

# **AB Minerals Corp.**

## **A New Separation Technology to Process Tantalite Bearing Minerals**

*AB Minerals has developed a new processing technology to  
produce metallurgical grade Tantalum powder and  
Niobium hydroxide, from an industrial scale  
processing plant using certified conflict-free ore*

**November 2016**

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# Introduction

The African and Latin American (“Tantalite producing countries”) mining industries export ore concentrate primarily to Chinese and European smelters at its lowest value. By implementing in-country value-added processing, local communities, miners and the country itself, all receive significant benefits.

Today, most mining in these regions remain narrowly focused on the direct export of strategic minerals to industrialized nations at the expense of local development. The mining industry remains comfortable with this export model, while the value-added processors appear not to have the desire to upgrade the minerals directly where they are sourced.

**AB Minerals’ vision is to change this value proposition by transforming the minerals into higher value-added products in-country, with processing plants near the source of the minerals.**

# Project Highlights

- AB Minerals is planning to construct several industrial scale plants to process Tantalite bearing ores and produce metallurgical grade Tantalum powder and Niobium hydroxide
- These will be the first plants of their kind in Tantalite producing countries
- This new, disruptive processing technology is the only Tantalite processing technology that does not use hydrofluoric acid
- The process is more environmentally friendly, low cost and energy efficient
- High-purity Tantalum powder and Niobium hydroxide is in high demand
- Even in today's challenging commodities environment, profit margins for this processing method are significant

# Project Highlights *(...cont)*

- The plants will be modular, scalable and can be located in any country where there is an adequate supply of Tantalite bearing minerals
- The design of the plant is complete
- The Company is entering the final phase of the project prior to building the plants. A financial partner is sought (US\$1 mil) to complete the Large Scale Processing Run to be conducted at a major lab in North America
- Payback - well within the first year of operation
- Major Tantalum and Niobium consumers have expressed interest in our finished products

# Large Scale Production Run & Plant Construction

- A Large Scale Production Run has been arranged at a major lab in North America that has the required equipment and metallurgical expertise, prior to building and exporting the plants
- Total cost of the Production Run is budgeted at US\$1.0 million
- Upon completion, the Company will build modular, skid mounted processing plants that will be shipped to Africa and other regions of the world where there are sufficient Tantalite ore supplies
- The plant will be turnkey upon delivery

# Advantages of the Process

- The AB Minerals technology is a complete, low cost redesign of how processing is done, something that hasn't changed significantly in more than 60 years
- To conform with the stricter environmental requirements of today, the Company has developed a safer and more efficient way to separate tantalum and niobium into high-purity products.
- Hydrofluoric acid is not required for decomposition of the ore
- Recovery of nearly 100% the Tantalum ( $\text{Ta}_2\text{O}_5$ ) and Niobium ( $\text{Nb}_2\text{O}_5$ ) from the ore
- Ability to customize the final product to Customer specifications
- Significant reduction in processing costs
- Elimination of radioactivity during processing, so only high-purity finished products with no radioactivity are exported

# What is Tantalum & Niobium Used For?

The plant will produce metallurgical grade Tantalum powder and Niobium hydroxide.

- Tantalum is widely used in modern electronics – capacitors, microchips, optoelectronic & acoustoelectronic devices, optics, as additives and coatings, special alloys manufacturing and the nuclear industry, to name a few.
- The most important application for Niobium is as an alloying element to strengthen high-strength low-alloy (HSLA) steels used in automobiles, high-pressure gas transmission pipelines and jet engines. When these superconducting alloys are combined with titanium and tin, they are widely used in the superconducting magnets of MRI scanners.

# Socio-Economic Impact

- Major beneficiaries of the project are the Artisanal & Small Scale Mining Companies and Cooperatives who represent a significant amount of the total miners in many countries.
- With a focus to develop SME's (Small & Medium Sized Enterprises) in rural areas, it further contributes to reducing the economic disparity between rural areas and the major cities in a country.
- Miners will be able to receive higher prices for their ore by selling directly to a local smelter rather than to agents.
- Creation of many high quality jobs.
- A Tantalite smelter will play an important role in assisting the mining sector in the country where it is located.
- The country will generate increased tax revenue through the export of value-added products.

# Key Personnel

- **Managing Director: Frank Balestra** has been involved in Africa since 2012. He is the Founder of AB Minerals Corp., and has over 25 years experience in assisting and advising private and public companies; procuring funding and incubating organizations in various stages of growth. He has successfully transformed start-ups from R&D and product development to commercially successful public entities.

He has assembled a team of experienced chemical, metallurgical, engineering and scientific experts that specialize in the tantalum industry. This team has extensive knowledge and experience in tantalum processing and the tantalum supply chain.

