



**IBC ADVANCED ALLOYS CORP.**

**MANAGEMENT'S DISCUSSION AND ANALYSIS**

**NINE MONTHS ENDED MARCH 31, 2017**

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**IBC Advanced Alloys Corp.**  
**Management's Discussion and Analysis**  
Nine Months Ended March 31, 2017

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*The following is management's discussion and analysis ("MD&A") of IBC Advanced Alloys Corp., and its subsidiaries, prepared as of May 26, 2017. This MD&A should be read together with the unaudited interim condensed consolidated financial statements for the nine months ended March 31, 2017 and the audited consolidated financial statements and related notes for the year ended June 30, 2016. Financial amounts, other than amounts per share or per pound, are presented in thousands of United States dollars ("\$\$") unless indicated otherwise. Canadian dollar amounts are denoted by "C\$".*

*The terms "IBC", "we", "us" and "our" refer to IBC Advanced Alloys Corp. and its subsidiaries, unless the context otherwise requires.*

*Certain information included in this MD&A may constitute forward-looking statements. Statements in this report that are not historical facts are forward-looking statements involving known and unknown risks and uncertainties, which could cause actual results to vary considerably from these statements. Readers are cautioned not to put undue reliance on forward-looking statements.*

*The Company's unaudited interim consolidated financial statements for the period ended March 31, 2017 have been prepared in accordance IAS 34 – Interim Financial Reporting using accounting policies consistent with International Financial Reporting Standards ("IFRS"), as issued by the International Accounting Standards Board and interpretations of the International Financial Reporting Interpretations Committee.*

*Additional information relating to us is available for view on SEDAR at [www.sedar.com](http://www.sedar.com).*

## **Our Business**

We are primarily engaged in developing and manufacturing advanced alloys, in particular beryllium-aluminum alloys and specialty copper alloys. Our head office is located in Franklin, Indiana. We operate four plants in the United States ("US") that manufacture, heat-treat, machine or market copper-beryllium, beryllium-aluminum, copper-based master alloys and similar specialty alloy products including beryllium-aluminum castings. Our manufacturing operations currently employ 71 people and comprise two divisions: Copper Alloys and Engineered Materials.

- Copper Alloys manufactures and distributes a wide variety of copper alloys as castings and forgings: beryllium copper, chrome copper, oxygen-free high conductivity copper and aluminum bronze in plate, block, bar, rings and specialty copper alloy forgings for the industrial welding, oil and gas, plastic mold, metal melting, marine defense, electronic and industrial equipment markets.
- Engineered Materials manufactures and supplies high-performance beryllium-aluminum components to the aerospace and high-tech manufacturing sectors.

At present, we are engaged in research and development of scandium-containing alloys, and we are monitoring developments related to the potential use of beryllium oxide ("BeO") in enhanced nuclear fuels, which has been the subject of previous research by the Company.

We were formed by an amalgamation under the laws of British Columbia on November 23, 2007 and our common shares are listed on the TSX Venture Exchange (the "TSX-V") under the symbol "IB" and on the OTCQB market under "IAALF".

