

ASX ANNOUNCEMENT

27 April 2023

ASX: AHK

Directors

Executive Chairman Roger Jackson

Executive Director
Ben Emery

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Projects

- Gunnawarra
 Nickel-Cobalt
- Mt JesseIron Copper
 - Sandy Mitchell
 Rare Earths
- PlutonGold



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TARGET AREAS DEFINED FOR UPCOMING SANDY MITCHELL RARE EARTHS DRILL PROGRAM

HIGHLIGHTS

- Ark is proposing to drill a defined 2.0 km² area of the ~147km² anomalous Sandy Mitchell Rare Earths placer deposit in North Queensland commencing mid-next month
- 10,067 hectares (100km²) of Rare Earth-enriched ("REE") thorium anomalies are located inside the tenement perimeter making the project potentially very large
- Historic augur drilling shows an anomalous REE area of over 30km² (refer figure 4)
- Planning for the drill program has highlighted the scale of the anomalous REE and Heavy Metals (refer Figure 3)
- Infill and extension drilling of historic augur drill holes to maximum ore body depths, will
 provide data for a resource estimate, as well as material for further metallurgical
 and beneficiation test work
- Previous beneficiation work has shown the sandy mineralised material can be significantly upgraded by simple gravitational processes. Beneficiation is proposed to be undertaken in situ, and in parallel with the free dig loader extraction.
- Phase 1 drill program will focus on a tangible sized area comprising:
 - 2.0 km² in a 120m-by-120m grid over the historic Augur program; and
 - 30 reconnaissance holes testing the broader anomaly

Ark Mines Ltd (ASX: AHK, "Ark" or the "Company") is pleased to report that it has now detailed the first phase drilling program at the Sandy Mitchell *advanced* Rare Earths and Heavy Minerals project ("Sandy Mitchell" or the "Project") contained in sands that hosts both light and heavy rare earths and heavy minerals. The program is on track to commence mid next month with the drill rig secured.

Significant historical work has been undertaken across the project including completion of more than 100 augur drill holes (*refer figure 4*), along with sediment and stream sampling. Extensive pan concentrates have also been collected, which best reflect the Project's grades given the Rare Earths Elements at Sandy Mitchell are hosted in sands.

MANAGEMENT COMMENTARY

Executive Chairman Roger Jackson said: "We are pleased to present a detailed outline of the Phase 1 drill program at Sandy Mitchell, following an extensive review and planning process. The program has been designed to carry out targeted testing of historic augur drill holes, complemented by 30 renassiance holes to test the scale of the broader REE anomaly. The additional 30 drill holes were commissioned after the planning and review process highlighted the potential scale of the project, where previous auger drilling already shows evidence of an anomalous REE area covering more than 30km^2 . In that context, the commencement of drilling marks the first step in Ark's stated strategy to further establish the credentials of Sandy Mitchell as a significant Australian rare earths project. The nature of the deposit, with rare earths hosted in sands, also makes it amenable to on-site beneficiation by gravity processing which will allow the Company to fast-track exploration efforts. We remain very confident the project has material upside and look forward to providing futher updates as the drill program progresses. Ark is also continuing to advance its other assets in Queensland, with the key focus on the Gunnawarra Nickel Project where we anticipate updating shareholders more fully on our progress in the coming weeks."

The Sandy Mitchel REE Project is located in North Queensland with main road access to port facilities at Mourilyan Harbour (*refer Figure 1*).

The Project tenement is enriched in REE through multi-stage erosion and alluvial deposition of the Mesopalaeozoic Yambo metamorphics with remnant outcrops north of the Project tenement (EPM 28013) (*refer Figure 2*).

The ephemeral drainage system has resulted in alluvial transportation heavy element enrichment (*refer Figure 2*). This is most evident in thorium band radiometric readings, which correlate with other enriched elements of comparable weight, including REE (*refer Figure 2 and Figure 4*).

The high range thorium anomaly within the Project tenement covers an area of 10,067ha (refer Figure 3).

Ark plans to commence resource drilling on a 120m-by-120m pattern over a 2km² area, with four follow-up resource grids planned for future extension (*refer Figure 4*). This drilling will be backed up by 30 reconnaissance holes targeting untested areas of the anomalous zone (*refer Figure 4*).

The aim of the program is to extend REE grade guidance from the historic auger and pan concentrate samples over the majority of the alluvial REE zone. Table 1 shows the pan concentrate results for the locations marked on (*refer Figure 5*).

Table 1: Pan concentrate results for locations marked on Figure 5.

Sampl	e E MGA94z54	N MGARA:54	Samp Type	TREO ppm	LREO %	HREO %	CREO 96	Mag Reo	Sc ₂ O ₃	La ₂ O ₃	CeO ₂	Pr ₆ O ₁₁	Nd ₂ O ₃	Sm ₂ O ₃	Eu ₂ O ₃	Y ₂ O ₃	Tb ₄ O ₇	Dy ₂ O ₃	Ho ₂ O ₃	Er ₂ O ₃	Tm ₂ O ₃	Yb ₂ O ₃
430A	813624		Pan Con	153,969	95.4	4.6	23.7		225.5	3.26		8,288		4,650					174.1	354.5	7.7	ppm 160.56
443A	808124	8196989	Pan Con	94,180	95.5	4.5	23.1	25.3	220.9	2.05	4.34	5,014	1.7846	2,876	88.5	2,806	197.6	797	103.8	215.0	19.6	109.77
443B	808125	8196989		17,554	91.1	8.9	25.5		309.8	0.35	0.76		0.3126	513	25.5	1,062	46.6	211	37.1	99.0		90.185
447A	807601	8195835		47,376	95.0	5.0	23.7		123.0	1.02		2,525				1,549		457	58.2	114.4		50.786
450A	812239	8195625		174,126	95.9	4.1	23.0		171.8	3.75				5,369		4,661	407.0		173.0	335.0		133.23
450B	812239 812274	8195625 8195859		17,929 184,777	90.6 95.8	9.4	26.1		300.6 199.4	0.35 3.99	0.77		0.3231	525 5,624	24.0 162.1	1,156 5,029		1,515	39.7 184.4	109.0 355.6		100.21 144.61
452A	810407	8190286		158,691	95.8	4.2	22.7		170.3	3.48					143.6	4,407		1,308	162.7	313.3		125.26
452B	810407	8190286		30,334	93.8	6.2	24.4		233.1	0.63		1,583		914	36.6	1,261	74.9	304	45.0	107.0		79.14
452A2	810408	8190286	Pan Con	123,058	95.7	4.3	22.8		135.0	2.73					118.1		297.6	1,002	131.7	268.7	19.8	112.73

Figure 1: Project location and transport infrastructure:

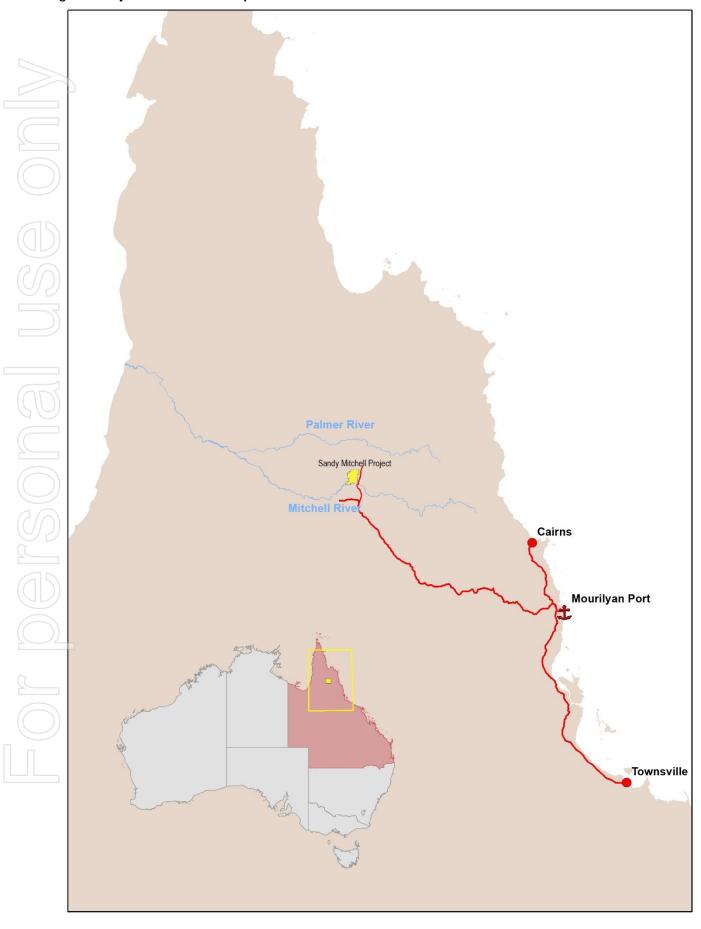


Figure 2: Thorium anomaly correlation with current drainage system:

