 Dy2O3 Ho2O3 Er2O3 Tm2O3 Yb2O3 Lu2O3 Y2O3</td></tr>
<tr><td>TREYO</td><td>La2O3 CeO2 Pr6O11 Nd2O3 Sm2O3 Eu2O3 Gd2O3 Tb4O7 Dy2O3 Ho2O3 Er2O3 Tm2O3 Yb2O3 Lu2O3 Y2O3</td></tr>
<tr><td>TREYO-Ce02</td><td>La2O3 CeO2 Pr6O11 Nd2O3 Sm2O3 Eu2O3 Gd2O3 Tb4O7 Dy2O3 Ho2O3 Er2O3 Tm2O3 Yb2O3 Lu2O3 Y2O3 minus CeO2</td></tr>
<tr><td>Magnet REE</td><td>Pr6O11 Nd2O3 Tb4O7 Dy2O3</td></tr>
<tr><td>HREYO/TREYO</td><td>(Eu2O3+Gd2O3+Tb4O7+Dy2O3+Ho2O3+Er2O3+Tm2O3+Yb2O3+Lu2O3+Y2O3) / TREYO</td></tr>
<tr><td colspan="2">This is the classification of HREEs as defined by IUPAC =International Union of Pure and Applied Chemists</td></tr>
</table></td></tr>
<tr><td>Relationship between mineralisation widths and intercept lengths</td><td>These relationships are particularly important in the reporting of Exploration Results.
If the geometry of the mineralisation with respect to the drill hole angle is known, its nature should be reported.
If it is not known and only the down hole lengths are reported, there should be a clear statement to this effect (eg 'down hole length, true width not known').</td><td>Mineralisation trends of REE are sub-horizontal.
As drilling was vertical, reported drill intercepts are interpreted to be very close to true widths.
Scandium oxide mineralisation appears to be very pervasive from near surface and orientations not yet fully understood However, high grade Sc_2O_3 zones also appear to be sub horizontal so reported drill intercepts are also currently interpreted to be close to true widths.</td></tr>
<tr><td>Diagrams</td><td>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.</td><td>Plan and cross-section figures are included in this report.</td></tr>
<tr><td>Balanced reporting</td><td>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.</td><td>Significant REE assays above 200ppm TREYO have been tabulated in this report however it is not practical to report all assays due to the volume of data. Asra believes the selection of assay reporting is appropriate and in no way misleading.</td></tr>
</table>

Criteria	JORC Code explanation	Commentary
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.*	• REE and Scandium was first recognized as being highly anomalous at Mt Stirring by Asra in 2022. • To date, pXRF, vacuum and RC drilling has been conducted but no diamond drilling has yet been undertaken to ascertain density and structures. • A bulk sample is being collected from Asra's drill samples for metallurgical testwork.
Further work	• *The nature and scale of planned further work (eg tests for lateral extensions or depth extensions or large-scale step-out drilling).* • *Diagrams clearly highlighting the areas of possible extensions, including the main geological interpretations and future drilling areas, provided this information is not commercially sensitive.*	• Step-out pXRF geochemical surveys to detect along strike extensions of REE and Scandium mineralisation is underway. • Geological analysis and interpretation from RC drill chip logging and assay chemistry is also in progress. • Further drilling is planned to define REE and Scandium extents. • Several diamond holes are in planning to assist rock, mineralisation, mineralogical, metallurgical and density characterization. • Metallurgical testwork is being planned once material characteristics of the regolith and REE dispersion are better understood.