Positive Metallurgical Test Results – Halleck Creek Project

written by Raj Shah | October 19, 2023

October 19, 2023 (Source) – American Rare Earths **(ASX: ARR | ADRs – OTCQX: AMRRY | Common Shares – OTCQB: ARRNF| FSE:1BHA) (ARR or the Company)** announces results from its metallurgical testing program from its flagship Halleck Creek project in Wyoming, performed under the direction of Wood PLC.

Highlights

- Recoveries of Neodymium and Praseodymium Oxide (NdPrO) *increased* 28.5% from prior designs.
- This preliminary test work indicates the ore can be effectively processed using conventional technologies that not only require less initial capital expenditure but also provides lower ongoing operating costs.
- Block flow diagrams are now complete and will be utilized in a subsequent phase of metallurgical test work to finalize a flowsheet to be used in a forthcoming Preliminary Economic Analysis.

ARR continues to advance the Halleck Creek project as potentially the largest strategic rare earth project in the United States, with a previously announced 1.43 billion tonne JORC resource[2]. The mineralization in this deposit is allanite and testing shows that rare earth elements can be leached from allanite utilizing atmospheric acid tank leaching, whereas rare earth elements cannot be leached from monazite or bastnaesite

deposits utilizing the same leaching process. In the most recent tests, sulphation baking kilns were removed from updated flowsheet design in favour of acid tank leaching. Acid tank leaching requires much lower operating temperatures and provides lower capital and operating costs than thermal cracking operations. Furthermore, the main reagents utilized are in plentiful supply in the Western U.S. and the project is proximate to interstate highway and railroad transportation.

“We are encouraged by the results of our most recent metallurgical tests provided by Wood PLC because they indicate that the properties of the Halleck Creek deposit may allow us to extract greater recoveries of magnet metals using simpler, lower-cost technology,” said Donald Swartz, Chief Executive Officer of American Rare Earths.

Initial results indicate increased recoveries of targeted rare earth materials (82-87% of the NdPr) using conventional processing technologies. Furthermore, ARR’s current exploration program is nearing completion. The core material obtained from the ongoing program is being prepared and will be sent to labs for the next phase of detailed metallurgical testing.

Technical Summary

- NdPr represents a favorable 23% of the Total Rare Earth Oxides (TREO) grade in the resource.
- The coarse grain structure offers relatively low energy costs, allowing sequential grinding and beneficiation to reject 83.9% of feed mass.
- The ore exhibits favorable selectivity for magnetic separation utilizing Wet High Intensity Magnetic Separator (WHIMS) magnetics at a grind size of 80% passing 106 microns, and the concentrated ore has a TREO grade of 1.51%, illustrating an impressive upgrade ratio of 4.3:1

using WHIMS processing alone.

- Preliminary acid tank leach testing adopted 6 hours of residence time at 90 deg C with 250 kg/t sulfuric acid addition, extracted 82-87% of the NdPr from feed material. Future work will continue to optimize the design and increase recoveries.
- The use of flotation does not significantly improve the upgrade ratio. Therefore, flotation will not be included in flowsheet design, further reducing potential capital and operating costs.

CEO, Donald Swartz, commented further, “Acid tank leaching is a well-established mineral processing technology with little technical risk and offers the ability to process high volumes of concentrate in low-cost leach trains at below-boiling point, compared to the constraints of acid-baking kilns that are limited to feed solids and are expensive to build and operate.”

This market announcement has been authorized for release to the market by the CEO of American Rare Earths.

Competent Persons Statement: The information in this document is based on information compiled by Mr. Greg Henderson. Mr. Henderson is a Senior Process Consultant at Wood Australia. Mr. Henderson is a Fellow of the Australian Institute of Mining and Metallurgy (AUSIMM), number 109007, and has sufficient experience which is relevant to the style of mineralization 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 JORC Code. Mr. Henderson consents to the inclusion in the report of the matters based upon the information in the form and context in which it appears. This work was reviewed and approved for release by Mr. Dwight Kinnes (Society of Mining Engineers #4063295RM) who is employed by American Rare Earths and has sufficient experience which is relevant to the style of

mineralization 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 JORC Code. Mr. Kinnes consents to the inclusion in the report of the matters based upon the information in the form and context in which it appears.

About American Rare Earths Limited:
American Rare Earths (ASX: ARR | ADRs – OTCQX: AMRRY | Common Shares – OTCQB: ARRNF| FSE:1BHA) owns the Halleck Creek, WY and La Paz, AZ rare earth deposits which have the potential to become the largest and most sustainable rare earth projects in North America. American Rare Earths is developing environmentally friendly and cost-effective extraction and processing methods to meet the rapidly increasing demand for resources essential to the clean energy transition and US national security. The Company continues to evaluate other exploration opportunities and is collaborating with US Government-supported R&D to develop efficient processing and separation techniques of rare earth elements to help ensure a renewable future.

See JORC Table here

Head Office
American Rare Earths Ltd
1658 Cole Blvd, Suite G30
Lakewood, CO, 80401
info@americanree.com
americanrareearths.com.au

Media Contact
Susan Assadi
sassadi@americanree.com
347 977 7125

1. ASX announcement June 2, 2023
2. ASX announcement March 30, 2023