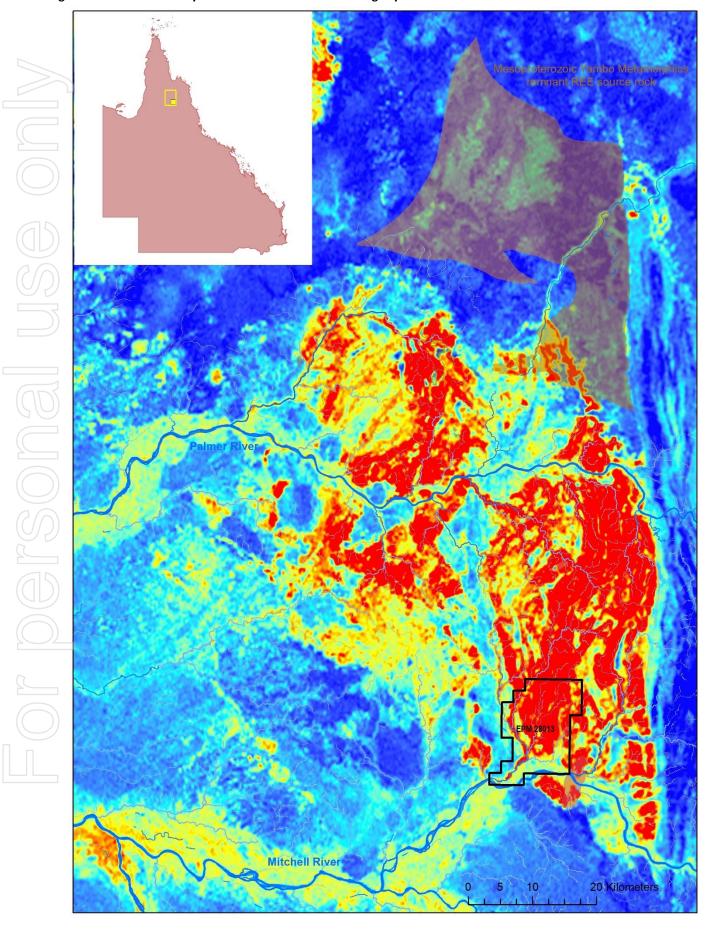


Figure 3: The size of the thorium anomaly correlating with REE enriched alluvial sands within the Project: tenement is

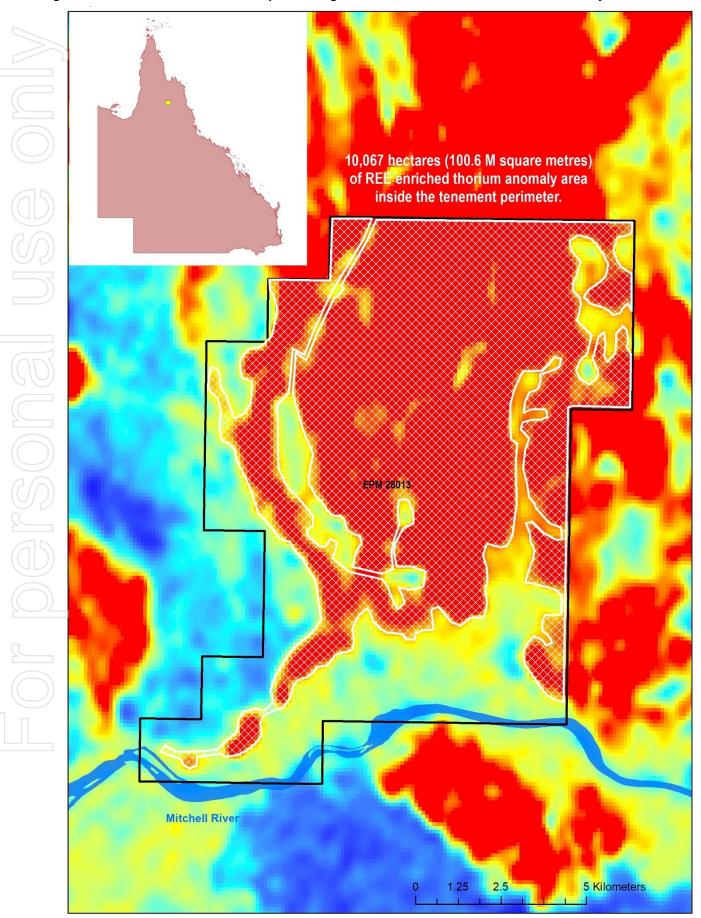
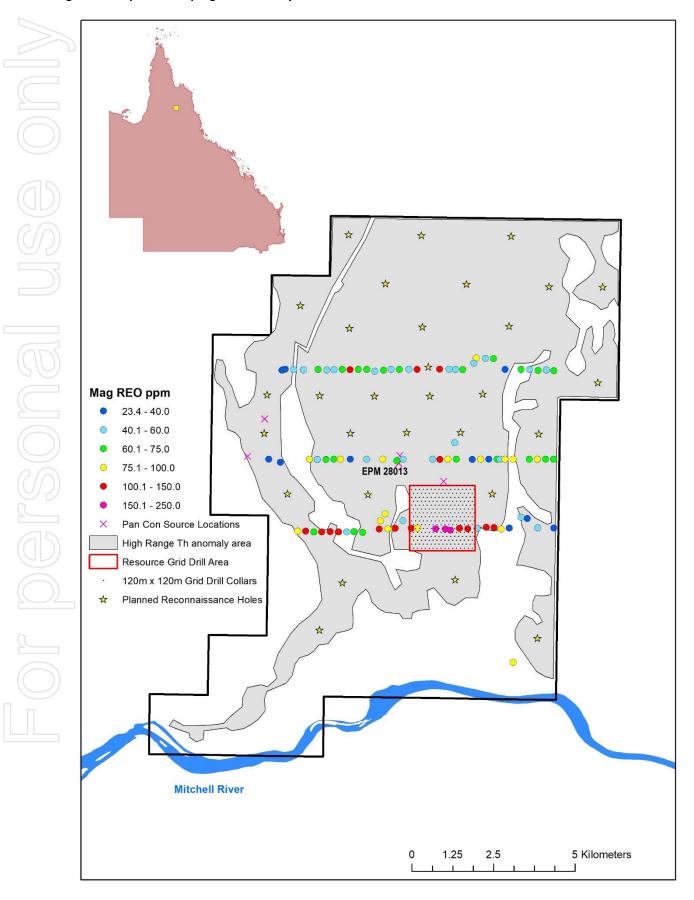


Figure 4. Proposed drill program for Sandy Mitchell. Focussed area in red:



180,000

PLye

PLyr?

PLyr?

PLyr2

PLys/2

Pmb1

Figure 5: Location of high-grade Pan Concentrate samples which define follow-up exploration targets:

This announcement has been approved by the Board of Ark Mines Ltd.

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Or visit our website and social media www.arkmines.com | www.twitter.com/arkmineslimited | www.linkedin.com/company/ark-mines-limited/

About Ark Mines Limited

Ark Mines is an ASX listed Australian mineral exploration company focused on developing its 100% owned projects located in the prolific Mt Garnet and Greenvale mineral fields of Northern Queensland. The Company's exploration portfolio consists of three high quality projects covering 200km² of tenure that are prospective for copper, iron ore, nickel-cobalt and porphyry gold:

Gunnawarra Nickel-Cobalt Project

- Comprised of 11 sub-blocks covering 36km²
- Borders Australian Mines Limited Sconi project the most advanced Cobalt-Nickel-Scandium project in Australia
- Potential synergies with local processing facilities with export DSO Nickel/Cobalt partnership options

Mt Jesse Copper-Iron Project

- Project covers a tenure area of 12.4km² located ~25km west of Mt Garnet
- Centered on a copper rich magnetite skarn associated with porphyry style mineralization
- Three exposed historic iron formations
- Potential for near term production via toll treat and potential to direct ship

Pluton Porphyry Gold Project

- Located ~90km SW of Cairns near Mareeba, QLD covering 18km²
- Prospective for gold and associated base metals (Ag, Cu, Mo)
- Porphyry outcrop discovered during initial field inspection coincides with regional scale geophysical interpretation

Sandy Mitchell Rare Earth and Heavy Mineral Project

- Ark has recently Acquired the 147km2 EPM 28013 'Sandy Mitchell' an advanced Rare Earths Project in North Queensland with additional 138km2 of sub blocks under application
- Very high historical TREO grades* including high grade pan concentrates of:
 - 18.4% TREO
 - 17.4% TREO
 - o 15.8% TREO
 - o 15.3% TREO
 - 12.3% TREO
 - 9.4% TREO
 - 4.7% TREO
 - 3.3% TREO
 - *Historical data, Not to JORC 2012 code standards
- Project contains all critical Light Rare Earths as well as Heavy Rare Earths including dysprosium (Dy), terbium (Tb), holmium (Ho), erbium (Er), thulium (Tm) ytterbium (Yb), yttrium (Y) and excluding only Lutetium
- Up to 25% of the TREO is Nd and Pr (magnet metals)
- Rare Earths at 'Sandy Mitchell' are amenable to panning a concentrate; Planned low-cost, fast start up, straightforward beneficiation by gravity processing

Reliance on Historic data

All sample data reported in this release, as disclosed in the body of the release, in the tables in the Appendix and in the JORC table is based on data compiled by the Competent Person from other sources and quoted in their original context. These sources have been referenced in the text and the original Competent Persons statements may be found with the relevant documents. Some of this information is publicly available but has not been reported in accordance with the provisions of the JORC Code and a completed Table 1 of the JORC Code and Competent Persons statement is attached to this Release. Whilst every effort has been made to validate and check the data, these results should be considered in the context in which they appear and are subject to field verification by the Company.

