Canada Zinc Metals Announces Metallurgical Results from the Cardiac Creek Deposit

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Vancouver - Canada Zinc Metals Corp. (“Canada Zinc Metals” or “the Company”, TSX Venture Exchange: CZX) is pleased to announce the results from new metallurgical test data on the 2017 drill core from its 100% owned zinc-lead-silver Cardiac Creek deposit located on the Akie property in northeast British Columbia.

Highlights:

- Flotation testing on the global composite indicated that a conventional reagent scheme produced clean, marketable concentrates
- Zinc Concentrate: Zinc was 89% recovered into a concentrate grading 52.4%
- Lead Concentrate: Lead was 46% recovered into a concentrate grading 45%
- Saleable concentrates can be produced for both Zn and Pb
- No potential impurity or penalty elements were identified in the concentrates
- DMS separation was very efficient at rejecting barren gangue and improving recovery of lead and zinc; average global composite rejection was 25% of the feed mass
- The global composite had a Bond Ball Mill Work Index value of 16.9 kWhr/tonne, which would be considered moderately hard but well within conventional milling practices

Peeyush Varshney, President and CEO, commented, “*The metallurgical results presented here continue to demonstrate the significant value of the Cardiac Creek deposit. We are especially pleased with the performance of the zinc recovery and grade. The inherent value of the Cardiac Creek deposit is largely driven by the zinc, as the contained zinc to lead ratio of the deposit is greater than 5 to 1. This work also demonstrated using DMS and conventional milling and floatation techniques can produce clean, saleable concentrates for both zinc and lead with no penalty elements. We recognize this is an iterative process and we fully expect additional metallurgical test results will be refined as the project advances.”*

Kelly McLeod, P.Eng., of JDS Energy and Mining Inc. of Vancouver, BC, commented: “*Test work indicates the Cardiac Creek mineralization can be treated using dense media separation (DMS) and sequential flotation to produce saleable lead and zinc concentrates at a target primary grind size of 80% passing 56 microns. Dense media separation was found to efficiently reject waste material with minimal metal losses and was incorporated in the flowsheet. Based on the global sample tested the locked cycle test results produced a lead concentrate with a grade of 45% and recovery of 46% and a zinc concentrate with a grade of 52% and recovery of 89%. From the minor element analysis of the locked cycle test lead and zinc concentrates, no deleterious elements were present in concentrations that would incur penalties from the smelters*.”

Metallurgical Program

The objective of the program was to investigate the metallurgical response of the mineralisation with a focus on enhancing the recoveries for both zinc and lead into high-grade concentrates.

Composites

Representative intervals from the 2017 drill program were selected from 5 drill holes across the strike of the

deposit, representing a broad spread of the Cardiac Creek mineral resource. Individual drill hole composites were generated using half NQ and HQ diamond drill core. Hanging wall and footwall dilution was included in each composite in order to simulate mined material. From these individual composites a global composite was constructed. The majority of the metallurgical testing was performed on the global composite. Once the metallurgical optimization was complete, the metallurgical process was used to evaluate the individual drill hole composites.

DMS

The test program commenced with an investigation of dense media separation (DMS) on coarsely crushed global composite sample material. DMS has been shown to have several benefits by rejecting coarse barren gangue rock early in the beneficiation process and by reducing the volume of material entering the grinding circuit, which can result in reduced capital equipment and operating costs.

The DMS process at a specific gravity of 2.95 produced 28 percent mass rejection and recovered 95 and 98 percent lead and zinc recovery to the flotation feed (sinks plus fines). By reducing the slurry SG to 2.77, mass rejection was 22 percent. Lead and zinc recovery to the flotation feed would be 98 and 99 percent, respectively. All the size fractions performed well; with separation efficiency increasing as the particle size was increased. This process could potentially be conducted at an even larger size fraction, as no decrease was noticed at the coarsest particle size.

Global Composite

The feed characteristics of the global composite sample were determined after the application of DMS. A large sample (100kg) was processed using a screen size of >1/4″ and a slurry SG of 2.8; the sinks and fines were combined to construct the global composite flotation feed. The sample contained 9.50% Zn (~85% of combined grade) and 1.88% Pb (~15% of combined grade).

