ANSTO ISR COLUMN PERMEABILITY AND RECOVERIES BODE WELL FOR FIELD PILOT TRIAL

Highlights

- 74% magnet (MREE) recovery and 62% (TREE + Y) recovery from ISR (in-situ recovery) column test at ANSTO (Australian Nuclear Science and Technology Organisation) significantly higher than recent scoping study base parameters
- ISR test was designed to mimic conditions of density, pressure and moisture measured in the ground and expected during eventual production
- Individual final calculated MREE recoveries;
    - Praseodymium 85%
    - Neodymium 72%
    - Terbium 70%
    - Dysprosium 63%
- ISR recoveries were achieved over only 28 days of leaching, resulting from permeability flow rates sufficient for commercial extraction
- Recoveries achieved using low strength 0.5M $MgSO_4$, pH 4.5, at ambient temperatures
- Test results bode well for the upcoming field pilot testwork which will commence during Q2 2025

ANSTO, commented:

"A pressurised column set at 2bar, the equivalent of approximately 20m depth below surface resulted in permeability flow rates in line with those achieved by the Company in Brazil from the same sample. The test also showed that the rare earths are readily soluble using $MgSO_4$ resulting in high recoveries after the passing of only 1.9 pore volumes (the ratio of the material's air volume to total volume)."

Andrew Reid, Managing Director, commented:

"Over the past 6 months the team has been actively working on the steps required to maximise the recoveries of rare earths whilst minimising impurity levels. The ANSTO column test followed the same sequence, the same $MgSO_4$ reagent and concentration, as well as the same physical parameter setup in the column to mimic ISR. These results give us confidence in being able to replicate these lab tests in the field with the pilot trial commencing in the coming weeks."

Brazilian Critical Minerals Limited (**ASX: BCM**) ("**BCM**" or the "**Company**") is pleased to announce that results have been received from an ANSTO column test that was set up and run to mimic conditions of temperature, pressure, density and moisture as those measured from in-situ samples at the Ema project.

The Company requested ANSTO to supplement their ongoing column work with a standard ISR column test on the Ema material. The test involved packing the ore into a column to achieve a bulk density as close as possible to that underground and feeding the $MgSO_4$ lixiviant through the mineralised material at a pressure equivalent to that at the depth of the orebody, with the column in a vertical configuration. The aim of the ISR test was to provide a more accurate assessment of the permeability of the undisturbed clay underground, as well as provide relevant leaching data such of rare earth extraction vs pore volume as well as $MgSO_4$ reagent consumption rates.

Results

A head grade analysis of the sample was determined at ALS Geochemistry Laboratory, Brisbane to contain **829ppm** TREY (15 REE elements + Yttrium) of which **30% or 250ppm** were of the elements Nd, Pr, Dy and Tb.

Over the course of 28 days, the $MgS0_4$ lixiviant at pH 4.5 was injected through the column which resulted in high recoveries of TREY and MREE relative to the recent values used in the Ema scoping study[1] (table 1).

Key takeaways;

- High recoveries of MREE achieved over the test period (table 1), with most of the recovery occurring over only 17 days
- <2 pore volumes (the ratio of the material's air volume to total volume) required to achieve final recoveries (Figure 1.)
- Individual MREE recoveries were;
    - Praseodymium 85%;
    - Neodymium 72%;
    - Terbium 70%; and
    - Dysprosium 63%

Table 1. Comparison of Scoping Study recoveries vs ANSTO Column recoveries

	TREY (%)	MREE (%)
Scoping Study Recoveries[1]	**48**	**62**
ANSTO Column Recoveries	**62**	**74**