Cautionary Statement

The panned concentration samples were taken by Stuart Foster, and the reported assay results supplied to MKY Resources Ltd and Delminco Pty Ltd (2007 to 2009). Stuart Foster, the present owner of the tenement has supplied a hard copy of the panned concentrate results to Ark. Mr Foster has also supplied a statement pertaining to the sampling procedures undertaken. There is however some information which is not available, and cannot be included in the Table 1. Sample results were sent to SGS Townsville for assaying the assay technique is yet to be determined and the assay receipts have not been sited. It is possible that following further evaluation and/or exploration work that the confidence in the prior exploration results may be reduced when reported under the JORC Code 2012. However, nothing has come to the attention of Ark that causes it to question the accuracy or reliability of S Fosters exploration results. The Company however has not independently validated the former explorer's exploration results and therefore is not to be regarded as reporting, adopting or endorsing those results.

Competent Persons Statement

The Information in this report that relates to exploration results, mineral resources or ore reserves is based on information compiled by Mr Roger Jackson, who is a Fellow of the Australian Institute of Mining and Metallurgy and a Fellow of the Australasian Institute of Geoscientists. Mr Jackson is a shareholder and director of the Company. Mr Jackson has sufficient experience which is relevant to the style of mineralisation and type of deposits under consideration and to the activity that he is undertaking to qualify as a Competent Person as defined in the 2012 edition of the `Australian Code for Reporting Exploration Results, Mineral Resources and Ore Reserves' (the JORC Code). Mr Jackson consents to the inclusion of this information in the form and context in which it appears in this report. Mr Jackson confirms information in this market announcement is an accurate representation of the available data for the exploration areas being acquired.

Forward Looking Statements and Important Notice

This report contains forecasts, projections and forward-looking information. Although the Company believes that its expectations, estimates and forecast outcomes are based on reasonable assumptions it can give no assurance that these will be achieved. Expectations and estimates and projections and information provided by the Company are not a guarantee of future performance and involve unknown risks and uncertainties, many of which are out of Ark Mines' control.

Actual results and developments will almost certainly differ materially from those expressed or implied. Ark Mines has not audited or investigated the accuracy or completeness of the information, statements and opinions contained in this announcement. To the maximum extent permitted by applicable laws, Ark Mines makes no representation and can give no assurance, guarantee or warranty, express or implied, as to, and takes no responsibility and assumes no liability for the authenticity, validity, accuracy, suitability or completeness of, or any errors in or omission from, any information, statement or opinion contained in this report and without prejudice, to the generality of the foregoing, the achievement or accuracy of any forecasts, projections or other forward looking information contained or referred to in this report.

Investors should make and rely upon their own enquiries before deciding to acquire or deal in the Company's securities.

Appendix A: JORC Code, 2012 Edition – Table 1

Section 1 Sampling Techniques and Data

method, etc).

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. In cases where 'industry standard' work has been done this would be relatively simple (eg 'reverse circulation drilling was used to obtain 1 m samples from which 3 kg was pulverised to produce a 30 g charge for fire assay'). In other cases, more explanation may be required, such as where there is coarse gold that has inherent sampling problems. Unusual commodities or mineralisation types (eg submarine nodules) may warrant disclosure of detailed information. 	Data taken from W. Scott and Partners EPM18308 2014 Annual Report CR075376 Augur Sampling Auger programme, using 6m auger Total soils were collected by hand from the collar to give a composite sample of 5m or depth of refusal, Sample was split by 25/75 riffle splitter to yield a 3 to 4 kg aliquot per hole Data provided by Stuart Foster and pertaining to the panned concentration samples. Stream and soil samples were panned to yield a heavy mineral concentrate. The panned residual material was placed in calico sample bags and sent to SGS for assaying.
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 	 Augur Samples Augur Drilling 6-inch diameter 5m depth Vertical hole Panned Concentrates No drilling undertaken

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/coarsmaterial.

Augur Samples

- Recoveries were not recorded.
- Relationships between sample recovery and grade could not be determined without original sample weight data, however the CP does not believe a material relationship exists given it was Augur sampling. Short hole auger soil sampling is not known to cause significant material fractionation as might be expected with RAB or RC techniques.

Panned Concentrates

• No drilling undertaken

Augur Samples

- Samples were not logged
- Total Counts per second were taken

Panned Concentrates

Not logged

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.

Subsampling techniques and sample preparation

- 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 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.

Augur Samples

- Samples were composited over the full length of the Augur depth.
- Total soils were collected progressively by hand from the collar to give a composite sample of 5m or depth of refusal.
- Sample was split by 25/75 riffle splitter to yield a 3 to 4 kg aliquot per hole.
- The samples size is appropriate to the grain size of the material sampled: Sand to very fine sand.

Panned Concentrates

- No compositing undertaken
- The sample size would be appropriate to the grain size of the material sampled. Sand to very fine sand.

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.

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.

Augur Samples

- Drill samples were sent to SGS Laboratories Townsville.
- Aliquots were collected from the splitter in calico sample bags and submitted to SGS Townsville for assay by ICP-OES
- Duplicate samples were produced at a rate of 1 in 13 and assayed.
- Twin auger holes were drilled at a rate of 1 in 100 with sample and assay as per other holes.
- The laboratory procedure was SGS ICP95A for major elements and IMS41Q for REE.

Panned Concentrates

- The samples were sent to SGS Laboratories Townsville.
- The laboratory procedure was SGS ICP95A for major elements and IMS41Q for REE.
- Duplicate samples were taken Refer to the panned concentrate table.

Augur Samples

- The work was undertaken by others.
- There is no way of verifying the sampling or the data other than observation of its spatial relationships and internal consistency.
- Assay data yielding elemental concentrations for rare earths (REE) within the sample are converted to their stoichiometric oxides (REO) in a calculation performed within the database using the conversion factors in the table below.
- Rare Earth oxide is the industry accepted form for reporting rare earths. The following calculations have been used for reporting throughout this report;

TREO = La203 + Ce02 = Pr6O11 + Nd2O3 + Sm2O3 + Eu2O3 + Gd2O3 + Tb4O7 + Dy2O3 + Ho2O3 + Er2O3 + Tm2O3 + Yb2O3 + Lu2O3+ Y2O3

CREO = Nd2O3 + Eu2O3 + Tb4O7 + Dy2O3 + Yb2O3

LREO = La203 + Ce02 = Pr6O11

HREO = Sm2O3 + Eu2O3 + Gd2O3 + Tb4O7

+ Dy2O3 + Ho2O3 + Er2O3 + Tm2O3 +

Yb2O3 + Lu2O3+ Y2O3

ND/Pr = Nd2O3 + Pr6O11

TREO - Ce = TREO - CeO2

%NdPr + NdPr/TREO

Element	Element	Oxide Factor
Name	Oxide	
Ce	CeO2	1.2284
Dy	Dy2O3	1.1477
Er	Er2O3	1.1435
Eu	Eu2O3	1.1579
Gd	Gd2O3	1.1526
Но	Ho2O3	1.1455
La	La2O3	1.1728
Lu	Lu2O3	1.1371
Nd	Nd2O3	1.1664
Pr	Pr6O11	1.2081
Sc	Sc2O3	1.5338
Sm	Sm2O3	1.1596
Tb	Tb4O7	1.1762
Th	ThO2	1.1379
Tm	Tm2O3	1.1421
U	U3O8	1.1793
Υ	Y2O3	1.2699
Yb	Yb2O3	1.1387

Panned Concentrates

- The work was undertaken by others.
- There is no way of verifying the sampling or the data other than observation of its spatial relationships and internal consistency.

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.

Augur Samples

- All collar coordinates were located with hand held GPS with an accuracy of ±5m.
- All coordinates were converted from WGS84 UTM z 54, to MGA94 z 54 by the GPS.
- Current topographic control is by AGSO DEM derived 10m contours which are of greater accuracy than the ±50m available from hand held GPS. This is sufficient for the current stage of pre-resource exploration.

Panned Concentrates

- All collar coordinates were located with hand held GPS with an accuracy of ±5m.
- All coordinates were converted from WGS84 UTM z 54, to MGA94 z 54 by the GPS.
- Current topographic control is by AGSO DEM derived 10m contours which are of greater accuracy than the ±50m available from hand held GPS. This is sufficient for the current stage of pre-resource exploration.

