Tasman Precipitates Heavy Rare Earth Element Concentrate and Provides Flowsheet Development Update for Norra Karr Project, Sweden

09.07.2014 | Marketwired

VANCOUVER, BRITISH COLUMBIA--(Marketwired - Jul 9, 2014) - ***Tasman Metals Ltd.*** ***("Tasman" or the "Company") (TSX VENTURE:TSM)(FRANKFURT:T61)(NYSE MKT:TAS).*** Mr Mark Saxon, President & CEO, is pleased to announce the precipitation of a heavy rare earth element (REE) rich concentrate as part of the hydrometallurgical testwork program underway on the 100%-owned Norra Karr heavy REE project in Sweden. Preparation of this concentrate is the final step in defining the Norra Karr flowsheet, and marks a significant milestone in the Company's metallurgical programs. An update on recent beneficiation progress is also provided.

Beneficiation and hydrometallurgy testwork has been completed by various internationally recognized laboratories and delivered data of a quality suitable for the Norra Karr Pre-Feasibility Study (PFS) which remains in progress.

Norra Karr is one of the most significant heavy REE deposits in the world, with a simple and predictable REE mineralogy. Previous testwork has shown that the only REE-bearing mineral with significant abundance at Norra Karr is the zirconosilicate eudialyte. Eudialyte is weakly magnetic (paramagnetic) and dissolves rapidly in weak acid at low temperature. This simplicity has allowed for an uncomplicated flowsheet to be developed, that can be achieved with standard mining/processing equipment and widely available chemicals.

Highlights

- Crushing and grinding characteristics of the Norra Karr mineralized material are now well known. **A grind size of 60 micron has been chosen** which provides adequate liberation of the REE-bearing mineral (eudialyte) that **can easily be achieved through standard commercial equipment**;
- Extensive testwork and optimization of **single-stage magnetic separation** has been completed by equipment manufacturer Metso Minerals and metallurgical laboratories of the Geological Survey of Finland (GTK). This optimization has increased REE **recovery in beneficiation to in excess of 86% in less than 35% of the original mass**, such that flotation is no longer deemed necessary as was envisaged under the Norra Karr Preliminary Economic Assessment (PEA) published June 2013. Magnetic separation shall use standard commercial equipment and does not require process chemicals;
- Extensive hydrometallurgical research has been completed by ANSTO Minerals which has tested/optimized a process of sulphuric acid leaching, leach solution purification, REE solvent extraction and **precipitation of an REE-concentrate**. Sulphuric acid was chosen due to its relatively low cost, and its widespread availability in Sweden. **A railway line which passes only 25km from Norra Karr already transports bulk sulphuric acid**;
- Under the hydrometallurgical process developed, **leaching is undertaken at ambient temperature and pressure**. High temperature roasting is not required to dissolve eudialyte;
- The improved magnetic separation has significantly reduced the amount of sulphuric acid-consuming gangue minerals within the eudialyte-rich mineral concentrate. As a result, **sulphuric acid consumption per tonne of ore has fallen to 85 kg/tonne** from the 150 kg/tonne envisaged in the PEA;
- **A heavy REE enriched oxalate has been precipitated by ANSTO during continuous testing with a grade of approximately 45% REE. The high value heavy REE dysprosium (Dy) contributes 4.8% of the REE content.** This oxalate can be easily calcined to a high grade REE-oxide (REO) subject to customer requirements;
- Despite Norra Karr being a high-grade zirconium (Zr) and hafnium (Hf) deposit, under the metallurgical process being modeled for the PFS, the recovery of Zr is not being considered. **Zr shall pass with Hf and niobium (Nb) to a by-product that shall be stockpiled for potential future recovery**;

"Tasman staff and their consultants have worked hard to optimize the processing conditions for the Norra Karr deposit for our Pre-Feasibility Study" said Mark Saxon, Tasman's President and CEO. "We have extensively tested our metallurgical process and have achieved the significant milestone of precipitating an attractive high purity heavy REE product. Eudialyte was once believed to be a difficult mineral to process, but due to the excellent work by Tasman's team, robust process pathways are now available. We congratulate our team on the milestones they have achieved and are proud to have taken the project from discovery to this significant milestone."

With the guidance of Tasman's PFS consultants, samples used in testwork were carefully chosen from drill core to be representative of the Norra Karr deposit, both in grade and ore type distribution. A 5 tonne sample was homogenized then crushed and ground to the target P80 size at a facility in Germany. This bulk sample has a total rare earth oxide (TREO) grade of 0.61% and has provided a consistent material source for all testing. Where possible, registered REE standards have been inserted to ensure assay quality, and mass balance calculations have consistently been completed to confirm results.

Magnetic Separation Tests

Due to the paramagnetic nature of eudialyte, magnetic separation has been the focus for beneficiation research. Following multi-laboratory testing of magnetic separation equipment, the Metso Minerals continuous HGMS was chosen as most promising for optimization. Metso has worked with the metallurgical division of the Geological Survey of Finland (GTK) to undertake both batch and continuous testing under a wide range of operating parameters (flow velocity, magnetic field strength, load density, grind size). The optimum operating conditions have been determined, which have been applied repeatedly under continuous tests, the results being both stable and predictable.