## **Corporate Developments**

- Both IBC operating divisions (Copper Alloys and Engineered Materials) enjoyed a stronger quarter with increased product demand. The loss for the quarter masks a swing to positive monthly operating income in March 2017 after several months of losses, although the Company noted that it expects to see continuing fluctuations in the coming months as it accounts for the downtime required for the installation of new furnaces in both operating divisions.
- In May 2017, we were awarded a production contract from Raytheon Space and Airborne Systems to produce a beryllium-aluminum cast component for use in Raytheon's Advanced Targeting Forward Looking Infrared (ATFLIR) system, currently in use on U.S. Navy F/A-18 fighter jets.
- In May 2017, we successfully completed the installation and commissioning of a new Solution Annealing Furnace and Quench Tank at our Copper Alloy division's Franklin, Indiana facility. This unit's operational start marked the completion of the major component of the Copper division's capital improvement program, which was launched in June 2016.
- In May 2017, we successfully completed the installation and commissioning of a new Vacuum Induction Melting ("VIM") furnace at our Engineered Materials division's Wilmington, MA manufacturing facility. This unit's operational start marked the completion of the major component of the Engineered Materials division's capital improvement program, which also was launched in June 2016.
- In March 2017, we were successful in winning a bid to produce and provide forged and machine copper alloy products to a Fortune 100 electronics manufacturer. See *Operating Performance and Outlook - Copper Alloys* below.
- In March 2017, Mark A. Smith was appointed as Chairman of the Board of Directors. See *Board of Directors and Management Changes* below.
- In December 2016, we received a third purchase order from Lockheed Martin to produce components for the F-35 Lightning II Electro-Optical Targeting System ("EOTS"). See *Manufacturing Operations - Engineering Materials - Recent Business Initiatives* below.
- In November 2016, we achieved re-certification of our ISO 9001:2008 and AS9100:2009 Rev. C standards for quality management systems at our Wilmington, MA facility, where we produce precision cast beryllium-aluminum products.
- In October 2016, Anthony Dutton resigned as a director and officer of the Company effective October 31, 2016. See *Related Party Transactions* below.
- In September 2016, we were accepted as an approved forging supplier by Newport News Shipbuilding and by General Dynamics' Electric Boat Corporation.
- In August 2016, the Company settled \$125,748 owing to our Chief Executive Officer ("CEO") and director through the issuance of 203,681 shares.

## **Board of Directors and Management Changes**

Mark A. Smith was appointed as Chairman of the Board of Directors effective March 10, 2017. Mr. Smith is the President, CEO and Executive Chairman of NioCorp Developments Ltd., a company developing a superalloy materials project near Elk Creek, Nebraska that is expected to produce niobium, scandium and titanium products. He also serves as President and CEO of

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Largo Resources Ltd. (TSXV: LGO), a growing strategic mineral company with projects in Brazil and Canada that presently is focused on the production of the steel additive vanadium from its flagship Maracás Menchen Mine in Brazil. Mr. Smith is well recognized in the mining community, having recently served as President, CEO and Director of Molycorp, Inc., where he was instrumentally involved in taking the company public. Previously, Mr. Smith was the President and CEO of Chevron Mining Inc. from 2005 through 2008. He was also Vice President for Unocal Corporation where he managed its real estate, remediation, mining and carbon divisions for over 22 years. From 2000 to 2007, Mr. Smith also served as a Director and Shareholder Representative of Companhia Brasileira de Metalurgia e Mineração, a private company that currently produces approximately 85% of the world supply of niobium. Mr. Smith has a Bachelor of Science in Engineering from Colorado State University and a Juris Doctor (cum laude) from Western State University, College of Law.

Simon Anderson resigned as Chief Financial Officer ("CFO") effective November 11, 2016 and joined our Board of Directors as a non-independent Director. Previously, Simon served since 2007 as CFO for IBC and its predecessor company. A CPA, CA with 30 years' experience, he has worked as an officer or director of public companies listed on the TSX-V, TSX, and/or NASDAQ for almost 20 years. He has extensive experience in financing, mergers and acquisitions, corporate governance, and securities regulation practices, and he worked for nine years in business valuation with BDO Canada LLP. Currently a Director of Sinovac Biotech Ltd. (NASDAQ: SVA), Simon received his Bachelor of Commerce in Accounting and Management Information Systems from the University of British Columbia.

David Anderson was appointed as CFO effective November 11, 2016. David (no relation to Simon Anderson) is a Certified Management Accountant with over 20 years of progressive experience with public and private manufacturing companies, including mergers and acquisition. He has worked at IBC and its predecessor company since 2007, serving in a variety of accounting, human resources, and information technology roles. He received his BA in Accounting from the University of Indianapolis.

### **Manufacturing Operations**

We currently have four manufacturing operations in the United States that employ a total of 71 people.

