NEW LIFE FOR AN OLD MINE IN KOREAN REPUBLIC

Sangdong Mine:

Lead consultant for Scoping Project and Resource Estimation Update
Lead consultant for Scoping Study – April 2010 & Resource Update – Sept. 2011, for Woulfe Mining Corp.

All information in this document is correct and/or in the public domain at the time of publication, April 2012.
Cover photos (Left) UV light on cutting-core taken from Sangdong phase-2 drilling (Right) Area for new processing plant at Sangdong, April 2010 (Photo courtesy of Woulfe)
Woulfe Mining Corp.  
Sangdong Mine

1. ABOUT THE CLIENT

Woulfe Mining Corp. is a TSX-V listed Canadian-based resource company. The vision of the company’s management is to develop high quality projects that can be brought into production quickly and at low cost, creating value for the company’s shareholders. To achieve this, they are focusing on properties with known mineralization and established infrastructure located in mining-friendly nations, such as South Korea, where the Sangdong Project is located.

The company has a diversified portfolio of mining licenses for tungsten, molybdenum, gold, base metals and uranium-vanadium in South Korea, and its primary properties are the Sangdong tungsten mine, the Muguk gold project and the Yeonwha lead-zinc property. At September 2011, major shareholders of the company were Commonwealth Bank of Australia, Korea Zinc, Resinco Capital Partners and Se Woo Mining. Woulfe was the only Western exploration company to blaze a trail in South Korea. Other companies are now recognising South Korea as a good destination for mineral investment.

2. BACKGROUND TO THE PROJECT

The Sangdong tungsten-molybdenum underground mine is the flagship property of Woulfe Mining Corp. (Woulfe) and is located close to China, the global leader in tungsten demand. Low metal prices, not the exhaustion of resources, led to the premature closure in 1992 of the mine, which had been the world’s leading producer of tungsten for 40 years. According to the 2010 Scoping Study, Sangdong’s Mine operating life is estimated at 15 years, with 12 months of pre-production underground development.

Substantial underground infrastructure is in place and the company has re-opened several of the old underground levels above the current levels of flooding. Above ground infrastructure includes access to roads, water and power. The source of the tungsten and molybdenum at the Sangdong deposit is in three shallow dipping skarn mineralised zones, namely the Main Zone, the Hangingwall and the Footwall Zones. These skarn zones replace part of the host limestone sequence. The majority of historical mining took place within the Main Zone. Drilling conducted by Kores (Korea Resources Corporation) in 1980-1987 discovered a deep molybdenum deposit (the Jangsan Quartzite) below the remaining tungsten skarn resources. As the first step in bringing the mine back to full production, Woulfe commissioned Wardrop Engineering, now Tetra Tech¹, to complete a Scoping Study on Sangdong in 2010, and thereafter a Resource Update in 2011. Tetra Tech continues to be involved with the project through producing a Feasibility Study.

3. INDUSTRY SNAPSHOT

South Korea as a direct foreign investment destination:
Woulfe’s strategy is to invest mining-friendly, high-tech industrialized economies, such as the Republic of Korea (South Korea) which has a market economy which ranks 14th in the world by nominal GDP and 12th by purchasing power parity (PPP), identifying it as one of the G20 major economies. South Korea is one of the few members of the Organisation for Economic Co-operation and Development (OECD) that has trade incentives. It is a high-income, developed country and one of the Asian Tigers, along with Hong Kong, Singapore and Taiwan. Despite the South Korean economy’s high growth potential and apparent structural stability, it suffers perpetual damage to its credit rating in the stock market due to the belligerence of North Korea in times of deep military crises. (www.wikipedia.com).

South Korea mining industry:
South Korea has small reserves of antimony, gold, copper, iron ore, lead, molybdenum, silver, tin, tungsten and zinc. The country’s domestic coal reserves have been exhausted, although it holds reasonable quantities of non-metallic minerals such as kaolin, limestone, feldspar, quartzite and mica. South Korea is one of the world’s leading steel producers and a leading producer of cadmium and slab zinc. Due to the country’s limited mineral reserves, supply has been unable to meet demand from the country’s industrial sector.

¹ Effective Oct. 3, 2011, Wardrop Engineering Inc. changed its name to Tetra Tech WEI Inc., after the outright acquisition of the company by Tetra Tech Inc. in 2009.

(Top) First trip inside the old mine workings in 20 years - site visit at Sangdong in June 2010. Project Manager, Paul Gribble, C.Eng., of Tetra Tech U.K., in the center foreground. (Photo: Woulfe)
(Bottom) Sept. 2011 on site meeting with Tetra Tech staff, SMC advisors and Geology team (Photo: Woulfe)
As a result, South Korea is an overall net importer of mineral commodities and one of the region’s main importers of coal, natural gas, nickel oxide sinter and ores and concentrates of copper, iron, lead and zinc. The current focus is on overseas exploration as the country seeks to secure supplies of raw materials to power its industrial base. Given the country’s small holdings of natural resources, activities are mostly focused on the processing of imported raw materials.