# Key Personnel (...cont)

- **Business Development: Curt Huber** is an independent corporate and financial consultant. He has been involved in all facets of public companies for more than 25 years. He is an experienced director and senior officer who has represented public companies in many different sectors: mining, oil and gas, and technology. In addition, he has provided investor relation services, raised financing in the public markets and built corporate awareness.
- **Advisor: William (Bill) Millman** - Director, Mines, Minerals, Metals & Markets Ltd. - has been involved in all aspects of the capacitor industry for over 40 years including R&D, engineering, manufacturing, materials, process, new product development, and quality. More recently he has been focused on the development of models for responsible sourcing of conflict free tantalum minerals through innovative initiatives.

Mr. Millman recently retired as the Director of Corporate Quality for AVX Corporation (one of the world's largest Tantalum users), after 40 years with the company. He has been elected President of the Tantalum International Study Centre (TIC), an international community from the tantalum industry, for three terms (1997-98, 2004-05, 2005-06) and has been an Executive member of the TIC Committee for 29 years.

# Key Personnel (...cont)

## Process Engineering Consultants

**Matt Bolu, M.Sc. P.Eng., Principal at BOMENCO Inc., Process (Metallurgical) Engineer** - Mr. Bolu has worked in the mineral processing and engineering industry for over 39 years. His professional career includes plant operations/management, process trouble shooting, design/development, project feasibility/economic studies, technical/due diligence analyses, detail design, and plant commissioning spanning over five continents.

**BOMENCO Inc.** is a minerals engineering and consulting company focused on extractive metallurgy and mineral processing. Their strength is their associates and experience: their engineers & technical personnel each bring many years of practical experience in the design and operation of minerals processing plants in most regions of the world, on both large and small projects, and for major & smaller size operating and engineering companies.

**DAMA Engineering** was incorporated in June 2005 by a number of professionals with diverse experience in Exploration and Mine development services. Along with experienced staff employed, DAMA is partnering with qualified geologists, metallurgists and mining engineers from Europe & America. By blending national and international skills, DAMA has the capability of providing high level services to the minerals industry for Value creation.

# Project Timeline

|                                                | Week |   |   |   |   |   |   |   |   |    |    |    | Month |   |   |   |   |   |    |    |    |    |    |    | Month |    |    |    |    |    |    |    |    |    |    |    | Month |    |    |    |    |    |    |    |    |  |  |  |
|------------------------------------------------|------|---|---|---|---|---|---|---|---|----|----|----|-------|---|---|---|---|---|----|----|----|----|----|----|-------|----|----|----|----|----|----|----|----|----|----|----|-------|----|----|----|----|----|----|----|----|--|--|--|
|                                                | 1    | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 4     | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16    | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28    | 29 | 30 | 31 | 32 | 33 | 34 | 35 | 36 |  |  |  |
| Project Funding Completed                      |      |   |   |   |   |   |   |   |   |    |    |    |       |   |   |   |   |   |    |    |    |    |    |    |       |    |    |    |    |    |    |    |    |    |    |    |       |    |    |    |    |    |    |    |    |  |  |  |
| <u>5 TONNE CUSTOMER EVALUATION RUN</u>         |      |   |   |   |   |   |   |   |   |    |    |    |       |   |   |   |   |   |    |    |    |    |    |    |       |    |    |    |    |    |    |    |    |    |    |    |       |    |    |    |    |    |    |    |    |  |  |  |
| Preparation Time for Evaluation Run            |      |   |   |   |   |   |   |   |   |    |    |    |       |   |   |   |   |   |    |    |    |    |    |    |       |    |    |    |    |    |    |    |    |    |    |    |       |    |    |    |    |    |    |    |    |  |  |  |
| Acquisition & Delivery of Ore Required for Run |      |   |   |   |   |   |   |   |   |    |    |    |       |   |   |   |   |   |    |    |    |    |    |    |       |    |    |    |    |    |    |    |    |    |    |    |       |    |    |    |    |    |    |    |    |  |  |  |
| Customer Evaluation Run                        |      |   |   |   |   |   |   |   |   |    |    |    |       |   |   |   |   |   |    |    |    |    |    |    |       |    |    |    |    |    |    |    |    |    |    |    |       |    |    |    |    |    |    |    |    |  |  |  |
| <u>PLANT CONSTRUCTION</u>                      |      |   |   |   |   |   |   |   |   |    |    |    |       |   |   |   |   |   |    |    |    |    |    |    |       |    |    |    |    |    |    |    |    |    |    |    |       |    |    |    |    |    |    |    |    |  |  |  |
| Purchase Orders - Full Scale Plant             |      |   |   |   |   |   |   |   |   |    |    |    |       |   |   |   |   |   |    |    |    |    |    |    |       |    |    |    |    |    |    |    |    |    |    |    |       |    |    |    |    |    |    |    |    |  |  |  |
| Purchase of Land for Facility                  |      |   |   |   |   |   |   |   |   |    |    |    |       |   |   |   |   |   |    |    |    |    |    |    |       |    |    |    |    |    |    |    |    |    |    |    |       |    |    |    |    |    |    |    |    |  |  |  |
| Facility Prep and Construction                 |      |   |   |   |   |   |   |   |   |    |    |    |       |   |   |   |   |   |    |    |    |    |    |    |       |    |    |    |    |    |    |    |    |    |    |    |       |    |    |    |    |    |    |    |    |  |  |  |