The Cardiac Creek sulphide resource is primarily comprised of pyrite, sphalerite (zinc mineral) and galena (lead mineral) hosted in shale with barite and minor gangue minerals such as calcite and quartz.

The mineral fragmentation properties of the composites were measured by size fraction using the QEMSCAN PMA routine. The analysis was conducted on samples ground with a primary grind size of 56µm K_{80}. Sphalerite (zinc mineral) liberation at the primary grind size was good with sphalerite seen to be interlocking as multiphase particles and in binary form with pyrite. The average particle size of sphalerite was much higher than galena (lead mineral). At the primary grind size galena liberation was relatively low as it tends to form as fine disseminations, most often occurring as complex multiphase particles interlocked with non-sulphide gangue and pyrite. The testing revealed that regrinding will be required to achieve satisfactory liberation and ultimately achieve marketable concentrate grade and recovery for zinc and lead.

Grinding Characteristics

The Bond Ball Mill Work Index values were determined for the global flotation feed composite. To help estimate the power savings with the DMS in the circuit, a Bond Ball Mill work index determination was also performed on the global composite without DMS. The composite had a Bond Ball Mill Work Index value of 16.9 kWhr/tonne, which would be considered moderately hard but well within conventional milling practices.

Rougher Floatation Response

Several different types of flotation tests were used to develop and optimize a flotation process and determine metallurgical response values for the global flotation feed composite. Initial testing focused on rougher flotation and the recovery of lead and zinc into separate rougher concentrates. Batch cleaner testing was used to determine the achievable concentrate grades and to optimize the parameters required to efficiently recover high-grade concentrates.

Initial zinc rougher tests indicated good zinc rougher performance with conventional reagent additions.

Therefore, only a limited number of zinc rougher tests were performed to conserve the testing budget in favor of lead. Overall, 91 percent of the zinc in the feed was recovered into the zinc rougher concentrate. There was no measurable effect on zinc recovery by varying the grind size.

The performance of zinc in the rougher tests allowed the majority of the flotation testing for the program to be focused on lead rougher flotation. The primary grind size was tested over a size range of 25 to 78µm K_{80}. Other important parameters tested included collector (SIPX) dosage, carbon depressant (CMC) and the effect of cyanide. Overall lead recovery was insensitive to primary grind size and maximum lead recoveries of about 60 percent were achieved.

Cleaner Floatation Response

Batch cleaner tests and sequential lead and zinc roughers were performed with regrinding on the rougher concentrates. Due to the fine dissemination of the mineralization, very fine regrind sizes were targeted. Optimized rougher test conditions were used to maximize lead recovery. Lead concentrate grades were 49 percent lead at recoveries ranging from 25 to 40 percent. Zinc concentrate grades between 54 to 55 percent were produced at recoveries ranging from 70 to 80 percent. Additional optimization testing will be examined in future test work to enhance the concentrate grades.

Locked Cycle Test Results

Using the best batch test conditions, a locked cycle test was performed to obtain metallurgical performance data for the composite sample. Zinc in the feed was 89 percent recovered into a concentrate grading 52.4 percent. Lead was 46 percent recovered from the feed into a concentrate grading 45.1 percent lead. This result was achieved with a primary grind size of 56µm K_{80} and lead and zinc regrind sizes of 10 and 14µm K80, respectively. These results were achieved using a conventional process. The stirred mill technology used to achieve particle sizes targets desired for this project is employed at many operating concentrators worldwide. Results from cycle tests are considered the best estimate of metallurgical response of the sample with the test conditions applied.

Concentrate Minor Elements

The locked cycle test lead and zinc concentrates were analyzed for minor elements. Element specific determination were performed for mercury (Hg by cold vapour) and fire assay ICP for gold, platinum and palladium. Other elements were performed by peroxide fusion and ICP or ICPMS. The concentrate contained low levels of most minor elements and no deleterious or penalty elements were identified.

Variability Sample Testing

A total of 7 variability composites were constructed for testing. Five samples were created from specific drill holes. Two additional composites were created; one composite was the same global composite with no hanging or footwall dilution and the final composite was a low grade hanging wall composite. Each composite was subjected to chemical, mineralogical, hardness and metallurgical tests. The metallurgical tests used the process flowsheet developed on the global composite.