Most of South Korea’s large coal mining, natural gas, petrochemical and petroleum refining companies are state-owned and come under the supervision of the Ministry of Commerce, Industry and Energy (MCIE). Other small, mid-sized mining, quarrying and metal processing companies are privately-owned and operated.  Key Players South Korea’s mining industry is dominated by the country’s largest and the world’s third largest steelmaker Pohang Iron and Steel Company (POSCO), and state-owned entities Korea Zinc and Kores. (Source: South Korea Mining Report Q2 2011, Business Monitor International, April 29, 2011)

5. PROJECT MILESTONES

- April 1916: Sangdong Tungsten Mine discovered in Gangwon Province, South Korea.

- 1992: Sangdong Mine closed down due to low metal prices. From 1992 to 2006, the mine had a number of owners.

- 9 October 2006: The company [Oriental Minerals Inc.] entered into an agreement with Se Woo Mining Co. Ltd. whereby Woulfe could earn up to 100% interest in the Sangdong property, comprised of 12 Mining Rights with an aggregate area of 3,173 ha.

- June 2008: Oriental Minerals Inc. announced further results from additional drilling program at the Sangdong Project.

- 25 February 2010: Woulfe Mining Corp. announced that Oriental Minerals Inc. has changed its name to Woulfe Mining Corp. and commenced trading on the TSX Venture Exchange under the symbol “WOF”, with new major shareholders, Directors and Management.

- March 2010: Woulfe announced that an independent environmental review of Sangdong, undertaken by APEC Pty. Ltd., indicated that there appears to be no major environmental constraints restricting the redevelopment of the mine.

- April 2010: Tetra Tech WEI completed a scoping study for the Sangdong mine, based on the historical underground drilling and 2006 – 2008 surface drilling information available.

- May 2011: Woulfe successfully completed phase one of a drill program which focused on the areas above the valley floor to verify historical data and to upgrade sufficient resources to support the pre-feasibility study.

- August 2011: Woulfe released a Valuation Report completed by Ross Glanville & Associates Ltd. which opined that the value of Sangdong Mining Corporation in the Sangdong Project is approximately US$300 million.

- September 2011: Woulfe announced the results of the Tetra Tech WEI-led interim NI 43-101 Resource Update for the Sangdong Mine.

---

Woulfe Mining Corp., Annual Information Form for the year ended June 30, 2011, p. 6

---

INDUSTRY SNAPSHOT (CONT.)

As a result, South Korea is an overall net importer of mineral commodities and one of the region’s main importers of coal, natural gas, nickel oxide sinter and ores and concentrates of copper, iron, lead and zinc. The current focus is on overseas exploration as the country seeks to secure supplies of raw materials to power its industrial base. Given the country’s small holdings of natural resources, activities are mostly focused on the processing of imported raw materials. Most of South Korea’s large coal mining, natural gas, petrochemical and petroleum refining companies are state-owned and come under the supervision of the Ministry of Commerce, Industry and Energy (MCIE). Other small, mid-sized mining, quarrying and metal processing companies are privately-owned and operated. Key Players South Korea’s mining industry is dominated by the country’s largest and the world’s third largest steelmaker Pohang Iron and Steel Company (POSCO), and state-owned entities Korea Zinc and Kores. (Source: South Korea Mining Report Q2 2011, Business Monitor International, April 29, 2011)

---

4. WHAT DIFFERENTIATES THE SANGDONG PROJECT?

Woulfe’s primary focus is bringing one of the world’s largest past producing tungsten mines, the Sangdong mine, back into production and to commence production at the mine in the fourth quarter of 2012. The Scoping Study and follow-on Resource Update carried out by Tetra Tech WEI were key to the company reaching this goal. Tetra Tech completed the Scoping Study under great time pressure, the difficulty of which was compounded by the requirement for significant changes to the basic parameters of the mine design, changing the entire focus from open pit to underground. The familiarity of the Tetra Tech mining team with the project, based on their past experience, and the good working relationship between the team and the client, resulted in the continuity that made it possible to successfully deliver the reports, on deadline. At present, the client is continuing to work with Tetra Tech to develop the project.

“The Tetra Tech’s scientific approach to the Interim Resource Update meant that we gathered as much information as possible on the nature of the mineralization, and conducted an exhaustive analysis – as opposed to the fast initial estimate required for the scoping study. As always in these studies, the essential value-add to the client is in the quality and range of data provided.”

- Paul Gribble, C.Eng., Tetra Tech, U.K.