Recovery in single pass magnetic separation consistently exceeded 86% recovery in 35% of the original mass. Size-by-size assaying and Mineral Liberation Analysis (MLA) has demonstrated that approximately 70% of the 14% REE lost to the tailings stream is in the fine grained (below 20 micron) fraction, which should be recoverable by a combination of hydrocyclone separation to recover the fine particles and small volume magnetic separation scavenging step.

Mineralogy of the mineral concentrate from the HGMS is comprised predominantly of the paramagnetic minerals eudialyte (16.0%) and aegirine (56.9%), with minor contribution of the felsic minerals feldspar (11.1%), nepheline (6.0%) and zeolite (4.9%). The very low content of nepheline and zeolite in this mineral concentrate is significant, as both minerals are soluble in sulphuric acid and therefore increase acid consumption.

Hydrometallurgy Tests

ANSTO Minerals in Australia were engaged by Tasman in 2013 to optimize and finalize the Norra Karr hydrometallurgical flowsheet that had been initiated by other parties. ANSTO are an acknowledged world leader in REE hydrometallurgy, and were chosen due to their experience in similar projects. Work was initiated on a poorer quality mineral concentrate, but moved to the higher quality material described above in 2014.

ANSTO's work has defined a stable and repeatable hydrometallurgical process that has been applied in continuous operation through to precipitation of an REE oxalate. ANSTO's extensive experience with silica management has allowed for any process-related issues to be quickly resolved.

In previous testwork, various acids were trialed, each giving certain process benefits. ANSTO has used only sulphuric acid for leaching due to its low cost, and widespread availability in Sweden. A railway line which passes only 25km from Norra Karr already transports bulk sulphuric acid that is produced in copper smelting in Sweden and Finland.

Due to the improved mineral concentrate and ANSTO's superior process control, sulphuric acid consumption (including residual acid) in leaching has been reduced to 85 kg per tonne of ore. This is a very significant reduction, as PEA financial modeling indicates sulphuric acid is the single largest processing cost.

Following leaching, purification of the leach solution via chemical and pH control was completed to remove various impurities including silica, iron and manganese. The concentration of REE's in solution was increased using conventional solvent extraction, which were then precipitated in oxalate form through the addition of oxalic acid. The composition of this REE-oxalate is provided in Table 1 below. This oxalate is strongly enriched in the high value heavy REE's, which contribute 44% of the material.

The recovery of REE's achieved in the hydrometallurgy stage (leaching to precipitation) is approximately 90%, with heavy REE (not including yttrium) recovery consistently exceeding light REE recovery.

"*The results described above come at an important stage of the development of Norra Karr, and will be incorporated into the PFS models" said Mark Saxon, Tasman's President and CEO. "Norra Karr is unusual in its heavy REE enrichment, and furthermore has the unique advantage of lying within a first world mining-friendly country with easy access to road, rail, power, process chemicals, skilled labor and the large European market."*

Element	Weight % REE in Oxalate Solid	REO as % of TREO	
La	4.94	10.7	
Ce	10.75	23.2	
Pr	1.46	3.1	LIGHT REE
Nd	6.76	14.5	
Sm	1.65	3.5	
Eu	0.27	0.6	
Gd	1.66	3.5	
Tb	0.35	0.7	
Dy	2.19	4.6	
Ho	0.49	1.0	
Er	1.29	2.7	HEAVY REE
Tm	0.18	0.4	
Yb	1.14	2.4	
Lu	0.15	0.3	
Y	12.21	28.6	
Total REE	45.48	100 %	
Light REE %		55.1	
Heavy REE %		44.9	

Table 1: Composition of REE-oxalate precipitated by ANSTO Minerals from Norra Karr project, with REO relative abundance (when converted to oxide)

Norra Karr lies 15km NNE of the township of Gränna and 300km SW of the capital Stockholm in mixed forestry and farming land, and is secured to Tasman with a 25-year Mining Lease. The short time taken from discovery to Mining Lease granting demonstrates the efficiency and advantage of operating in a jurisdiction with a strong and transparent Mining Act and a long term association with resource industries. The project is proximal to road, rail, power and operating ports, plus skilled personnel, minimizing the need for offsite infrastructure to be built by the Company.

Tasman's Qualified Person, Mr. Mark Saxon, President and Chief Executive Officer of Tasman and a Fellow of the Australasian Institute of Mining and Metallurgy and Member of the Australian Institute of Geoscientists, has reviewed and verified the contents of this news release.

About Tasman Metals Ltd.

Tasman is a Canadian mineral development company focused on critical metals including Rare Earth Elements (REE's) and tungsten (W) in Scandinavia. Tasman is listed on the TSX Venture Exchange under the symbol "**TSM**" and the NYSE-MKT under the symbol "**TAS**". REE and tungsten demand is increasing, due to the metals' unique properties that make them essential for high technology and industry. Since over 95% of REE and 80% of tungsten supply is sourced from China, the European Commission promotes policy to develop domestic supply of critical metals to ensure the security of industry. Tasman receives research funding from the European Commission.