Each of the variability samples were screened to ¼″, with the material coarser than ¼″ processed by dense media separation (DMS). The DMS slurry density was controlled to 2.8 SG using ferrosilicon. The DMS was remarkably efficient from a metallurgical perspective resulting in very consistent recovery values. On average, 96.3 percent of the lead and 98.5 percent of the zinc was recovered from the feed to the sinks and fines stream.

To assess the metallurgical performance of the variability samples, rougher and cleaner tests were performed. Rougher tests were completed under the conditions developed on the global flotation feed samples. These tests were used as scoping tests to determine the appropriate levels of collectors. Adjustments were made where necessary to the rougher reagents, and then two cleaner tests were performed on each sample. The closed-circuit tests demonstrated that with the developed flowsheet and conventional reagent scheme, lead concentrates averaging about 51 percent could be produced. The

concentrate grades ranged from 41.8 to 60 percent. Zinc in the feed was, on average, 78 percent recovered from the flotation feed to the zinc concentrate. Zinc recoveries ranged from 71.4 to 82.9 percent. The zinc concentrate grade averaged 56 percent zinc and had very low levels of fluctuation in zinc grade. The flotation performance of the zinc circuit was far less variable than the lead circuit in terms of concentrate grade and recovery.

The tests were performed by Base Metallurgical Laboratories Ltd of Kamloops, British Columbia, under the supervision of principal metallurgist Tom Shouldice, P.Eng. Assistance and program design was provided by Kelly McLeod, P.Eng.of JDS Energy and Mining Inc. of Vancouver, BC.

The Akie Zn-Pb-Ag Project

The 100% owned Akie property is situated within the Kechika Trough, the southernmost area of the regionally extensive Paleozoic Selwyn Basin and one of the most prolific sedimentary basins in the world for the occurrence of SEDEX zinc-lead-silver and stratiform barite deposits.

Drilling on the Akie property by Canada Zinc Metals since 2005 has identified a significant body of baritic-zinc-lead SEDEX mineralization known as the Cardiac Creek deposit. The deposit is hosted by siliceous, carbonaceous, fine grained clastic rocks of the Middle to Late Devonian Gunsteel Formation.

With additional drilling completed in 2017, the Company has updated the estimate of mineral resources at Cardiac Creek, as follows:

5% Zinc Cut-Off Grade					Contained Metal:		
Category	Tonnes (million)	Zn (%)	Pb (%)	Ag (g/t)	Zn (Blbs)	Pb (Blbs)	Ag (Moz)
Indicated	22.7	8.32	1.61	14.1	4.162	0.804	10.3
Inferred	7.5	7.04	1.24	12.0	1.169	0.205	2.9

In addition to the Akie Project, the Company owns 100% of eight of eleven large, contiguous property blocks that comprise the Kechika Regional Project including the advanced Mt. Alcock prospect. The Kechika Regional Project also includes the Pie, Yuen and Cirque East properties within which the Company maintains a significant 49% interest with partners Teck Resources Ltd. (TSX: TECK.B) and Korea Zinc Co. Ltd. These properties collectively extend northwest from the Akie property for approximately 140 kilometres covering the highly prospective Gunsteel Formation shale; the main host rock for known SEDEX zinc-lead-silver deposits in the Kechika Trough of northeastern British Columbia. These projects are located approximately 260 kilometres north northwest of the town of Mackenzie, British Columbia, Canada.

Ken MacDonald P.Geo., Vice President of Exploration for the Company, is the designated Qualified Person as defined by National Instrument 43-101 and is responsible for the technical information contained in this release.

Tom Shouldice P.Eng., Principal Metallurgist at Base Metallurgical Laboratories Ltd of Kamloops, British Columbia, and Kelly McLeod, P.Eng. of JDS Energy and Mining Inc. of Vancouver, BC; are both designated Qualified Person as defined by National Instrument 43-101 and responsible for the metallurgical technical information contained in this release.

The TSX Venture Exchange has neither approved nor disapproved the contents of this press release.

ON BEHALF OF THE BOARD OF DIRECTORS, CANADA ZINC METALS CORP.

“PEEYUSH VARSHNEY”
PEEYUSH VARSHNEY, LL.B, CEO & CHAIRMAN

Source: Canada Zinc Metals Corp. (TSX Venture:CZX)