---

3,173 ha

Aggregate area of Sangdong property mining rights

US$300m

Approximate value of project in 2011

1916

Sangdong Mine discovered

1 Tetra Tech WEI
7. PROJECT SCOPE

The Scoping Study was prepared by Wardrop Engineering Inc., now Tetra Tech, to examine the reopening and redeveloping the de-commissioned underground Sangdong Tungsten/Molybdenum mine. It encompassed overall study management and final report preparation to National Instrument 43-101F Technical Report format for public disclosure. The study involved:

- Geology peer review
- Mining peer review
- Tailings management review
- Process and metallurgy to develop a Phase 1 testwork program and a process plant flowsheet, as well as the preliminary design.
- Infrastructure to develop a preliminary site plan and facilities design.
- Capital cost estimate to a ±35% level of accuracy.
- Operating cost estimate to a ±35% level of accuracy.
- Financial analysis to prepare a before and after tax financial model
- Project Execution Plan
- Risks and Opportunities

Completion of the Study triggered the completion of the agreement between Woulfe and Se Woo Mining, whereby, Woulfe would receive a further 19% interest in the Sangdong property, lifting its share to 70%. The company has the right to secure 100% ownership on completion of a full feasibility study. Following the Scoping Study, Wardrop completed an Interim Resource Update. The Study provides support for the company’s plans to refurbish a small-scale, high-grade underground operation in a skarn-type deposit using existing mine access, extensive underground development and other mine infrastructural assets...

(Source: Press announcement: “Woulfe announces positive results from its Sangdong Scoping Study”, March 05, 2010)

8. OUTCOMES

8.1. Scoping Study – April 2010

The initial estimate (NI 43-101 Technical Report, 2008) estimated tungsten and molybdenum values within the main skarn altered units. The estimate was made from the modern surface drilling holes completed by Oriental Minerals and combined with the historical underground drilling completed by Korean Tungsten during mine production. (Refer the perspective view, p.7, of interpreted skarn and quartzite zones and drill holes. Surface holes are in red and underground drilling are in black.)

Because of questionable location and sample quality control of these underground holes, and the limited geological understanding, the 2010 Resource was classified in the Inferred category. Additional drilling is required to upgrade the resource from the Inferred category, and to better understand the variation in and distribution of the mineralization.

The resource estimate totaled 103.2 million tonnes at 0.35% WO$_3$ and 0.04% MoS$_2$, based on a cut-off grade of 0.1% WO$_3$ and included only the Hangingwall and Footwall Veins (below).

<table>
<thead>
<tr>
<th>Zone</th>
<th>Tonnage (Mt)</th>
<th>WO$_3$ (%)</th>
<th>MoS$_2$ (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hangingwall</td>
<td>45.8</td>
<td>0.12</td>
<td>0.05</td>
</tr>
<tr>
<td>Footwall</td>
<td>57.4</td>
<td>0.37</td>
<td>0.04</td>
</tr>
</tbody>
</table>

Subsequently, Woulfe determined that the CDN$289 million build cost estimated in the Scoping Study is high when compared to similar, local development costs, and the company’s management was considering a number of options to finance this step, to “prevent or minimize dilution to shareholders”, according to the company.

1. Source: Press announcement: “Woulfe announces positive results from its Sangdong Scoping Study”, March 5, 2010)

2. WO$_3$: Tungsten Trioxide
3. MoS$_2$: Molybdenum Disulfide
PROJECT OUTCOMES (CONT.)

8.2. Resource Update – September 2011

The Resource Update had a substantively different basis than the Scoping Study and relied entirely on modern drilling programmes with associated sample quality control. The modern data, however, covers only approximately the upper quarter of the known dip-length of the mineralized zones. The remaining down dip mineralization represents a large tonnage of target mineralization that requires further drilling to upgrade to resource status. Tetra Tech WEI updated the resource for the upper portion only above the historic 2 Level, with the following results:

- Indicated resource of 6.0 Mt at 0.42% WO$_3$ and 0.04% MoS$_2$
- Inferred resource of 18.6 Mt at 0.45% WO$_3$ and 0.05% MoS$_2$

This resource estimate is significant for two reasons: the grade is currently higher than the scoping study grade, reflecting the higher grade remnant Main Zone mineralization included in the latest estimate, and the tonnage above 2 Level could conceivably provide the mill feed for more than 20 years, assuming upgrade of Inferred resources.