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<b>Location</b>	<b>Building Area</b>		<b>Leased/Owned</b>	<b>Employs</b>
	<b>m<sup>2</sup></b>	<b>sq ft</b>		
<b>Copper Alloys</b>				
Franklin, IN	4,500	48,800	Owned	36
Royersford, PA	1,500	16,000	Leased	6
New Madrid, MO	2,500	26,500	Owned	6
				<hr/>
				48
<b>Engineered Materials</b>				
Wilmington, MA	5,800	63,000	Leased	23
				<hr/>
				71

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Most of the Company's management and administration are based at the Franklin, IN facility.

### *COPPER ALLOYS*

We manufacture and distribute a wide variety of copper alloys as castings and forgings, including beryllium copper, chrome copper, oxygen-free high conductivity copper, and aluminum bronze in plate, block, bar, rings and specialty copper alloy forgings for various markets and applications. We sell directly to end users and serve some markets through a network of established dealers and distributors. Our Copper Alloys operations are based in Franklin, IN, where we maintain a forging (hammer, press and ring rolling), heat-treating and machining operation. We cast billets at plants in Royersford, Pennsylvania and New Madrid, Missouri. Our Franklin plant sits on 4.8 hectares (12.0 acres) of land that has considerable room for expansion should economic conditions and business plans call for such expansion.

We source copper alloys in cast billet, slab or ingot from mills in North America, Europe and Asia and convert these into usable industrial products serving the industrial welding, oil and gas, plastic mold, metal melting, marine defense, electronic and industrial equipment markets. We also provide tooling components for the North American automotive industry, the European and North American consumer plastic tooling producers, the global oil and gas service industry, the prime North American submarine and aircraft carrier producers and repair facilities including the US Navy, electronics industries and general equipment manufacturers. We produce material at two IBC-owned mills and buy other billet from independent third-party mills.

We have expertise in melting and casting beryllium copper and other beryllium-containing alloys. Our casting operations are a primary producer-supplier of beryllium copper casting and master alloy ingot products in North America and markets around the world. Our Copper Alloys operations also manufacture beryllium-nickel and low-beryllium-content beryllium-aluminum alloys. We offer our customers a full range of manufacturing and support services including casting and master alloy products, cast and forged billet products, semi-continuous cast input billets and wrought products. We manufacture our beryllium alloys utilizing either pure metallic beryllium or certified beryllium copper master alloy.

Our Royersford, PA facility has three furnaces that have been adapted to meet the specialized requirements of beryllium alloy manufacturing. We have strong technical and manufacturing engineering resources in the highly specialized beryllium and beryllium containing alloy industry. This gives us the capability to manufacture large 21-inch diameter beryllium copper input billets weighing up to two tons. These large-scale as-cast billets exhibit consistently fine-grained, uniform micro-structures coupled with high purity, low carbide chemical compositions.

Our New Madrid, MO plant is located on a 2.4-hectare (6.0 acres) site 265 kilometers (165 miles) south of St. Louis, Missouri. It has two furnaces and is capable of producing billets in a range of sizes and compositions. This facility is underutilized and, as a result, there is room for significant expansion of plant operations at this location should economic conditions and business plans call for such expansion.

### *ENGINEERED MATERIALS*

The Engineered Materials division supplies high-performance beryllium-aluminum components to the aerospace and high-tech manufacturing sectors. We currently manufacture the Beralcast<sup>®</sup> and ABX<sup>™</sup> families of metal matrices that are used in commercial and military applications requiring complex, lightweight or high-stiffness parts. We have additional, higher-performance products in development. Using our proprietary manufacturing techniques, our objective is to make beryllium-aluminum components more accessible and cost-effective for a wide range of industries and applications.

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In general, Beralcast<sup>®</sup> and ABX<sup>™</sup> alloys serve as a higher-performance or lower-cost replacement materials for cast aluminum, magnesium, titanium, metal matrix composites, non-metallic composites, and pure beryllium or powder metallurgy beryllium-aluminum. Some of their varied applications include automotive braking and structural components and aerospace and satellite system components.