Augur Samples Data • Data spacing for reporting of Augur drilling was undertaken over three spacing and Exploration Results. E-W fences of auger holes approximately distribution Whether the data spacing and each 9 km long distribution is sufficient to Hole spacings at approximately 250 establish the degree of metres. geological and grade continuity appropriate for the Mineral Samples were composited at the sampling Resource and Ore Reserve stage. estimation procedure(s) and These factors result in some data gaps that require infill. classifications applied. Whether sample compositing has Variography to determine appropriateness of grade continuity for been applied. resource estimation has not yet been carried out but the current spacing is not expected to support resource estimation. • No resource or reserve is reported. Panned Concentrates Samples were taken randomly in areas with a high radiometric reading. No resource or reserve is reported. **Augur Samples** Orientation Whether the orientation of Drill holes were drilled vertically which is of data in sampling achieves unbiased appropriate for horizontal regolith profile. sampling of possible structures relation to Any sampling bias resultant from the geological and the extent to which this is orientation of drilling and possible structure known, considering the deposit structural offsets of mineralisation is type. considered to be minimal. If the relationship between the The fence of augur holes running east west drilling orientation and the cross the North south alluvial patterns. orientation of key mineralised The orientation of the drilling is considered structures is considered to have appropriate for testing the lateral and introduced a sampling bias, this vertical extent of mineralisation without should be assessed and reported if material. any bias. **Panned Concentrates** • The sampling is random • There is no relationship of sampling to mineralisation orientation. Sample The measures taken to ensure • Samples were farmed on the remote site security sample security. with batches transported and delivered to SGS by company personnel. • The results of any audits or **Audits or** Data was audited in mid Feb 2023 by reviews reviews of sampling techniques independent geologists of Empirical Earth and data. Science. The data was found to be acceptable for the current stage of exploration with recommendation that

the original assay returns and laboratory QAQC be sourced from the previous

owner or SGS Townsville.

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 in the area. 	 EPM 28013 Sandy Mitchell is 100% owned by Ark Mines Limited. It was purchased on the 23rd of February 2023. This tenement was formally EPM18308 There are no third-party agreements No known issues impeding on the security of the tenure of Ark Mines ability to operate in the area exist.
Exploration done by other parties	Acknowledgment and appraisal of exploration by other parties.	 A number of companies and individuals have explored the area for gold and base metals and for heavy minerals. The summaries presented below are from the IRTM source: ATP 597M was granted to Laskan Minerals Pty Ltd in 1969 over the Reid Creek area, north of the Mitchell River. From assays of rock chip and stream sediment samples, it was concluded that there was little chance of economic mineralisation occurring in the Authority. Although good monazite grades were obtained, the samples were from creeks with little available wash. Good concentrations of monazite and ilmenite were present in large areas of sandy, alluvial sheet wash in the Reid's Creek area. It was believed that there was a potential for economic exploitation if the monazite concentrations occurred in a large enough volume of sandy material. No further work was reported. In 1970, Altarama Search Pty Ltd was granted ATP 833M over the Mitchell River in the Reid Creek, Sandy Creek and Mount Mulgrave Homestead area. Four hundred stream sediment samples, at an average density of 1.25 samples/km², were collected for assay. Copper and

Criteria	JORC Code explanation	Commentary
		lead contents were low. Half of the zinc results were considered to be possibly anomalous. A two-population distribution was obtained for zinc, with a standard threshold of about 15 ppm. It was suggested that the two population distributions represented normal background ranges present in different strata. No other work was carried out. • ATP 2580M was granted to Tacam Pty Ltd over Sandy Creek and its tributaries. Stream sediment samples averaged 0.18% monazite (0.01 to 0.45%), 0.07% rutile (0.15% in terraces), and 0.06% zircon (0.14% in terraces). The area had low economic potential and the Authority was abandoned in August
		 The principals involved in Tacam Pty Ltd combined with Metcalfe Holdings Pty Ltd in 1986 to take up 4 Authorities to Prospect - 4400,4401,4402 and 4403 centred on Mt Mulgrave, Arkara Creek, Sandy Creek and the Kennedy River respectively. The investigations were for the possibility of locating large-scale heavy minerals in association with major drainages and lower slope eluvial deposits associated with Cretaceous weathering as indicated in previous investigations. EPM 4400, 4401, 4402 and 4403
		 Barron and O'Toole focused on Mt Mulgrave for Ilmenite, rutile, REE, Monzonite, Zircon, and Gold. Tenement EPM 4400 consisted of 96 sub-blocks centred on Mount Mulgrave (7665, 7765), EPM 4401 consisted of 97 sub-blocks centred on Arkara Creek (7665), EPM 4402 consisted of 100 sub- blocks centred on Sandy Creek (7665) and EPM 4403 consisted of 86 sub-blocks centred on Kennedy River (7666, 7766) were granted to P.T.C. Barron, A. O'Toole and Metcalfe Holdings Pty Ltd on 22 September 1986 to explore for heavy minerals and precious metals. After three years of exploration the

EPMs were surrendered on 22 August

1989.

carried out AEM surveying, field mapping

sedimentary lithological units or obvious

and sampling and drilling. The AEM targets were found to be related to

shear zones.

Criteria	JORC Code explanation	Commentary
Geology	 Deposit type, geological setting 	 In 2007 - 2009 - MTY Resources Ltd undertook bulk sampling program along with a Panned Concentrate sampling program as reported in this report. In 2012 Waverley Nominees undertook an Augur sampling program as set out in this report. The tenement covers portion of the
	Deposit type, geological setting and style of mineralisation.	 The tenement covers portion of the southern extent of the Yambo Inlier, one of the several Proterozoic inliers to the west of the Palmerville Fault System. Rocks of the Yambo Inlier covered by the tenement comprise those of the middle Proterozoic Yambo Metamorphic Group of mainly amphibolites and gneisses ranging in age from ~1690 Ma to ~1585 Ma. These rocks have been intruded by Silurian-Devonian granites of the Lukinville Suite which form an integral part of the Cape York Batholith. Within the tenement they form a belt roughly 10 km wide trending NNW. Extensive intrusions of Carboniferous-Permian dolerites occur throughout the Inlier, with only a few occurrences within the tenement. The tenement is largely gold deficient except for the gold reporting to sediments within the Palmer River. Recent Governmental radiometric surveys have highlighted areas of anomalous radiometric emission within the Yambo Inlier. The project tenements cover the majority of the anomalous radiometric areas. There are many stream systems within the Mulgrave/Sandy Mitchell tenements and they contain concentrations of rare earth minerals. These minerals have been derived from the now denuded remnant Jurassic-Cretaceous sandstone-pebble conglomerates and quartz sandstones, with the greater volumes being associated with the breakdown of the Mesoproterozoic basement rocks. Isolated areas of high garnet concentrations are derived from irregular zones of highly garnetiferous dolerites and schists.

Criteria	JORC Code explanation	Commentary
Drill hole Information	 A summary of all information material to the understanding of the exploration results including a tabulation of the following information for all Material drill holes: easting and northing of the drill hole collar elevation or RL (Reduced Level – elevation above sea level in metres) of the drill hole collar dip and azimuth of the hole down hole length and interception depth hole length. If the exclusion of this information is justified on the basis that the information is not Material and this exclusion does not detract from the understanding of the report, the Competent Person should clearly explain why this is the case. 	 Augur Samples Refer to Table in Appendices C Panned Concentrate Refer to Table in Appendices B
Data aggregation methods	 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 	 Augur Samples No high or Low-grade top/bottom-cut has been applied. The total data set is reported in Appendix C. REE Equivalent TREO (total REE oxides) is reported as this is the industry standard for presentation of REE data. Stoichiometric calculation of REE oxide equivalents were performed in units of ppm, with TREO, LREO (light REE oxides), HREO (heavy REE Oxides), CREO (critical REE oxides) and Mag REO (magnet production REE oxides), as per Table 1 page 2 and 3, yielding these factors as concentrations and percentages of TREO concentration. Panned Concentrates The total data set is reported in Appendix B
Relationship between mineralisati on widths and	 values should be clearly stated. These relationships are particularly important in the reporting of Exploration Results. If the geometry of the mineralisation with respect to 	 Augur Samples All holes sample assays are based on sampling of the whole hole length. The mineralisation is interpreted to be flat lying and drilling is vertical perpendicular to

Criteria	JORC Code explanation	Commentary
intercept lengths	 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'). 	mineralisation. Any internal variations to REE distribution within the horizontal layering was not defined, therefore the true width is considered not known at the current stage of development. Panned Concentrates Not relevant to soil samples
Diagrams	• Appropriate maps and sections (with scales) and tabulations of intercepts should be included for any significant discovery being reported These should include, but not be limited to a plan view of drill hole collar locations and appropriate sectional views.	See plan image 2 and 3.
Balanced reporting	Where comprehensive reporting of all Exploration Results is not practicable, representative reporting of both low and high grades and/or widths should be practiced to avoid misleading reporting of Exploration Results.	 Results reported include all recovered assay, both low and high grade, for all holes. See Appendix B and C for full data.
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.	 All data material to this report that has been collected to date has been reported textually, graphically or both. Absent material data includes, Drill collar RLs, bulk density, the nature, quality and appropriateness of the assaying and laboratory procedures, water table height and geotechnical characteristics is absent from the historical data record recovered so far, and current data is still undergoing analysis. These data are not relevant to the current pre-resource drill data release.
Further Work	 The nature and scale of planned further work. 	 Ark plans to undertake further infill Augur drilling, further beneficiation test work, pilot plant test work. Resourcing and reserve studies.

