

American Rare Earths Announces Breakthrough Metallurgical Results

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Highlights

- Halleck Creek ore has been successfully preconcentrated to 3.5% TREO at a 12:1 upgrade ratio, representing a ~200% increase from existing flowsheet design using low-cost, conventional Dense Medium Separation ("DMS").
- Preconcentrating reduces Wet High Intensity Magnetic Separator ("WHIMS") needs by 70% from existing design, significantly reducing capital and operating expenditures.
- The feed mass leading into direct leaching was reduced to 7% from 16%, a 56% reduction of material reporting to leach circuits, providing another significant reduction in operating costs.
- The project has been selected to advance to the next phase of study and the company is engaged in discussions around funding and next steps.

DENVER, Jan. 22, 2024 -- American Rare Earths (ASX: ARR | ADRs - OTCQX: AMRRY | Common Shares - OTCQB: ARRF) ("ARR" or the "Company") is pleased to announce breakthrough metallurgical results as part of the SynBREE project, a consortium led by Lawrence Livermore National Laboratory (LLNL) as part of a program funded by the Environmental Microbes as a BioEngineering Resource (EMBER) program within Defense Advanced Research Projects Agency ("DARPA"), a U.S. Department of Defense (DoD) agency.

Under the leadership of Yongqin Jiao, Ph.D. and Dan Park, Ph.D. at LLNL, consortium member Rick Honaker, Ph.D. at the University of Kentucky (UK) performed preconcentrating testwork for the project. Preconcentrating is a crucial step in the processing of critical minerals, like rare earth elements, as it is a physical process that separates the barren gangue material and the more valuable ore. Furthermore, the SynBREE project has been selected to advance to the next phase.

CEO Donald Swartz commented on the results:

"The program set out to fill a critical DoD supply chain gap, and these results help to ensure that the U.S. maintains its technological edge. We are now focused on implementing these improvements into our flowsheet and scoping study. I am excited with the upside potential, as the team utilized ore specifically low in radionuclides from early exploration work at the project. Since that time, we have completed new exploration programs and developed mining plans in near-zero strip ratio ore that is approximately 55% higher grade than what was utilized in this work program. This is a continuation of our work to de-risk the Halleck Creek project, which is free of the sovereign risks associated with projects identified in Latin American, SE Asia and Africa."

"Halleck Creek is stacking up to become a world class project which has the strategic scale and potential to secure a stable, domestic supply of rare earths for the U.S. for many decades."

Dr. Yongqin Jiao, of LLNL commented on the results:

"Our protein-based rare earth separation technologies continue to be advanced and are greatly enhanced by this conventional beneficiation technique that will improve the economic viability. Removal of the gangue materials at the solid state enhances the concentration of the rare earth elements, creating an optimal solution feed for downstream bio-separation. The recent findings by our collaborator Prof. Honaker at University of Kentucky, showcasing low-cost density separation coupled with magnetic separation of allanite, have a substantial impact on our overall process efficacy and economic feasibility. These findings contribute significantly to refining our approach and enhancing the efficiency of the rare earth element extraction process."

A photo accompanying this announcement is available at <https://www.globenewswire.com/NewsRoom/AttachmentNg/247633ca-36be-4ca3-8492-d01787d76015>

Full technical summary and JORC Report can be found here.

Competent Persons Statement: The information in this document is based on information compiled by personnel under the direction of Mr. Dwight Kinnes who is Chief Technical Officer of American Rare Earths and is managing ARR's contribution to the SynBREE project. This work was reviewed and approved for release by Mr. Kinnes (Society of Mining Engineers #4063295RM) who is employed by American Rare Earths and has sufficient experience which is 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 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.

This work was reviewed and approved for release by Mr Kelton Smith (Society of Mining Engineers #4227309RM) who is employed by Tetra Tech and has sufficient experience which is relevant to the metallurgical testing 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 Smith consents to the inclusion in the report of the matters based upon the information in the form and context in which it appears.

About SynBREE:

The SynREE project is a consortium of leading research institutions and ARR. Led by LLNL, collaborating institutions include Penn State University, University of Illinois, Columbia University, Tufts University, University of Kentucky, Purdue University, and American Rare Earths. The consortium draws on a wealth of rare earths experience in processing, separation, purification, and economic analysis. DARPA's EMBER program has provided the funding to activate world-class talent and labs as they seek to scale game changing technology.

About American Rare Earths Limited:

American Rare Earths (ASX: ARR | ADRs - OTCQX: AMRRY | Common Shares - OTCQB: ARRNF) 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.

Head Office

[American Rare Earths Ltd.](#)
1658 Cole Blvd, Suite G30
Lakewood, CO, 80401
info@americanrareearths.com.au
americanrareearths.com.au

For additional information:

Susan Assadi
Media Relations US
sassadi@americanree.com
347 977 7125

Beverly Jedynek
Investor Relations US
Beverly.jedynek@viriathus.com
312 943 1123

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