The principal Beralcast<sup>®</sup> metal matrix is more than three times stiffer than aluminum with 22% less weight and it can be precision cast to simple and complex configurations. This material is very lightweight with a high modulus of elasticity and can be precision cast for three-dimensional stability. Beralcast<sup>®</sup> is ideally suited for certain demanding semiconductor manufacturing equipment, computer components and other commercial and aerospace applications, and it allows for a near-net shape to be cast for maximum manufacturing efficiencies.

Binary beryllium-aluminum composites were developed by a US corporation, which was originally a metallurgical laboratory affiliated with MIT, in cooperation with Lockheed Martin. We own the intellectual property relating to the more advanced development of this technology, which is a proprietary castable metal matrix composite beryllium-aluminum alloy now manufactured as Beralcast<sup>®</sup>. We believe that a competitor has sought to develop an alternative cast beryllium-aluminum product, which, if commercially viable, would be a direct competitor to Beralcast<sup>®</sup> and ABX<sup>™</sup>.

We have trade name rights to Beralcast<sup>®</sup> and ABX<sup>™</sup>; proprietary know-how; manufacturing equipment; marketing and supply agreements; and US beryllium stockpile bidding requirements and bona fides. Since the manufacturing process for our beryllium-aluminum products is different from that employed for Copper Alloys products, we operate a separate manufacturing facility optimized for Beralcast<sup>®</sup> and ABX<sup>™</sup> alloys in Wilmington, MA.

We are developing Engineered Materials' business by undertaking product-focused development initiatives with a heavy emphasis on defense applications. Generally, the process is as follows:

1. **Memorandum of understanding** – The first step is to assess the feasibility of using Beralcast<sup>®</sup> in the customer's application.
2. **Non-recurring engineering** – At various stages between the initial feasibility assessment and production, we and our customer engage in engineering work to tailor the part design to the material and assess its performance.
3. **Hard tooling** – Once production is likely, the customer asks us to design, manufacture and implement hard tooling to be included as part of the final qualification process. Although not a guarantee that a production order will follow, a hard tooling contract is a very strong indication that the customer expects to enter volume production of the component.
4. **Low-Rate Initial Production ("LRIP")** – New programs typically work through a start-up phase to iron out problems before production reaches long-term levels. As part of the first production run, we work with our customer on various quality assurance steps culminating in the first article inspection.
5. **Volume production.**

We are currently working on various product development and sales initiatives with a range of existing and potential new customers at stages from memorandum of understanding to volume production.

*Recent Business Initiatives*

In September 2014, Lockheed Martin Missiles and Fire Control selected Engineered Materials to provide critical cast components for the Electro-Optical Targeting System ("EOTS") on the F-35 Lightning II. EOTS is multi-function system that provides precision air-to-air and air-to-surface targeting capability. The first component covered by this contract is an EOTS azimuth gimbal housing being manufactured using Beralcast<sup>®</sup>, Engineered Material's proprietary beryllium-aluminum casting alloy.

Lockheed Martin has awarded us three contracts for production azimuth gimbal housings for OEM aircraft and spares. These contracts are for the ramp-up production period, or LRIP. The first contract, awarded in September 2013, was for LRIP lots 7 and 8, and the second contract awarded in August 2014 was for LRIP lots 9 and 10. We have completed production for LRIP lots 7 and 8. We have also completed LRIP lots 9 and 10 and have begun making deliveries on the third contract, LRIP 11.

The value of the initial contract in 2013 was just over \$2.0 million, including machining, non-recurring engineering and hard tooling deliverables. The value of the second contract in 2014, which is for castings only, was for a similar amount. The third contract, which is for a single LRIP, has been awarded and is valued at approximately \$2.6 million. (See *Business Risks* below). These contracts, with subsequent LRIP contract awards, have the potential to increase significantly over the life of the F-35 program. The EOTS system is being produced by Lockheed Martin for all the F-35 variants. Although our production contracts are typically about one year, planned F-35 production is expected to run through 2035 with completion of over 3,000 aircraft.