Appendix B: Panned Concentrate Table

### 5980 ### 5980# 5980# 5980 ### 5980	4204			Samp Type	ppm	LREO %	HREO %	%	Mag Reo %	ppm	%	%	ppm	%	Sm ₂ O ₃	ppm	Gd ₂ O ₃	ppm	Tb ₄ O ₇	ppm	ppm	ррт	ppm	ppm	Lu ₂ O ₃ ppm	Note
4438 808125 8196989 Pan Con 17,554 91.1 8.9 25.5 24.3 309.8 0.35 0.76 887 0.3126 513 25.5 1,062 46.6 211 37.1 99.0 13.6 90.185 twin 40.74 240 80.761 8189535 Pan Con 17,326 95.0 5.0 2.77 25.6 12.30 10.2 2.5 2.525 90.0 1,450 56.0 1,549 10.0 457 58.2 11.4 97 50.786 450.0 812329 8195635 Pan Con 17,326 95.9 4.1 23.0 12.2 56.1 17.8 3.75 8.11 3,351 3,338 5.369 135.5 4,661 407.0 1.00 173.0 333.0 25.9 133.3 450.0 135.5 10.0 11 17,00 173.0 133.0 25.9 133.3 450.0 135.5 10.0 11 17,00 173.0 133.0 25.9 133.3 450.0 135.5 10.0 11 17,00 173.0 133.0 25.9 133.3 450.0 135.0 13																										
447A 807601 8195835Pan Con 47,376 95.0 5.0 23.7 25.6 123.0 1.02 2.16 2.25 0.994 1,450 56.0 1,549 120.0 457 58.2 114.4 9.7 50.786 450A 13232 8195625Pan Con 174,126 95.9 4.1 23.0 25.6 171.8 3.75 8.11 9.351 33.395 5,380 135.5 4,661 47.0 1,400 17.0 33.5 25.9 132.33 450B 812228 8195625Pan Con 179,795 98. 4 2 23.1 25.6 199.4 39.6 9.8 9.895 5,545 16.2 1.0 1,545 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0																										huin
450A 812239 8195625 Pan Con 17329 90.6 94 261 224.6 30.6 0.33 0.7 994 0.231 525 24.0 1.156 47.0 1.70 1.70 30 38.0 25.9 133.23 45.0 1.70 1.70 1.70 1.70 1.70 1.70 1.70 1.																										CWIII
## 1812/14 ## 195859 Pan Com 184,777 95.8 4.2 23.1 25.6 199.4 3.99 8.59 3.859 5.624 162.1 5.029 441.1 1.515 184.4 35.6 28.1 144.61 ## 18274 8190286 Pan Com 158,691 95.8 4.2 22.7 25.2 170.3 3.48 7.79 85.18 2.9743 4.859 13.6 4.407 381.1 1.381 16.77 31.3 24.3 12.5 ## 1828 819027 8190286 Pan Com 30.334 93.8 6.2 24.4 25.3 233.1 0.63 1.36 1.583 0.5715 914 36.6 1.261 74.9 304 45.0 107.0 12.6 79.14 ## 1828 8190286 Pan Com 123,058 95.7 4.3 22.8 24.7 135.0 2.73 5.72 5.932 2.3211 3.792 118.1 3.467 297.6 1.002 131.7 268.7 19.8 112.73 ## 1829 8190286 Pan Com 123,058 95.7 4.3 22.8 24.7 135.0 2.73 5.72 5.932 2.3211 3.792 118.1 3.467 297.6 1.002 131.7 268.7 19.8 112.73 ## 1820 Total REE Oxides = \$			8195625	Pan Con			4.1				3.75	8.11	9,351	3.3359	5,369			4,661								
2A 810407 8190286 Pan Con 158,691 95.8 4.2 22.7 25.2 170.3 3.48 737 8.518 2.9743 4.899 143.6 4.407 381.1 1,308 162.7 313.3 24.3 125.26 8 810407 8190286 Pan Con 30,334 93.8 6.2 24.4 25.3 23.1 0.63 1.36 1.583 0.5715 914 3.6 1.261 74.9 30.4 45.0 107.0 12.6 79.14 twin 2A2 810408 8190286 Pan Con 123,058 95.7 4.3 22.8 24.7 135.0 2.73 5.72 5.92 2.3211 3,792 118.1 3,467 297.6 1,002 131.7 268.7 19.8 112.73 duplicate te: E0: Total REE Oxides = \$																										twin
828 810407 8190286 Pan Con 30,334 93.8 6.2 24.4 25.3 233.1 0.63 1.36 1.583 0.5715 914 36.6 1.261 74.9 304 45.0 107.0 12.6 79.14 wwin 5222 810408 8190286 Pan Con 123,058 95.7 4.3 22.8 24.7 135.0 2.73 5.72 5.932 2.3211 3,792 118.1 3,767 297.6 1,002 131.7 268.7 19.8 112.73 duplicate ote: Total REE Oxides = Sc_O ₂ + La ₂ O ₃ + CeO ₂ + Pr ₆ O ₁₁ + Nd ₂ O ₃ + Sm ₂ O ₃ + Eu ₂ O ₃ + Gd ₂ O ₃ (includes Sc) NB: Gd not assyed REO: Total REE Oxides = Y _{O₂} + Th ₂ O ₃ + Pr ₆ O ₃ + Th ₂																										
8190286 Pan Con 123,058 95.7 4.3 22.8 24.7 135.0 2.73 5.72 5.932 2.3211 3,792 118.1 3,467 297.6 1,002 131.7 268.7 19.8 112.73 duplicate te: Column																										twin
Total REE Oxides = Sc ₂ O ₃ + La ₂ O ₃ + CeO ₂ + Pr ₆ O ₁₁ + Nd ₂ O ₃ + Sm ₂ O ₃ + Eu ₂ O ₃ + Gd ₂ O ₃ + Y,O ₃ + Tb ₄ O ₇ + Dy ₂ O ₃ + Ho ₂ O ₃ + Yb ₂ O ₃ + Lu ₂ O ₃ (includes Sc & Y) NB: Gd & tu not asoyed D: Light REE Oxides = Sc ₂ O ₃ + La ₂ O ₃ + CeO ₂ + Pr ₆ O ₁₁ + Nd ₂ O ₃ + Sm ₂ O ₃ + Eu ₂ O ₃ + Gd ₂ O ₃ (includes Sc) NB: Gd not asoyed D: Total REE Oxides = Y ₂ O ₃ + Tb ₄ O ₇ + Dy ₂ O ₃ + Ho ₂ O ₃ + Fr ₂ O ₃ + Tm ₂ O ₃ + Yb ₂ O ₃ + Lu ₂ O ₃ (includes Y) NB: Lu not asoyed D: Critical REE Oxides = Nd ₂ O ₃ + Eu ₂ O ₃ + Y ₂ O ₃ + Tb ₄ O ₇ + Dy ₂ O ₃ (US Dept' Energy Definition) REO: Magnet Production REE Oxides = Pr ₆ O ₁₁ + Nd ₂ O ₃ , Tb ₄ O ₇ + Dy ₂ O ₃																										
