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SUCCESSFUL HYDROMET PILOTING COMPLETED - ALL PROCESSING FLOWSHEETS TESTED

HIGHLIGHTS

- **Pilot plant testing of the hydrometallurgy (Hydromet) circuits successfully validated the simple and effective flowsheet of the Yangibana Hydromet processes**
- **Three phase piloting undertaken:**
  - **Acid bake**
  - **Water leach and impurity removal**
  - **Carbonate product precipitation**
- **All three phases achieved or exceeded laboratory results**
- **Key engineering data was collected from the pilot plant operation for the Definitive Feasibility Study (DFS)**
- **Effective operational processes parameters identified**
- **Over 50 kg of high purity Mixed Rare Earth Carbonate (MREC) produced for marketing purposes**

Hastings Technology Metals Limited ("**Hastings**" or "**the Company**") has successfully completed the crucial continuous Hydromet pilot plant operations for the Yangibana Rare Earths Project.

The Yangibana Rare Earths Project is located in the Gascoyne region of Western Australia. The Company plans to construct a processing plant to produce a MREC product, through the process of mining, beneficiation and hydrometallurgy. The hydromet pilot plant is the final stage in pilot testing of the Yangibana process flowsheet.

Hydromet Pilot Plant Summary

The three phase simple and effective flowsheet was developed with the best available technology in the laboratory testwork program. The piloting produced 3.5 kg concentrate per hour. The pilot processing circuit, operated continuously on a 24 hour basis over a total of 12 days at Australian Nuclear Science and Technology Organisation (ANSTO), Lucas Heights, NSW.

Concentrate was produced from the February 2017 beneficiation pilot plant operation. The three stages of the hydromet piloting were;

1. Baking of the concentrate/acid mixture.
2. Leaching the calcine product in water to produce a rare earth containing liquor. Impurities in the liquor were then removed.
3. Precipitation of the rare earths as a carbonate product. Rare earth recoveries were above 94% for water leach, 95% for impurity removal and 98.5% for carbonate precipitation.

The MREC produced (Table 1), shows that the manganese, iron, thorium and uranium were removed or controlled within acceptable product range.

Table 1 Mixed Rare Earth Carbonate Precipitate

		Target (dry Basis)	Pilot Plant Result
TREO	**%**	>58%	61
La_2O_3/TREO	**%**		10.66
CeO_2/TREO	**%**		40.17
Nd_2O_3/TREO	**%**		33.60
Pr_6O_{11}/TREO	**%**		7.21
Others	**%**		8.36
Fe	**%**	<0.075	<0.05
Ca	**%**	<0.5	0.12
Mg	**%**	<0.075	<0.02
Mn	**%**	<0.015	<0.01
Zn	**%**	<0.015	<0.01
U	**ppm**	<15	<15
Th	**ppm**	<15	<15