Tasman's exploration portfolio is uniquely placed, with the capacity to deliver strategic metals from politically

stable, mining friendly jurisdictions with developed infrastructure and skills. The Company's Norra Karr and Olserum projects in Sweden are two of the most significant known heavy REE resources in the world, enriched in dysprosium, yttrium, terbium and neodymium. The Company is now focused on the safe, sustainable and responsible development of its Scandinavian mineral portfolio.

On behalf of the Board,

Mark Saxon, President & CEO

The TSX Venture Exchange nor its Regulation Services Provider (as that term is defined in the policies of the TSX Venture Exchange), the NYSE - MKT nor the Frankfurt Stock Exchange accepts responsibility for the adequacy or accuracy of this news release.

Cautionary Note to U.S. Investors Concerning Mineral Resources and Reserves. In this news release, the definition of "**mineral resources**" is that used by the Canadian securities administrators and conforms to the definition utilized by CIM in the "CIM Standards on Mineral Resources and Reserves - Definitions and Guidelines" adopted on August 20, 2000 and amended December 11, 2005.

The standards employed in estimating the mineral resources referenced in this news release differ significantly from the requirements of the United States Securities and Exchange Commission (the "**SEC**") and the resource information reported may not be comparable to similar information reported by United States companies. The term "**resources**" does not equate to "**reserves**" and normally may not be included in documents filed with the SEC. "**Resources**" are sometimes referred to as "**mineralization**" or "**mineral deposits**." While the terms "**mineral resource**", "**measured mineral resource**", "i**ndicated mineral resource**" and "**inferred mineral resource**" are recognized and required by Canadian regulations, they are not defined terms under standards in the United States and normally are not permitted to be used in reports and registration statements filed with the SEC. The terms "**mineral reserve**," "**proven mineral reserve**" and "**probable mineral reserve**" are Canadian mining terms as defined in accordance with National Instrument 43-101 - *Standards of Disclosure for Mineral Projects* ("**NI 43-101**") and the CIM - CIM Definition Standards on Mineral Resources and Mineral Reserves, adopted by the CIM Council, as may be amended from time to time by the CIM. These definitions differ from the definitions in the United States Securities and Exchange Commission Industry Guide 7 ("**SEC Industry Guide 7**") under the Securities Act of 1933. Under Canadian rules, estimates of inferred mineral resources may not form the basis of feasibility or prefeasibility studies, except in rare cases. Disclosure of "contained ounces" in a resource is permitted disclosure under Canadian regulations; however, the SEC normally only permits issuers to report mineralization that does not constitute "reserves" by SEC standards as in place tonnage and grade without reference to unit measures.

The estimation of measured, indicated and inferred mineral resources involves greater uncertainty as to their existence and economic feasibility than the estimation of proven and probable reserves. U.S. investors are cautioned (i) not to assume that measured or indicated resources will be converted into reserves and (ii) not to assume that estimates of inferred mineral resources exist, are economically or legally minable, or will be upgraded into measured or indicated mineral resources. It cannot be assumed that the Company will identify any viable mineral resources on its properties or that any mineral reserves, if any, can be recovered profitably, if at all. As such, information contained in this news release and the documents incorporated by reference herein concerning descriptions of mineralization and resources under Canadian standards may not be comparable to similar information made public by United States companies in SEC filings.

Cautionary Statements. Certain statements found in this release may constitute forward-looking statements as defined in the U.S. Private Securities Litigation Reform Act of 1995. Forward-looking statements reflect the speaker's current views with respect to future events and financial performance and include any statement that does not directly relate to a current or historical fact. Such statements reflect the current risks, uncertainties and assumptions related to certain factors including, without limitations, competitive factors, general economic conditions, customer relations, uncertainties related to the availability and costs of financing, unexpected geological conditions, success of future development initiatives, imprecision in resource estimates, ability to obtain necessary permits and approvals, relationships with vendors and strategic partners, the interest rate environment, governmental regulation and supervision, seasonality, technological change, changes in industry practices, changes in world metal markets, changes in equity markets, environmental and safety risks, and one-time events. Should any one or more of these risks or uncertainties materialize, or should any underlying assumptions prove incorrect, actual results may vary materially from those described herein. Forward-looking statements cannot be guaranteed and actual results

may vary materially due to the uncertainties and risks, known and unknown, associated with such statements. Shareholders and other readers should not place undue reliance on "forward-looking statements," as such statements speak only as of the date of this release.

Contact

Investor Information
Tasman Metals Ltd.
Jim Powell, V.P. - Corporate Development
+ 1 (647) 478 8952
jpowell@tasmanmetals.com
Tasman Metals Ltd.
Mariana Bermudez
+1 (604) 685 9316
info@tasmanmetals.com
www.tasmanmetals.com