O: Total REE Oxides = Sc ₂ O ₃ + La ₂ O ₃ + CeO ₂ + Pr ₆ O ₁₁ + Nd ₂ O ₃ + Sm ₂ O ₃ + Eu ₂ O ₃ + Gd ₂ O ₃ + Y ₂ O ₃ + Tb ₄ O ₇ + Dy ₂ O ₃ + Ha ₂ O ₃ + Tm ₃ O ₃ + Yb ₂ O ₃ + Lu ₂ O ₃ (Includes Sc & Y) NB: Gd & Lu not assayed O: Light REE Oxides = Sc ₂ O ₃ + La ₂ O ₃ + CeO ₂ + Pr ₆ O ₁₁ + Nd ₂ O ₃ + Sm ₂ O ₃ + Eu ₂ O ₃ + Gd ₂ O ₃ (Includes Sc) NB: Gd not assayed O: Total REE Oxides = Y ₂ O ₃ + Tb ₂ O ₇ + Dy ₂ O ₃ + Ha ₂ O ₃ + Er ₂ O ₃ + Tm ₂ O ₃ + Yb ₂ O ₃ + Lu ₂ O ₃ (Includes Y) NB: Lu not assayed O: Critical REE Oxides = Nd ₂ O ₃ + Eu ₂ O ₃ + Tb ₂ O ₇ + Dy ₂ O ₃ (US Dept' Energy Definition) g REO: Magnet Production REE Oxides = Pr ₆ O ₁₁ + Nd ₂ O ₃ , Tb ₄ O ₇ + Dy ₂ O ₃																										
NR: Gd &L unot asoyed O: Light REE Oxides = \$C_2O_3 + La_2O_3 + CeO_2 + Pr_6O_{11} + Nd_2O_3 + Sm_2O_3 + Eu_2O_3 + Gd_2O_3 (Includes Sc) NR: Gd not asoyed C: Total REE Oxides = \$Y_2O_3 + Tb_2O_7 + Dy_2O_3 + Ho_2O_3 + Er_2O_3 + Tm_2O_3 + Vb_2O_3 + Lu_2O_3 (Includes Y) NR: Lu not asoyed O: Critical REE Oxides = \$N_2O_3 + Eu_2O_3 + Y_2O_3 + Tb_2O_7 + Dy_2O_3 (US Dept' Energy Definition) g REO: Magnet Production REE Oxides = \$Pr_6O_{11} + Nd_2O_3 + Tb_2O_7 + Dy_2O_3	e:																									
NB: Gd & Lu not asoyed EO: Light REE Oxides = Sc ₂ O ₃ + La ₂ O ₃ + CeO ₂ + Pr ₆ O ₁₁ + Nd ₂ O ₃ + Sm ₂ O ₃ + Eu ₂ O ₃ + Gd ₂ O ₃ (includes Sc) NB: Gd not asoyed EO: Total REE Oxides = Y ₂ O ₃ + Tb ₄ O ₇ + Dy ₂ O ₃ + Ho ₂ O ₃ + Fr ₂ O ₃ + Tm ₂ O ₃ + Vp ₂ O ₃ + Lu ₂ O ₃ (includes Y) NB: Lu not asoyed EO: Critical REE Oxides = Nd ₂ O ₃ + Eu ₂ O ₃ + V ₂ O ₃ + Tm ₂ O ₃ + Vp ₂ O ₃ (Us Dept' Energy Definition) REO: Magnet Production REE Oxides = Pr ₆ O ₁₁ + Nd ₂ O ₃ , Tb ₄ O ₇ + Dy ₂ O ₃	EO:	Total REE Oxide	s = Sc ₂ O ₂ + La	a ₂ O ₂ + CeO ₂ + l	Pr ₆ O ₁₁ + Nd	O ₂ + Sm ₂ O	2 + Eu ₂ O ₂ -	+ Gd ₂ O ₂ + Y	/2O2 + Tb4O2	+ Dy ₂ O	+ Ho ₂ O ₂	+ Er ₂ O ₂ +	+ Tm ₂ O ₂ -	+ Yb ₂ O ₂ +	Lu ₂ O ₂ (ir	cludes S	c & Y)									
NB: Gd not asayed EO: Total REE Oxides = Y,O ₃ + Tb ₄ O ₇ + Dy ₂ O ₃ + Tm ₂ O ₃ + Tm ₂ O ₃ + Tu ₂ O ₃ + Lu ₂ O ₃ (includes Y) NB: Lu not asayed EO: Critical REE Oxides = Nd ₂ O ₃ + Eu ₂ O ₃ + Y,O ₃ + Tb ₄ O ₇ + Dy ₂ O ₃ (US Dept' Energy Definition) g REO: Magnet Production REE Oxides = Pr _Q O ₁₁ + Nd ₂ O ₃ + Tb ₄ O ₇ + Dy ₂ O ₃				2 32	0-11	2-3 - 2-	3 -2-3		2-3 -4-7	72-3	2.3	2-3	2-3	-2-3	1213											
Total REE Oxides = Y ₂ O ₃ + Tb ₄ O ₇ + Dy ₂ O ₃ + Ho ₂ O ₃ + Er ₂ O ₃ + Tm ₂ O ₃ + Vb ₂ O ₃ + Lu ₂ O ₃ (includes Y) NB: Lu not assyed EO: Critical REE Oxides = Nd ₂ O ₃ + Eu ₂ O ₃ + Y ₂ O ₃ + Tb ₄ O ₇ + Dy ₂ O ₃ Magnet Production REE Oxides = Pr ₆ O ₁₁ + Nd ₂ O ₃ , Tb ₄ O ₇ + Dy ₂ O ₃	EO:	Light REE Oxides	s = Sc ₂ O ₃ + La	a ₂ O ₃ + CeO ₂ + I	Pr ₆ O ₁₁ + Nd	O ₃ + Sm ₂ O	3 + Eu ₂ O ₃ +	+ Gd ₂ O ₃ (in	ncludes Sc)																	
NB: Lu not asayed CO: Critical REE Oxides = Nd ₂ O ₃ + Eu ₂ O ₃ + Tb ₄ O ₇ + Dy ₂ O ₃ (US Dept' Energy Definition) Ig REO: Magnet Production REE Oxides = Pr ₆ O ₁₁ + Nd ₂ O ₃ · Tb ₄ O ₇ + Dy ₂ O ₃ Magnet Production REE Oxides = Oxides																										
Critical REE Oxides = Nd ₂ O ₃ + Eu ₂ O ₃ + Y ₂ O ₃ + Tb ₄ O ₇ + Dy ₂ O ₃ (US Dept' Energy Definition) Ig REO: Magnet Production REE Oxides = Pr ₆ O ₁₁ + Nd ₂ O ₃ , Tb ₄ O ₇ + Dy ₂ O ₃	EO:			4O ₇ + Dy ₂ O ₃ +	Ho ₂ O ₃ + Er ₂	O ₃ + Tm ₂ O ₃	3 + Yb2O3 +	· Lu ₂ O ₃ (in	cludes Y)																	
Magnet Production REE Oxides = Pr ₆ O ₁₁ + Nd ₂ O ₃ · Tb ₄ O ₇ + Dy ₂ O ₃	EO:			Eu ₂ O ₂ + Y ₂ O ₂	+ Tb ₄ O ₂ + I	Ov ₂ O ₂ (US	Dept' Ener	rgy Definition	on)																	
								5, 5																		
				-	-						-		-	. —											-	

