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TECHNOLOGICAL BREAKTHROUGH FOR TNG'S TiO₂ PIGMENT PRODUCTION UNLOCKS POTENTIAL FURTHER ENHANCEMENTS AT MOUNT PEAKE AND POSITIONS TNG TO COMPLETE OFF-TAKE NEGOTIATIONS

TNG's technical consultants METS, SMS and CSIRO have developed and confirmed the viability of a TNG-developed TiO₂ process – building further potential value uplift to that already achieved in vanadium

Key Points

- A high-purity TiO₂ pigment process ("TNG process") has been successfully developed and confirmed by TNG and its consultants and engineers.
- The new process, which is based on the conventional TiO₂ sulphate route, has the potential to directly use the Company's TIVAN®-produced feedstock for the production of a high-grade TiO₂ pigment.
- The TIVAN® titanium feedstock's low iron content is a highly significant advantage over current TiO₂ sulphate route feedstocks.
- This breakthrough on the TIVAN® feedstock builds on the value uplift already achieved by TNG in 2016 in its vanadium product suite, which saw it successfully produce high-purity vanadium electrolyte (used in Vanadium Redox Batteries) using its high-purity vanadium pentoxide from the Mount Peake material (ASX Release, 10 October 2016).

Australian strategic metals company TNG Limited (ASX: TNG) is pleased to announce that, together with its technical consultants, METS, SMS and CSIRO, it has confirmed a potential TiO₂ pigment process for its flagship **Mount Peake Vanadium-Titanium-Iron Project** in the Northern Territory.

The successful development of the new process, which is based on the conventional TiO₂ sulphate route, marks the culmination of extensive technical work that has been undertaken as part of the Company's ongoing strategy to maximise value from the Mount Peake Project. Importantly, it also confirms the potential pigment type for the Company's on-going titanium off-take discussions.

The success has the potential to build further on the value uplift already achieved by TNG in 2016 with the successful production of commercial-grade high-purity vanadium pentoxide and high specification vanadium electrolyte from Mount Peake.

TNG's new process has confirmed the potential for the the Company to directly use its TIVAN® titanium feedstock for the production of a high-grade TiO₂ pigment, without any further upgrading treatment process. TNG's process uses a modified and improved version of the current main commercial TiO₂ sulphate route for pigment production.

Directly using the TIVAN® titanium feedstock (which is the residue directly out of the TIVAN® process, after the vanadium and iron have been extracted), without the need for further upgrading, significantly reduces the cost and complexity of the process. The Mount Peake Project's Feasibility Study has previously incorporated upgrade steps before this process was first conceived and then tested on TIVAN® feedstock.

The TIVAN® titanium feedstock's low iron content is a significant advantage over current TiO₂ sulphate route feedstocks. Low-iron feedstock has the potential to minimise the environmental impact compared to a standard sulphate titanium pigment production process – an important competitive and strategic advantage for TNG.

The Company is currently in advanced discussions with leading global TiO_2 industry participants for off-take and financing partnerships, and the confirmation of this process provides added impetus to finalise a long-term, life-of-mine, 100% titanium product off-take agreement.

This recent technical breakthrough has the potential to further improve the economics of TNG's Mount Peake Project while at the same time reducing the technical complexity and environmental impact of the Project.



TIVAN® feedstock



Digested Cake



TNG's Pure white high purity Titanium dioxide prior to coating and finishing

Management Comment

TNG's Managing Director, Mr Paul Burton, said the successful development of this process for the Company's titanium product suite represented another major achievement by its exceptional specialist technical team.

"We continue to kick goals on this project, which now incorporates a number of world-leading technological breakthroughs in our downstream process – taking us further up the value chain with the real potential to further enhance the project economics," he said.

"This effectively closes the loop on all our TIVAN®-generated products and gives us a very robust business model, with world-class products," he added.

The Company will further update the market on overall progress on the development of the Mount Peake Project in the near future.

Paul E Burton
Managing Director

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Additional Information

TNG updated the economics of its Definitive Feasibility Study (DFS) for the Mount Peake Project in November 2017, confirming a world-class project capable of generating outstanding returns (ASX Release, 20 November 2017). The recent technical breakthrough should further improve the economics of TNG's Mount Peake project while at the same time reducing some technical complexity and environmental impact. Key findings of the updated DFS included life-of-mine net cash flow of \$11.7 billion, a pre-tax IRR of 44% and an NPV₈ of \$4.7 billion (*see ASX Announcement – 20 November 2017*).

TNG intends to produce three commercial products:

Vanadium Pentoxide and Vanadium Electrolyte:

TNG has previously confirmed the ability to produce high-purity vanadium pentoxide at +99% purity from its TIVAN® plant following an extensive pilot plant testwork program in 2015 (ASX release, 8 July 2015).

Subsequently, the Company successfully produced commercial-grade high-purity vanadium electrolyte from this vanadium pentoxide (see ASX release, 10 October 2016) to the exacting and detailed specification required by Sumitomo Electric (SEI). TNG has a binding life of mine off-take agreement for its vanadium pentoxide in place with Korea's WOOJIN Group.

Titanium Dioxide – Titanium Pigment

TNG has previously confirmed its ability to produce a high-grade titanium dioxide feedstock from its TIVAN® process, grading approximately 80% TiO₂ (see ASX release, 8 July 2015). This feedstock is a direct residue from the initial leaching phase of the TIVAN® process, where the vanadium and iron have been dissolved into solution. With this current breakthrough, TNG has now confirmed that this feedstock can be taken directly to a pre-coating pigment phase.

Iron Oxide: As part of the acid digestion process, the iron component of the magnetite is removed and then captured once the vanadium is extracted from solution, producing a 99.9% pure Fe₂O₃ product. TNG has a binding off-take agreement for this product stream with Gunvor.

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About TNG

TNG is building a world-scale strategic metals business based on its flagship 100%-owned Mount Peake Vanadium-Titanium-Iron Project in the Northern Territory. Located 235km north of Alice Springs, Mount Peake will be a long-life project producing a suite of high-quality, high-purity strategic metals products for global markets including vanadium pentoxide, titanium dioxide and pig iron. The project, which will be a top-10 global producer, has received Major Project Facilitation status from the NT Government.

Vanadium is a highly strategic metal which is used as an alloy in steel. It is also in strong demand for use in energy storage, with vanadium redox batteries used to store electricity generated by solar and wind power, and lithium-vanadium ion batteries used to power hybrid cars.

Forward-Looking Statements

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