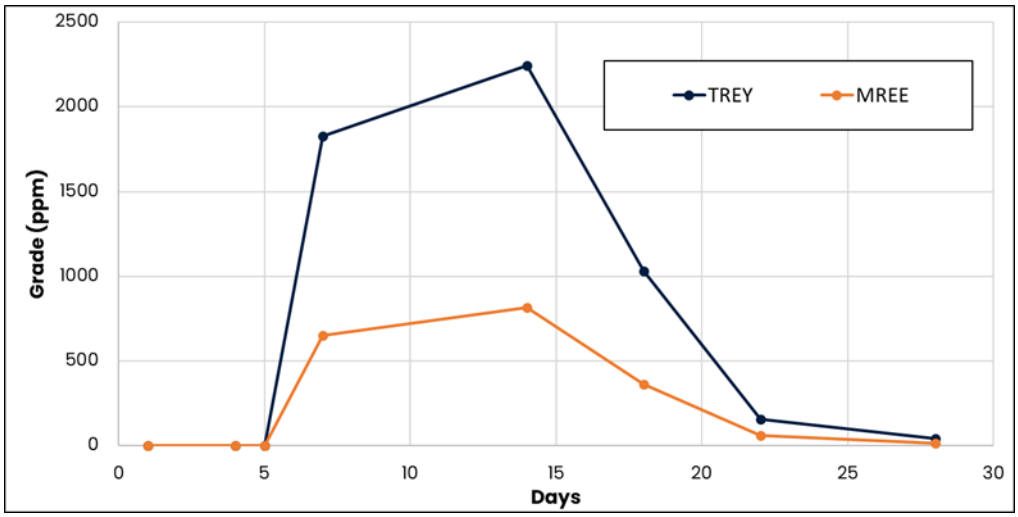

Figure 1. Solution concentration of rare earth elements in (ppm) over the 28-day test period.

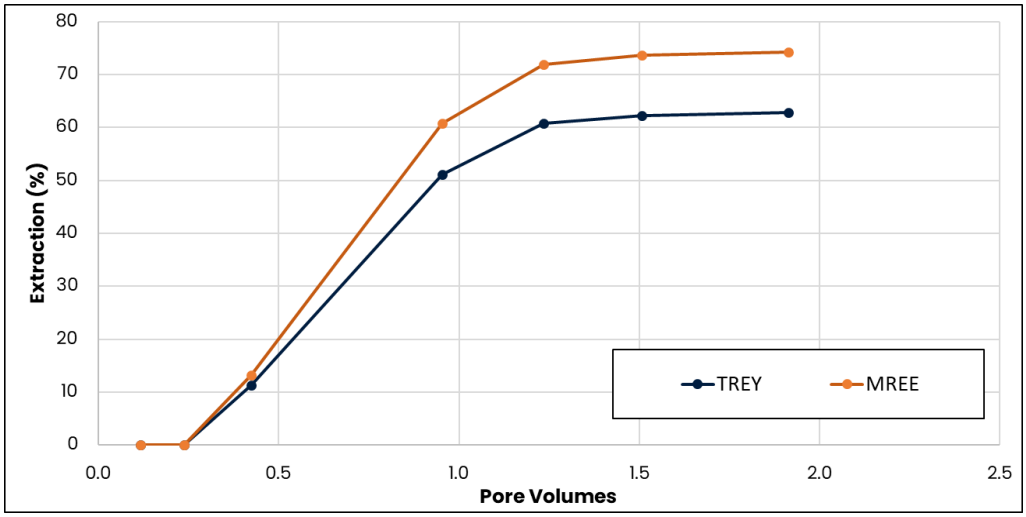

Figure 2. Cumulative extraction of rare earth elements in (%) over the 28-day test period.

Next Steps

The field pilot trial is an important next step in the evolution of the Ema rare earths project, designed to gather important information for the next study phase. To date, the Company has completed numerous field slug tests[1] and column test results both within Brazil and at Australian Nuclear Science & Technology Organisation (ANSTO) in Sydney, all of which have shown that there is a degree of permeability within the weathered clays that allows solution flow and the ability to ionically recover rare earths into solution.

References

[1]Brazilian Critical Minerals (ASX:BCM) – Ema Scoping Study confirms low CAPEX and OPEX 26th February 2025

This announcement has been authorised for release by the Board of Directors.

Enquiries

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Brazilian Critical Minerals Limited (BCM) is a mineral exploration company listed on the Australian Securities Exchange.

Its major exploration focus is Brazil, in the Apuí region, where BCM has discovered a world class Ionic Adsorbed Clay (IAC) Rare Earth Elements deposit. The Ema IAC project is contained within the 781 km² of exploration tenements within the Colider Group and adjacent sediments.