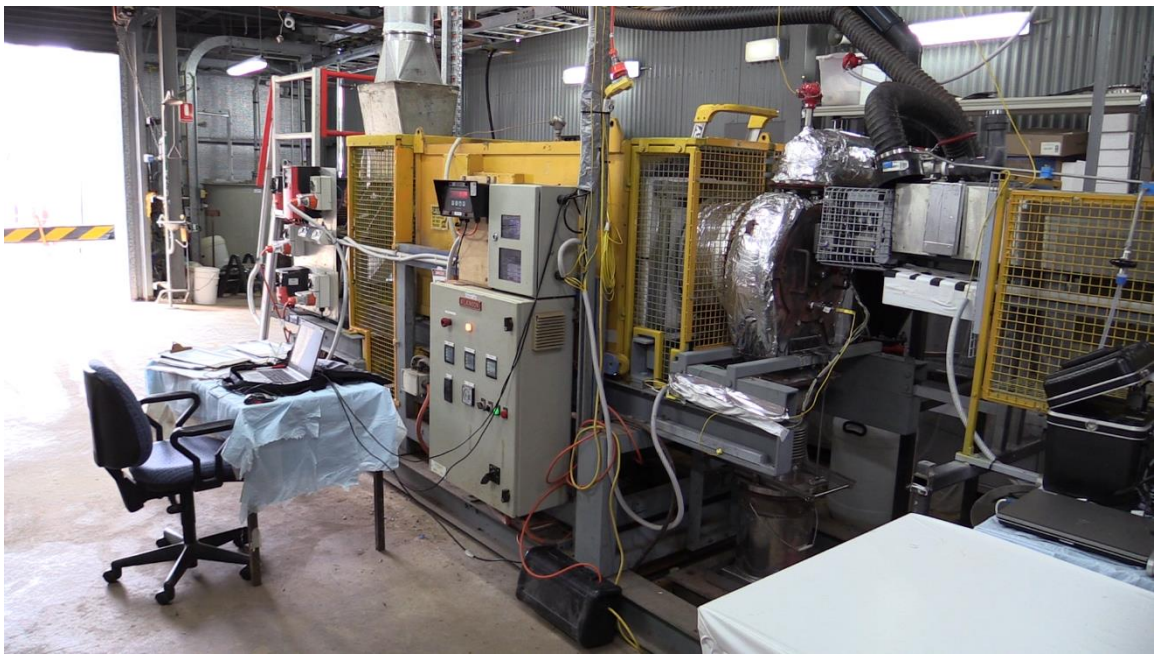

Figure 1 Hydrometallurgy Pilot testing - Acid Bake Kiln

Figure 2 Hydrometallurgy Pilot testing – Water Leach Circuit

Figure 3 Hydrometallurgy Pilot testing – Neutralisation & Precipitation Circuit

Figure 4 MREC Product Filter Cake

The hydromet circuit uses commercially and readily available equipment and reagents.

Specialist equipment vendors attended the pilot operation to test the thickening and filtration performance of the intermediate solid-liquid separation stages and assess applicability to the engineering design. Work is continuing with other process equipment vendors for sizing of specific equipment, such as attrition tank for leach circuit etc. Data collected from this work will be incorporated into the detailed engineering study.

The following samples were also collected from the continuous 24 hour piloting:

- Full circuit metallurgical survey samples for validation of scale-up from laboratory results;
- Bulk samples for engineering design testwork, e.g. calcine attritioning, thickener sizing, product filter sizing, tailing storage facility design and materials handling characterisation;
- MREC product which will be used for marketing.

The results will feed into the current engineering study and detailed design phase of the project.

Ongoing Performance Improvement Testwork

Further performance improvement testwork for the hydromet circuit will be carried out from the results of the pilot testing.

TERMINOLOGY USED IN THIS REPORT

Total Rare Earths Oxides, TREO, is the sum of the oxides of the light rare earth elements lanthanum (La), cerium (Ce), praseodymium (Pr), neodymium (Nd), and samarium (Sm) and the heavy rare earth elements europium (Eu), gadolinium (Gd), terbium (Tb), dysprosium (Dy), holmium (Ho), erbium (Er), thulium (Tm), ytterbium (Yb), lutetium (Lu), and yttrium (Y).

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About Hastings Technology Metals

- Hastings Technology Metals is a leading Australian rare earths company, with two rare earths projects hosting JORC-compliant resources in Western Australia.
- The Yangibana Project hosts JORC Resources totalling 13.41 million tonnes at 1.18% TREO (comprising Measured Resources of 2.16 million tonnes at 1.01% TREO, Indicated Resources of 5.45 million tonnes at 1.30% TREO and Inferred Resources of 5.81 million tonnes at 1.12% TREO), including 0.39% Nd_2O_3+Pr_6O_{11}.
- The Brockman deposit contains JORC Indicated and Inferred Resources totalling 41.4 million tonnes (comprising 32.3mt Indicated Resources and 9.1mt Inferred Resources) at 0.21% TREO, including 0.18% HREO, plus 0.36% Nb_2O_5 and 0.90% ZrO_2.
- Rare earths are critical to a wide variety of current and new technologies, including smart phones, hybrid cars, wind turbines and energy efficient light bulbs.
- The Company aims to capitalise on the strong demand for critical rare earths created by expanding new technologies.