# Project Timeline (...cont)

|                                                      | Week |   |   |   |   |   |   |   |   |    |    |    | Month |   |   |   |   |   |    |    |    |    |    |    | Month |    |    |    |    |    |    |    |    |    |    |    | Month |    |    |    |    |    |    |    |    |  |  |  |  |
|------------------------------------------------------|------|---|---|---|---|---|---|---|---|----|----|----|-------|---|---|---|---|---|----|----|----|----|----|----|-------|----|----|----|----|----|----|----|----|----|----|----|-------|----|----|----|----|----|----|----|----|--|--|--|--|
|                                                      | 1    | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 4     | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16    | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28    | 29 | 30 | 31 | 32 | 33 | 34 | 35 | 36 |  |  |  |  |
| Construction/Del of Initial 90 t/mo Processing Plant |      |   |   |   |   |   |   |   |   |    |    |    |       |   |   |   |   |   |    |    |    |    |    |    |       |    |    |    |    |    |    |    |    |    |    |    |       |    |    |    |    |    |    |    |    |  |  |  |  |
| Acquisition of initial ore supply                    |      |   |   |   |   |   |   |   |   |    |    |    |       |   |   |   |   |   |    |    |    |    |    |    |       |    |    |    |    |    |    |    |    |    |    |    |       |    |    |    |    |    |    |    |    |  |  |  |  |
| Acquisition of operating ore supply                  |      |   |   |   |   |   |   |   |   |    |    |    |       |   |   |   |   |   |    |    |    |    |    |    |       |    |    |    |    |    |    |    |    |    |    |    |       |    |    |    |    |    |    |    |    |  |  |  |  |
| 25 t/month processing                                |      |   |   |   |   |   |   |   |   |    |    |    |       |   |   |   |   |   |    |    |    |    |    |    |       |    |    |    |    |    |    |    |    |    |    |    |       |    |    |    |    |    |    |    |    |  |  |  |  |
| 90 t/month processing                                |      |   |   |   |   |   |   |   |   |    |    |    |       |   |   |   |   |   |    |    |    |    |    |    |       |    |    |    |    |    |    |    |    |    |    |    |       |    |    |    |    |    |    |    |    |  |  |  |  |
| Construction/del of add'l processing equipment       |      |   |   |   |   |   |   |   |   |    |    |    |       |   |   |   |   |   |    |    |    |    |    |    |       |    |    |    |    |    |    |    |    |    |    |    |       |    |    |    |    |    |    |    |    |  |  |  |  |
| 180 t/month processing                               |      |   |   |   |   |   |   |   |   |    |    |    |       |   |   |   |   |   |    |    |    |    |    |    |       |    |    |    |    |    |    |    |    |    |    |    |       |    |    |    |    |    |    |    |    |  |  |  |  |
| Construction/del of add'l processing equipment       |      |   |   |   |   |   |   |   |   |    |    |    |       |   |   |   |   |   |    |    |    |    |    |    |       |    |    |    |    |    |    |    |    |    |    |    |       |    |    |    |    |    |    |    |    |  |  |  |  |
| 270 t/month processing                               |      |   |   |   |   |   |   |   |   |    |    |    |       |   |   |   |   |   |    |    |    |    |    |    |       |    |    |    |    |    |    |    |    |    |    |    |       |    |    |    |    |    |    |    |    |  |  |  |  |

A background image showing several hands of different skin tones holding a large quantity of small, grey, seed-like objects. The hands are cupped together, and the seeds are piled in the center. The image is slightly faded to allow the text to be prominent.

# **Financial Projections & Large Scale Production Run Budget**

**available upon request**

# Investment Opportunity

- The Company is seeking a financial partner to participate in the Large Scale Production Run
- Use of Proceeds - Funds raised will be used for the purchase and shipment of 5 tonnes of Coltan from Africa and the associated processing work
- Investment Required - US\$1.0 million
- In addition, we are seeking either an individual financial partner to fund all of the plants or individual groups to fund a plant country by country.

# **For Further Information Contact**

**Frank Balestra - Managing Director  
or**

**Curt Huber - Business Development**

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