BCM has defined an indicated and inferred MRE of 943Mt of REE's with metallurgical recoveries averaging 68% MREO, representing some of the highest for these types of deposits anywhere in the world.

The Company has converted the MRE central portion from Inferred into the Indicated category with an extensive drill program during 2024 which informed the scoping study and economic analysis released in February 2025.

Ema REE Global Mineral Resource Estimate @COG 500ppm TREO

JORC Category	cut-off ppm TREO	Tonnes Mt	TREO ppm	NdPr ppm	DyTb ppm	MREO ppm	MREO: TREO %
Indicated	500	248	759	176	16	192	25
Inferred	500	695	701	165	16	181	26
Total	**500**	**943**	**716**	**168**	**16**	**184**	**26**

The information in this announcement relates to previously reported exploration results and mineral resource estimates for the Ema Project released by the Company to ASX on 22 May 2023, 17 July 2023, 19 July 2023, 31 July 2023, 13 Sep 2023, 19 Oct 2023, 06 Dec 2023, 06 Feb 2024, 22 Feb 2024, 13 Mar 2024, 02 Apr 2024, 08 Oct 2024 19 Nov 2024, 21 Jan 2025 and 17th Feb 2025. The Company confirms

that is not aware of any new information or data that materially affects the information included in the above-mentioned releases.

Competent Person Statement

The information in this report that relates to exploration results released by the Company to the ASX on 22 May 2023, 17 July 2023, 19 July 2023, 31 July 2023, 13 Sep 2023, 19 Oct 2023, 06 Dec 2023, 06 Feb 2024, 22 Feb 2024, 13 Mar 2024, 02 Apr 2024, 08 Oct 2024 19 Nov 2024, 21 Jan 2025 and 17th Feb 2025 is based on information compiled by Mr. Antonio de Castro, BSc (Hons), Member of AusIMM, CREA, who acts as BCM´s Senior Consulting Geologist through the consultancy firm, ADC Geologia Ltda. Mr. Castro has sufficient experience which is relevant to the type of deposit under consideration and to the reporting of exploration results and analytical and metallurgical test work to qualify as a Competent Persons as defined in the 2012 Edition of the Joint Ore Reserve Committee (JORC) "Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves". Mr. Castro consents to the report being issued in the form and context in which it appears.

The Company confirms that is not aware of any new information or data that materially affects the information included in the above-mentioned relevant market announcements, that all material assumptions and technical parameters underpinning the estimates in the relevant market announces continue to apply and have not materially changed.

Appendix 1
The following Table and Sections are provided to ensure compliance with JORC Code (2012 Edition).

JORC (2012) Table 1 – Section 1: Sampling Techniques and Data for auger hole drilling

Item	JORC code explanation	Comments
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 representativity 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.	• Metallurgical results are for a 60kg composite sample, not dried, maintaining in-situ moisture level, from a twin auger hole EMA-TR-188, from 4m to 10m. • Every 1-metre sample was collected in a plastic bag in the field, immediately sealed to preserve natural humidity. • Sampling was supervised by a BCM geologist. • Each metre weighted around 10kg. • The plastic bags as received from the field were sent to ANSTO.
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).	• Auger drilling was completed by a hand held-mechanical auger with a 3" auger bit. The drilling is an open hole. meaning there is a significant chance of contamination from surface and other parts of the auger hole. Holes are vertical and not oriented.
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.	• No recoveries are recorded. • The operator observes the volume of each metre and notes any discrepancy. • No relationship is believed to exist between recovery and grade.
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.	• All exploration holes were logged by GE21 geologist. detailing the colour. weathering. alteration. texture and any geological observations. Care is taken to identify transported cover from in-situ saprolite/clay zones and the moisture content. Logging was done to a level that would support a Mineral Resource Estimate. • Qualitative logging with systematic photography of the stored box. • The entire auger hole is logged.