Appendix C: Augur Sample Table

	Sample ID	E MGA94z54	N MGA94z54	Samp Type	TREO	LREO	HREO	CREO	Mag Reo	Sc ₂ O ₃	La ₂ O ₃				Sm ₂ O ₃		Gd ₂ O ₃	Y ₂ O ₃	Tb ₄ O ₇					Yb ₂ O ₃	Lu ₂ O ₃	Note
	SM-01	809133	8193543	Auger	ppm 368.93	% 97.15	% 2.85	18.48	% 23.15	<i>ppm</i> 17.€	78.3	ppm 162.1	ppm 18.7	<i>ppm</i> 60.3	ppm 10.3	<i>ppm</i> 1.5	<i>ppm</i> 9.5	ppm	ppm 1.11	<i>ppm</i> 5.3	<i>ppm</i> 1.09	<i>ppm</i> 2.3	<i>ppm</i> 0.38	ppm	<i>ppm</i> 0.38	
	SM-02	809383	8193538	Auger	457.05	97.72	2.28	18.68	23.65	12.3	99.0	208.8	24.0	77.3	12.9	1.3	10.9		1.21	5.5	1.03	2.1	0.32		0.31	
	SM-03 SM-04	809634 809873	8193515 8193517	Auger	270.14 479.30	97.16 97.30	2.84	18.21 18.56	22.73	13.2 23.9	56.3 101.0	121.0 211.3	13.4 24.2	43.4 79.2	7.4 13.6	1.2	6.6 11.4		0.81 1.38	3.8	0.80 1.37	1.7 2.7	0.29	\vdash	0.27	
	SM-05	810135	8193520	Auger	515.48	97.81	2.19	19.34	24.54	13.2	_	226.0	28.2	91.0	15.3	1.4	12.9		1.38	6.0	1.11	2.2	0.34		0.33	
	SM-6A SM-6B	810388 810388	8193515 8193515	Auger	350.92 424.01	96.85 97.80	3.15 2.20	18.33 18.60	22.73 23.54	24.7 12.7	70.6 91.0	151.1 194.1	17.3 22.1	56.0 71.6	9.6 12.1	1.8	8.8 9.9		1.11	5.4	1.19 0.92	2.5 1.8	0.42		0.42	duplicate
	SM-6B-2	810388	8193515	Auger	470.40	97.78	2.22	18.46	23.43	14.1	101.8	215.0	24.6	78.7	13.2	1.3	11.2		1.32	5.5	1.01	2.1	0.29		0.27	duplicate
	SM-07 SM-08	810641 810866	8193513 8193524	Auger Auger	237.47 276.48	96.50 96.77	3.50 3.23	17.91 18.19	21.98 22.53	19.5	45.7 56.9	103.1 119.2	11.1	36.3 43.6	6.3 7.7	1.4	5.8 6.7		0.79	4.0	0.88	1.9 2.1	0.33	\vdash	0.35	
	SM-09	811134	8193498	Auger	307.50	97.88	2.12	18.52	23.45	9.7	67.9	138.8	16.1	51.8	8.7	0.9	7.1		0.80	3.4	0.63	1.3	0.19		0.18	
	SM-10 SM-11	811638	8193602	Auger	481.23	97.76 96.93	2.24	19.70 18.38	25.03	11.7 23.6	108.7 83.6	208.8 174.4	26.8 19.9	86.5 64.6	14.5 11.4	1.1	12.2 9.9		1.35	5.7	1.05 1.31	2.1 2.7	0.31	\square	0.28	
	SM-12	811823 811672	8194069 8193858	Auger Auger	401.64 367.71	97.92	3.07 2.08	18.12	22.89 22.94	8.3	81.9	169.5	19.9	60.0	10.8	1.0	9.5		1.08	4.4	0.70	1.3	0.43		0.43	
	SM-13	811904	8193610	Auger	391.60	97.15	2.85	18.38	22.99	23.2	81.5	170.7	19.7	63.7	10.7	1.6	9.3		1.14	5.5	1.17	2.5	0.41		0.42	
	SM-14 SM-15	812103 812371	8193624 8193862	Auger	342.34 234.51	97.23 97.55	2.77	18.51 18.31	23.22 22.97	19.3	70.6 50.8	149.9 104.7	17.4 12.1	56.1 38.3	9.7 6.6	1.3	8.5 5.4		1.06 0.66	4.9 2.9	0.96	1.9	0.30		0.30	
	SM-16	812620	8193624	Auger	512.77	98.05	1.95	19.04	24.17	11.5	117.2	227.3	27.8	89.3	15.4	1.5	12.8		1.40	5.4	0.96	1.8	0.24		0.18	
	SM-17 SM-18	812812 812128	8193635 8193628	Auger Auger	418.58 484.67	98.04 97.91	1.96 2.09	18.41 19.59	23.19 24.79	9.4	94.4	191.6 210.1	21.7 26.7	69.8 86.5	11.9 14.8	1.8	9.8 12.7		1.09	4.5	0.77 1.00	1.5 1.8	0.19	\vdash	0.17 0.18	-
	SM-19	813376	8193613	Auger	670.81	98.27	1.73	19.21	24.75	15.8		294.8	37.5	119.0	19.1	1.7	15.3		1.65	6.5	1.10	1.9	0.24		0.16	
	SM-20	813667	8193602	Auger	628.88	97.93	2.07	20.09	25.51	13.2		272.7	35.5	115.9	19.1	1.4	16.0		1.75	7.2	1.24	2.3	0.29		0.22	
	SM-21 SM-22	813828 814104	8193570 8193626	Auger Auger	976.52 546.97	98.61 98.09	1.39 1.91	18.57 19.40	23.80 24.78	12.0		481.5 238.3	52.3 30.8	170.3 97.9	27.8 17.0	1.2	20.7		2.03 1.35	7.8	1.20	2.2	0.23	\vdash	0.15	
	SM-23	814360	8193613	Auger	450.85	98.03	1.97	18.77	23.87	8.9	98.0	207.6	24.0	77.7	13.5	1.1	11.2		1.19	4.7	0.86	1.7	0.23		0.19	
	SM-24A SM-24B	814650 814650	8193627 8193627	Auger Auger	377.89 244.44	97.21 96.22	2.79 3.78	17.98 19.71	22.52 24.37	20.9	78.8 53.6	167.1 89.9	18.7 12.7	60.0 41.3	10.9 7.3	1.6	9.5 7.6		1.14	5.3	1.11 0.97	2.3	0.38	\vdash	0.36	duplicate
	SM-25	814929	8193655	Auger	611.92	97.84	2.16	19.07	24.28	17.3	143.1	264.1	33.5	106.6	17.6	1.6	14.9		1.60	6.9	1.35	2.6	0.39		0.39	- spireute
	SM-26	815167 815390	8193650 8193605	Auger	445.58	97.36 97.38	2.64	18.19 18.19	23.00	16.4 20.7	95.8 91.4	201.5 192.9	22.8 21.7	72.4 70.0	12.4 11.7	1.4 1.6	11.1 10.6		1.26	6.0 5.7	1.21 1.15	2.5 2.4	0.41	\vdash	0.41	
	SM-27 SM-28	815390 815633	8193605 8193638	Auger Auger	431.86 356.82	97.46	2.62 2.54	18.19	22.86 22.63	16.9	76.6	159.7	17.8	57.4	9.6	1.6	8.5		1.02	4.6	0.93	1.9	0.39		0.36	
	SM-30	815633	8193638	Auger	155.48	85.87	14.13	29.02	23.27	16.7	20.6	54.0	6.0	26.5	4.5	1.2	3.9		0.05	3.7	0.56	2.2	0.23	1.4	0.20	-
	SM-342 SM-343	813963 817006	8196260 8193634	Auger Auger	200.68 106.98	87.40 90.70	12.60 9.30	27.52 24.36	22.55 21.84	17.8	35.2 17.8	70.3 45.6	7.6 3.9	33.4 17.5	5.5 2.8	1.3 0.6	4.5 2.3	16.25 6.03	0.54	3.8	0.60	2.3 0.9	0.22	1.4 0.6	0.23	
	SM-345	816502	8193639	Auger	197.98	89.20	10.80	27.08	23.81	15.2	34.6	72.4	8.0	35.2	5.7	1.0	4.6	13.46	0.51	3.4	0.53	1.9	0.18	1.1	0.18	
	SM-346 SM-347	816001 816186	8193966 8193926	Auger Auger	230.41 143.18	88.45 86.95	11.55 13.05	27.64 28.09	23.75 23.22	19.5	38.9 21.9	82.2 48.0	9.1 5.5	40.7 24.4	6.8 4.2	1.1 0.8	5.4 3.6		0.61	3.0	0.63	2.3 1.7	0.23	1.4	0.22	
	SM-348	815504	8198504	Auger	178.71	88.90	11.10	23.79	20.15	14.1	24.0	79.6	5.8	26.2	4.6	0.7	3.7	11.66	0.47	3.4	0.54	1.9	0.22	1.4	0.20	
	SM-349 SM-350	815750 815995	8189504 8198510	Auger Auger	304.94 290.74	90.68	9.32 9.23	26.97 26.07	25.04 23.99	14.1	56.5 52.3	117.4 117.6	13.2 12.0	57.7 52.6	9.4 8.1	1.0	7.1 6.1	18.03 17.14	0.75	4.7	0.68	2.4	0.25	1.4 1.3	0.23	<u> </u>
	SM-351	816251	8198508	Auger	217.75	90.69	9.31	26.13	24.06	14.4	39.5	82.9	9.0	39.4	6.4	0.8	5.0		0.63	3.4	0.49	1.8	0.16	1.0	0.15	
	SM-352	816518	8198477	Auger	249.05	92.03	7.97	25.98	25.29	10.6	47.7	97.8	10.8	47.7	7.8	0.8	6.0	11.67	0.60	3.9	0.53	1.8	0.16	1.0	0.15	
	SM-353A SM-353B	816776 816776	8198493 8198493	Auger Auger	277.32 230.12	91.48 88.60	8.52 11.40	26.14 27.38	24.68 23.80	13.8	52.3 39.9	107.7 83.2	11.8 9.1	51.9 40.6	8.6 6.7	0.9 1.0	6.7 5.3	14.86 16.38	0.66	4.1	0.56 0.86	2.1	0.17	1.0 1.4	0.16	duplicate
	SM-354	817003	8198465	Auger	315.87	92.02	7.98	22.08	20.35	16.7	47.5	152.3	10.9	48.2	7.9	1.1	6.1	15.24	0.65	4.6	0.63	2.3	0.23	1.4	0.23	
	SM-355 SM-356	815147 814908	8198842 8198851	Auger	268.89 220.76	92.52 91.41	7.48 8.59	26.19 26.43	25.69 25.24	11.0	50.3 38.5	106.7 87.0	11.8 9.4	53.0 42.3	8.7 7.0	0.7	6.5 5.3	12.43	0.62	3.7	0.49	1.7	0.15	0.9 1.0	0.13	
	SM-357	814616	8198858	Auger	309.23	93.39	6.61	25.23	25.52	10.6	59.0	126.5	13.9	60.2	10.2	0.9	7.5	12.05	0.72	4.1	0.50	1.8	0.15	0.9	0.14	