<table>
<thead>
<tr>
<th>Resource Category</th>
<th>Mineralised Zone</th>
<th>Tonnes</th>
<th>WO$_3$ (%)</th>
<th>MoS$_2$ (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>'Indicated'</td>
<td>Hangingwall</td>
<td>1,143,000</td>
<td>0.38</td>
<td>0.07</td>
</tr>
<tr>
<td>'Indicated'</td>
<td>Main</td>
<td>2,076,000</td>
<td>0.47</td>
<td>0.03</td>
</tr>
<tr>
<td>'Indicated'</td>
<td>Footwall</td>
<td>2,749,000</td>
<td>0.41</td>
<td>0.03</td>
</tr>
<tr>
<td>'Indicated'</td>
<td>Total</td>
<td>5,968,000</td>
<td>0.42</td>
<td>0.04</td>
</tr>
<tr>
<td>'Inferred'</td>
<td>Hangingwall</td>
<td>6,073,000</td>
<td>0.38</td>
<td>0.06</td>
</tr>
<tr>
<td>'Inferred'</td>
<td>Main</td>
<td>9,002,000</td>
<td>0.50</td>
<td>0.04</td>
</tr>
<tr>
<td>'Inferred'</td>
<td>Footwall</td>
<td>3,497,000</td>
<td>0.46</td>
<td>0.04</td>
</tr>
<tr>
<td>'Inferred'</td>
<td>Total</td>
<td>18,572,000</td>
<td>0.45</td>
<td>0.05</td>
</tr>
</tbody>
</table>

Note: MoS$_2$ is reported in terms of WO$_3$ cut-off

9. SUBSEQUENT EVENTS

Following the completion of the Resource Update, Woulfe commissioned Tetra Tech, as lead consultant, to undertake a Feasibility Study on Sangdong, with contributing experts such as Contromation Energy Services, Jakarta, for plant engineering, and BE Enterprises, Sydney, for the metallurgical testwork.

Woulfe has decided to forego the Pre-Feasibility Study, and the Feasibility study is scheduled for completion at the end of 2011. The Feasibility Study is important as it allows Woulfe to begin the construction phase of development and supports Woulfe’s possible application for project finance in the form of debt early in 2012.
Critical mindset and scientific approach

(Above, left) Gently dipping skarn at Sangdong
(Right) Concordant quartz veining at Sangdong  (Both images: Tetra Tech Scoping Study)
(Below) Perspective view of interpreted skarn and quartzite zones and drill holes looking south-east.

Key:
• Drill holes:- red - modern surface holes, black/blue - historical underground holes
• Wireframes:- cyan - hanging wall zone, purple - footwall zone, green - Jangsan quartzite stockwork

(Source: Tetra Tech Scoping Study)

ADMINISTRATIVE DETAILS

References:
All statements about this project, including site maps and photos, in this document have been sourced from www.woulfemining.com, and internal Tetra Tech correspondence, unless indicated otherwise.

Further information:
• “Sangdong Project, Scoping Study, Document No. 0753410100-REP-R0004-06”, April 2010
• Photo of molybdenum sample: en.wikipedia.org

Client contact:
Woulfe Mining Corp.: Administration Office Vancouver, Canada, Tel.: +1 604 684 6264 Fax: +1 604 684 6242 email: info@woulfe.com.au
Project office:
Tetra Tech UK: Ground Floor, Unit 2, Apple Walk, Kembrey Park, Swindon, SN2 8BL, UK.
Tel.: +44 1793 512305
ABOUT THIS DOCUMENT
This Case Study is published by Tetra Tech Inc. (NASDAQ: TTEK) (Tetra Tech), as a means of stimulating insight and debate in the mining and metals industry, and promoting the solutions and services offered by Tetra Tech and its associates. Tetra Tech and its subsidiary companies have been serving the mining and minerals industry since the 1960s. The Group understands the many challenges inherent in the life cycle of a mine, and has the resources and the global presence to complete the most demanding projects today. In the aggressive consulting marketplace, what sets Tetra Tech apart is its customer focus. More than just an engineering house, Tetra Tech’s “Start with Science” methodology allows it to tailor solutions to a customer’s need. This customized approach informs project planning throughout the mine life cycle, making projects much more likely to be built, more productive, and easier to maintain over the life of the mine.

DISCLAIMER
The material contained in this Case Study is for information only and does not constitute advice, a mandate or a recommendation of any nature. While Tetra Tech attempts to ensure that the content of this Case Study is accurate and complete, any person who relies on this Case Study or on the information contained in it does so at his or her own risk. Tetra Tech does not accept any responsibility for any errors or omissions in this Case Study, since the information contained therein has been obtained from outside parties, with their permission. All information regarding the product, services and information in this Case Study is subject to change without notice. The contents of this Case Study, including (without limitation) any software, icons, text, links, graphics, images, sound clips, trade names, logos, trade marks and service marks are protected by law, including but not limited to copyright, patent and trade mark law, and are the property of Tetra Tech and/or third parties. Any unauthorized use of the contents, information or materials in this Case Study is prohibited.