Medallion Resources Ltd. Completes Process Engineering Work for Rare-Earth Element Extraction

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VANCOUVER, Feb. 25, 2020 - Medallion Resources Ltd. (TSX-V: MDL; OTCPK: MLLOF; Frankfurt: MRDN) (“Medallion” or the “Company”), pursuing North American production of rare-earth magnet metals, today reports the completion of Process Engineering Design for its proprietary extraction of a rare-earth element (REE) concentrate.

Summary of this news

- Completion of an extensive Process Engineering Design project for the extraction of REE from monazite sand, including detailed process flow diagrams and full waste management solutions.
- Project provides the requirements for a Techno-Economic Assessment (see description below) that will define economic considerations for a US-based REE operation.
- Sites and trade-off studies are now being evaluated in the US for prospective plant locations. Once complete, Medallion will progress to plant engineering, with a specific capacity and location.
- Medallion’s plant feedstock is by-product monazite sand, an REE mineral rich in rare-earth magnet metals, essential for high-strength magnets required to power EVs and hybrids.

“Completion of this design phase is a key milestone for Medallion. It marks the culmination of core test work and process development stages. We are now combining this work with trade-off studies already underway,” said Dr Kurt Forrester, consulting metallurgist. “This data forms the basis for our planned Techno-Economic Assessment that will provide design engineering specifications and produce capital and operating cost estimates for our proposed US rare-earth plant.”

The engineered process utilizes monazite sand, a low-cost by-product mineral, and provides a clean, safe, and automated REE-supply solution without the need for additional mining or upgrading. Monazite is produced in large volume in the eastern United States as a by-product from heavy-mineral sands mining. Today, this valuable material is stockpiled, sold to China, or returned to the mining pit from where it was extracted. Medallion’s process optimizes the extraction of a clean rare-earth element concentrate, which is ready for separation into marketable oxides, while dealing effectively with the waste material.

The Medallion process allows for a relatively rapid and low-capital production of REEs–there is no requirement to build or permit a mine or upgrade an operation. Feedstock can be sourced within the United States and shipped to a rare-earth extraction plant, designed to readily scale up as required.

Value Chain Schematic:
https://www.globenewswire.com/NewsRoom/AttachmentNg/c2dff4fb-f763-4baa-94fe-5f9fecb073f1

The Process Engineering Design was completed by Australian-based Simulus Engineers, an independent engineering consultancy. Simulus undertook chemical process modelling of Medallion’s proprietary monazite caustic crack process and prepared all required process flow diagrams.

Key Magnet Metals — Neodymium and Praseodymium (NdPr)

Due to the high Neodymium and Praseodymium (together referred to as “NdPr”) content of monazite, output from Medallion’s proposed plant is rich in these most critical REEs. NdPr is the key

ingredient for the manufacture of high-strength permanent magnets (“NdFeB magnets”), which are essential to the lightweight and powerful motors required in EVs, defense applications, and numerous clean technologies. In motors, NdFeB magnets enable electrical energy to be converted to mechanical energy with maximum efficiency. They are favored by EV manufacturers to improve performance and battery range.

Most current and planned EV and hybrid models, including the Tesla Model 3, incorporate NdFeB magnets as a key component in the traction motor. While internal gas and diesel-powered vehicles each use approximately 0.7 kg of NdPr for accessory electric motors, EVs and hybrid vehicles require on average an additional 140% NdPr. Adamas Intelligence (Electric Growth: EVs Motors and Motor Materials, 2019 H2) forecast that NdFeB magnet demand for traction motors will increase NdPr usage from 3,000 tpa in 2018 to approximately 28,000 tpa in 2030, representing a 12-year increase exceeding 900%. Given projected NdPr shortages, prices of Nd and Pr are forecast to more than double over that timeframe.

Presently, on a global basis, the automotive sector represents approximately 50% of total NdPr usage and NdPr represents the majority of the REE market by value (Total annual REE market: approximately $4B). For more on how the EV and hybrid vehicle will impact the rare-earth marketplace see this report from Adamas Intelligence: “Electric Growth: EVs, Motors and Motor Materials”.

Techno-Economic Assessment

The proposed Techno-Economic Assessment is a scoping-level study that will produce a Class 4 technical and economic assessment of the project in accordance with the American Association of Cost Engineers International (AACEI) standards (Recommended Practice 18R-97). The AACEI is the recognized body for capital and operating cost analysis of chemical production facilities globally. Medallion believes this methodology is appropriate for its proposed hydro-metallurgical plant using contracted mineral feedstock.

Medallion has engaged international engineering group Stantec (TSX: STN) to evaluate sites in the United States for Medallion’s extraction plant using feedstock sourced from the Southeast United States. The evaluation also covers both upstream and downstream logistics options related to the transport of monazite feedstock, reagents, produced concentrates and waste material.

About Medallion Resources

Medallion Resources has developed a proprietary process and related business model to achieve low-cost, near-term, rare-earth element (REE) production by exploiting monazite. Monazite is a rare-earth phosphate mineral that is widely available as a by-product from mineral sand mining operations. REEs are critical inputs to electric and hybrid vehicles, electronics, imaging systems, wind turbines and strategic defense systems. Medallion is committed to following best practices and accepted international standards in all aspects of mineral transportation, processing and the safe management of waste materials. More about Medallion (TSX-V: MDL; OTCPK: MLLOF; Frankfurt: MRDN) can be found at medallionresources.com.

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Medallion management takes full responsibility for content and has prepared this news release. Some of the statements contained in this release are forward-looking statements, such as statements that describe Medallion’s plans with respect to the completion of additional tranche(s) of the Offering and the intended use of the proceeds. Since forward-looking statements address future events and conditions, by their very nature, they involve inherent risks and uncertainties, including the risks related to market conditions and regulatory approval and other risks outlined in the Company’s management discussions and analysis of financial results. Actual results in each case could differ materially from those currently anticipated in these statements. Also, in order to proceed with Medallion’s plans, additional funding will be necessary and, depending on market conditions, this funding may not be forthcoming on a schedule or on terms that facilitate Medallion’s plans. These forward-looking statements are made as of the date of this press release, and, other than as required by applicable securities laws, Medallion

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