Item	JORC code explanation	Comments
	• The total length and percentage of the relevant intersections logged.	
Sub-Sampling Techniques and Sampling Procedures	• 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 representativity 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.	• Sampling was conducted from 4m to 10m by auger drilling. • Each metre was fully collected in a plastic bag, then immediately sealed to preserve its natural moisture.
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	• ANSTO sent the composite sample to determine its head grade at ALS-Brisbane. • The assay technique used for REE was Lithium Metaborate Fusion ICP-MS, which is a total analysis technique for the REE suite and associated elements. • Assays for recovered REE were conducted at ANSTO • All assay results in this report for REE are presented for the element, **not its oxide**.
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.	• Apart from the routine QA/QC procedures by the Company and the laboratory. there was no other independent or alternative verification of sampling and assaying procedures. • Analytical results for REE were supplied digitally. directly from ANSTO to the CEO in Australia. • This sampling is from a twin hole, 1m from EMA-TR-188, from 4m to 10m. • Geological data was logged onto paper and transferred to Excel spreadsheets at end of the day and then transferred into the drill hole database. Microsoft Access is used for database storage and management and incorporates numerous data validation and data integrity checks. All assay data is imported directly into the Microsoft Access database. • No adjustments were made to the data. • All REE assay data received from the laboratory in element form is unadjusted for data entry.

Item	JORC code explanation	Comments
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.	• The UTM WGS84 zone 21S grid datum is used for current reporting. • EMA-TR-188 185794N 9181359E 163RL
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.	• Single auger hole, twin of EMA-TR-188, sampled from 4m to 10m for metallurgical test work on a natural sample, not dried, with its in-situ moisture.
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 location and depth of the sampling is appropriate for the deposit type. • Relevant REE values are compatible with the exploration model for ionic REEs. • No relationship between mineralisation and drilling orientation is known at this stage.
Sample security	• The measures taken to ensure sample security.	• The auger samples in sealed plastic bags were sent directly to ANSTO by bus and then airfreight. The Company has no reason to believe that sample security poses a material risk to the integrity of the assay data.
Audit or Reviews	• The results of any audits or reviews of sampling techniques and data.	• The sampling techniques and data have been reviewed by the Competent Person and are found to be of industry standard.

JORC (2012) Table 1 - Section 2: Reporting of Exploration Results

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.	• The EMA and EMA EAST leases are 100% owned by BCM with no issues in respect to native title interests. historical sites. wilderness or national park and environmental settings. • The Company is not aware of any impediment to obtain a licence to operate in the area.
Exploration done by Other Parties	• Acknowledgment and appraisal of exploration by other parties.	• No exploration by other parties has been conducted in the region.
Geology	• Deposit type. geological setting and style of mineralisation.	• The REE mineralisation at EMA is contained within the tropical lateritic weathering profile developed on top of felsic rocks. rhyolites as per the Chinese deposits. • The REE mineralisation is concentrated in the weathered profile where it has dissolved from the primary mineral. such as monazite and xenotime. then adsorbed on to the neo-forming fine particles of aluminosilicate clays (e.g. kaolinite. illite. smectite). • This adsorbed iREE is the target for extraction and production of REO.

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.
		• Auger locations and diagrams are presented in previous announcements.
		• Details are tabulated in the announcement.

Criteria	JORC code explanation	Commentary
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 values should be clearly stated.	• Weighted averages were calculated for all intercepts. • 500ppm TREO cut-off grade was applied to define the relevant intersections. • No metal equivalent values reported.
Relationship between mineralization widths and intercepted lengths	• 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').	• Significant values of REE were reported for the auger samples. • Mineralisation orientation is not known at this stage although assumed to be flat. • The downhole depths are reported, true widths are not known at this stage.
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.	• Maps and tables of the auger holes location and target location are inserted in previous announcements.
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.	• Relevant REE mineralisation with grades higher than 500ppm TREO in auger holes were reported with confirmation of IAC (Ionic Adsorbed Clay) type mineralisation obtained in almost all the auger holes from phase 1 in this same geological setting.
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.	• No other significant exploration data has been acquired by the Company.
Further Work	• The nature and scale of planned further work (eg tests for lateral extensions or depth extensions or large-scale step-out drilling).	• Additional metallurgical test work at ANSTO. • Permeability test work under WSP co-ordination.

Criteria	JORC code explanation	Commentary
	• Diagrams clearly highlighting the areas of possible extensions. including the main geological interpretations and future drilling areas. provided this information is not commercially sensitive.	