	SM-358 SM-359	814545 814206	8198699 8198499	Auger	225.90 269.92	90.20	9.80 7.40	26.71 26.08	24.19 26.09	15.3 7.1	40.3 51.8	84.9 109.1	9.3 12.0	41.2 53.5	6.8 8.9	0.8	5.1 6.7	14.10 11.07	0.54	3.7	0.52	1.8 2.1	0.18	1.1	0.17	<u> </u>
	SM-360	813986	8198506	Auger	231.10	91.31	8.69	26.62	25.36	9.7	43.0	90.5	9.9	44.4	7.3	0.8	5.3	12.00	0.58	3.7	0.53	1.9	0.17	1.0	0.16	
	SM-361 SM-362	813785 813493	8198514 8198516	Auger Auger	181.29 406.64	91.36 94.55	8.64 5.45	26.20 25.69	24.84 27.11	8.4 4.0		71.5 172.0	7.7 19.2	34.1 85.3	5.6 13.2	0.7	4.3 9.1		0.45	2.9	0.40	1.5 2.2	0.13	0.8	0.14	
	SM-363	812808	8198504	Auger	441.18	92.24	7.76	26.30	25.62	16.7		176.9	19.6	86.4	13.5	1.3	9.8	21.33	0.93	6.1	0.84	3.0	0.26	1.6	0.24	
	SM-364 SM-365	812551 812256	8198516 8198506	Auger Auger	224.98 260.18	88.52 92.38	11.48 7.62	27.56 26.27	24.17 26.17	14.4	37.6 49.4	84.5 106.5	9.1 11.7	40.5 52.0	6.6 8.3	1.2 0.7	5.2 5.9		0.56	4.2 3.8	0.68	2.6 2.1	0.26	1.7		
	SM-366	812003	8198507	Auger	202.06	89.41	10.59	28.02	25.83	10.0		75.3	8.7	39.2	6.6	0.7	5.1	12.42	0.55	3.8	0.58	2.3	0.13	1.4		
	SM-367 SM-368	811778 811502	8198482	Auger	253.72	91.88 93.76	8.12	26.26 25.54	25.66 25.97	8.9 5.7	48.1 43.2	100.6 88.1	11.1 9.8	49.3 42.7	8.0 7.1	0.9 1.3	6.1 5.4	11.72 7.63	0.61	4.0	0.57	2.1 1.1	0.19	1.3 0.5		<u> </u>
	SM-369	811259	8198455 8198504	Auger Auger	216.73 230.85	93.76	6.24	26.20	26.44	9.8	_	91.8	10.2	46.5	7.1	1.3	6.0	8.47	0.60	3.7	0.45	1.4	0.10	0.5	0.07	
	SM-370	810998	8198511	Auger	227.65	96.19	3.81	24.08	26.47	3.1		97.9	10.6	46.9	7.3	0.6	5.0		0.45	2.3	0.25	0.8	0.03	0.2		
	SM-371 SM-372	810748 810505	8198496 8198509	Auger Auger	407.97 267.59	95.19 94.08		25.32 25.45	26.98 26.11	6.1 7.2		169.5 109.0	19.2 12.1	85.1 53.0	13.9 8.7	1.0 1.5	9.7 6.7		0.89	4.8	0.53	1.5	0.08	0.3		
	SM-373	810253	8198502	Auger	169.40	93.31		26.55	26.58	5.2		66.0	7.6	34.2	5.7	1.1	4.5		0.47	2.8		0.9	0.06	0.3		
	SM-374 SM-375	810033 809762	8198495 8198509	Auger Auger	166.01 255.68	94.26 94.57	5.74 5.43	25.07 25.72	25.73 26.67	5.5 4.4		67.8 104.4	7.4 11.7	32.5 52.7	5.5 8.6	0.9 1.4	4.1 6.3		0.41	3.2	0.26	0.8 1.3	0.06	0.2		
	SM-377	809308	8198495	Auger	178.99	93.07	6.93	26.12	25.72	4.3	35.8	71.9	7.9	34.9	5.9	1.3	4.6	7.33	0.47	2.8	0.34	1.0	0.08	0.3	0.06	
	SM-378 SM-379	809012 808758	8198503 8198518	Auger Auger	166.59 141.46	92.91 94.20	7.09 5.80	26.27 25.40	25.98 26.22	4.1		67.1 59.0	7.3 6.5	32.8 28.2	5.7 5.1	1.2 0.7	4.4 3.8	6.64 4.60	0.44	2.8	0.34	1.0 0.7	0.08	0.5		—
	SM-380	808672	8198494	Auger	180.31	90.19	9.81	26.97	25.13	7.5	33.0	69.8	7.6	33.9	5.6	0.9	4.4	9.97	0.47	3.3	0.50	1.9	0.17	1.1	0.17	
	SM-381 SM-383	808656 808248	8198483 8195749	Auger Auger	151.78 148.57	89.31 89.25	10.69 10.75	27.72 27.01	25.34 24.47	6.7	26.9	57.7 57.1	6.4 6.1	28.6 26.8	4.8	0.8	3.7	9.17	0.41	3.1	0.47	1.7	0.17 0.16	1.0		<u> </u>
	SM-385	808604	8195657	Auger	137.27	87.71	12.29	27.57	23.42	12.3	_	48.3	5.3	23.6	3.9	0.9	3.3	10.10	0.39	2.9	0.45	1.7	0.16	1.0	0.17	
	SM-390A SM-390B	809500 809500	8195751	Auger	192.43	92.88		25.87	25.35	5.5 10.0	_	78.0	8.3	37.0	6.3	1.5	4.7	7.84	0.49	3.0	0.38	1.3	0.10	0.6		dunli
	SM-390B SM-391A	809500 809742	8195751 8195743	Auger Auger	366.85 187.05	93.81 93.93		25.18 24.87	25.50 25.05	5.8		151.1 76.7	16.4 8.3	71.4 35.7	11.8 5.8	1.3	8.4 4.3		0.81		0.53	1.7 0.9	0.10	0.6		duplicate
	SM-391B	809742	8195743	Auger	188.45	94.03	5.97	25.24	25.84	3.2	39.4	77.6	8.4	36.9	6.0	1.1	4.5	6.16	0.44	3.0	0.30	0.9	0.07	0.3	0.06	duplicate
	SM-392 SM-393	810010 810249	8195746 8195750	Auger Auger	263.79 245.11	92.93 91.15		25.66 26.87	25.36 25.82	8.4 5.1		106.3 96.4	11.7 10.9	51.1 47.9	8.5 7.4		6.1 5.5		0.59	3.6	0.48	1.6 2.3	0.13			
	SM-394	810449	8195750	Auger	302.74	91.43	8.57	26.89	25.72	8.6	61.1	116.5	13.2	59.0	9.7	1.3	7.4	15.37	0.75	4.9	0.70	2.5	0.24	1.3	0.18	
	SM-395 SM-399	810750 811250	8195752 8195749	Auger Auger	157.69 199.92	89.19 91.83		26.88 26.86	24.01 25.90	9.7		60.4 79.1	6.4 8.8	27.9 39.1	4.6 7.0		3.6 5.4		0.42			1.8 1.5	0.17 0.13	1.1 0.8		
	SM-402	811750	8195753	Auger	306.06	92.34	7.66	26.10	25.67	8.4	60.3	122.8	13.4	59.7	9.6	1.1	7.1	13.59	0.73	4.7	0.63	2.2	0.19	1.3	0.18	
	SM-403 SM-404	813749 813498	8195752 8195744	Auger	342.72 427.77	93.38 94.03		25.69 25.73	25.95 26.69	8.1 8.1		141.3 175.7	15.2 19.8	68.2 87.9	11.2 14.1	1.1	8.1 9.7		0.78	4.7 5.5	0.62 0.73	2.2 2.5	0.16 0.19	0.9 1.1		
	SM-404	813498 813284	8195744 8195751	Auger Auger	179.50	94.03		26.20	25.75	7.2		70.8	19.8 7.9	35.2	5.7	0.8	4.3		0.92			1.1	0.19	0.6		
	SM-409	812375	8195753	Auger	217.96	93.83	6.17	24.71	25.30	6.1	40.7	93.0	9.5	42.0	7.1	0.8	5.3	7.44	0.53	3.1	0.38	1.3	0.10	0.6	0.07	
	SM-410 SM-411	812181 814008	8195699 8195748	Auger Auger	281.21 244.87	91.35 93.52		26.49 25.34	25.35 25.94	9.7 6.1		110.4 101.1	12.0 11.0	53.9 48.6	8.8 7.8	1.1 0.8	6.7 5.5		0.69	4.7 3.3	0.63	2.4 1.6	0.23	1.4 0.9		
	SM-413	814500	8195745	Auger	187.91	92.62	7.38	21.79	21.05	13.8	28.6	86.2	6.6	29.6	4.8	0.7	3.7	7.37	0.41	2.9	0.41	1.5	0.15	1.0	0.15	
	SM-414 SM-415	814754 815005	8195747 8195749	Auger Auger	352.82 147.86	93.68 94.32		25.79 24.09	26.42 25.17	8.6		146.2 60.8	15.8 6.4	71.5 28.6	11.6 4.8	1.2 0.4	8.6 3.5		0.85	5.0	0.64	2.1 0.9	0.16	1.0 0.5		
	SM-416	815258	8195749 8195750	Auger	277.60	91.55		27.19	26.34	8.0		106.3	12.6	55.5	8.9	1.3	6.8		0.67	4.4	0.25	2.4	0.08	1.4		
	SM-417	815347 815502	8195748 8195748	Auger	254.12	87.48		27.22	22.29	28.2 9.8		86.5	9.4	41.8 60.3	7.3	1.1	6.2		0.69	4.8	0.76	2.6	0.25	1.6		
	SM-418 SM-419	815503 815755	8195748 8195749	Auger Auger	314.24 311.62	92.65 92.25		25.44 25.80	25.23 25.37	10.1		129.0 125.3	13.5 13.5	60.0	9.9	1.1	7.4 7.4		0.74	4.7	0.63	2.3 2.4	0.21	1.3 1.4		
					257.83	93.31		25.47	25.80	4.3		105.9	11.6	50.9	8.2	0.8	6.1		0.58	3.4	0.46	1.6	0.14	0.9		
	SM-420	816250	8195749	Auger																						
	SM-420 SM-421A	816500	8195751	Auger	455.07	93.42		25.67 25.75	26.19 25.95	9.4		186.7 145.0	20.7 15.9	91.2 70.8	14.5 11.6	1.3	10.4 8.5		0.99	6.3 5.0	0.81	2.9 2.5	0.24	1.5 1.3		
	SM-420					93.42 93.04 92.82	6.96 7.18	25.67 25.75 25.69 26.50	26.19 25.95 25.66 25.63	9.4 8.9 7.4 7.7	70.1 52.0	145.0 111.3	15.9 12.0	70.8 53.1	14.5 11.6 8.5 8.0	1.1 1.0	8.5 6.1	14.10 11.09	0.99 0.81 0.60 0.58	5.0	0.71 0.54	2.9 2.5 1.9 2.1	0.24 0.22 0.18	1.3 1.1	0.19 0.15	duplicate