In addition to our publicly announced contracts with Lockheed Martin and Raytheon, we are currently pursuing other sales opportunities with several defense companies, including BAE Systems and other major aerospace companies.

Installation and commissioning of a new VIM furnace in our Wilmington, MA production facility was completed in May 2017. We are now ramping up our production capacity at this facility in order to fill existing Beralcast<sup>®</sup> orders as well as a significant acceleration of component part orders from existing and new customers. Advanced automation and real time process monitoring have been integrated into this VIM furnace, thereby enabling a significant step-change in capability. With improved cycle time, the furnace is expected result in a 25% increase in the Company's daily melt capacity. Combined with additional shifts, reduced maintenance down-time, and expected yield improvements, this capital improvement should position IBC to significantly increase output over the next 12 months.

*BUSINESS RISKS*

Some of the risks that our business faces, which are specific to our operations, include the following:

*Dependence on Ulba Metallurgical Plant*

We are dependent on Ulba Metallurgical Plant ("Ulba") for our supply of vacuum-cast beryllium and beryllium copper master alloy. Ulba operates a beryllium processing and manufacturing facility and is owned by Kazatomprom, the national atomic company of Kazakhstan. As we have done in the past, we may also be able to source beryllium from the US National Defense Stockpile and a third-party business from time to time. We have entered into long-term beryllium and beryllium copper master alloy supply agreements lasting through 2021. Ulba's ability to honor its supply obligations will depend on its ability to source raw materials. We are unable to obtain reliable information as to the extent and availability of Ulba's raw material supply, although we understand that production uses long-term stockpiles. Any disruptions in Ulba's



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ability to manufacture beryllium or CTMA to our specifications would have a materially adverse effect on our business.

*Disruptions of our Manufacturing Operations*

From time to time, our operations are adversely affected by disruptions caused by such things as water line failures, power outages, equipment failures and adverse weather. These issues normally only cause short-term interruptions but can affect our ability to meet our quarterly revenue and profitability objectives.

*Need to Meet Product Specifications*

All of the products that we manufacture are required to conform to a specification. Some of these specifications are very exacting and small variations in process can cause our products to fall short of the required standard. In addition, customers' requirements can change from time to time. If we are unable to address these specification issues in a timely manner, we are at risk of losing short-term revenue and even long-term production contracts.

*OPERATING PERFORMANCE AND OUTLOOK*

*Copper Alloys*

Sales improved slightly in the first three fiscal quarters compared to the prior year and our operating loss decreased by 45%. We expect sales and profitability to improve as we continue shipping to a multinational manufacturing customer in Asia and begin shipping forged and machined copper alloy products to a Fortune 100 electronics manufacturer. We have been shipping two parts and are producing samples of the remaining four parts for First Article Inspection. While we expect acceptance of these samples, we cannot be certain that we will meet the production specification. Expected revenues are based on customer forecasts and historical ordering patterns, but the customer may change these targets at their discretion. Also, funds from our private placement in May 2016 are being used to fund purchases of equipment, which we expect to improve both our revenue and margins.

Copper Alloys sales also are affected by changes in the underlying price of commodities, primarily copper. Indicative copper prices per pound are:

	<b>2016</b>	<b>2015</b>
June 30	\$2.20	\$2.64
September 30	\$2.21	\$2.29
December 31	\$2.50	\$2.10
	<b>2017</b>	<b>2016</b>
March 31	\$2.70	\$2.16

We aim to pass the cost of copper through to our customers and we do not hold large inventories of copper. Accordingly, our profitability should not be affected by the price of copper in the long term except to the extent that high copper prices discourage consumption or that competitors lower their margins to obtain business. In the short term, price fluctuations can have a bearing on our profitability as we realize gains or losses on our inventories. Since copper is a significant component of products we sell, the price of copper does materially affect our revenues.

### *Engineered Materials*

Engineered Materials continues to fulfill orders related to our ongoing Lockheed Martin business. We have completed LRIP lots 9 and 10 and have begun making deliveries on the third contract, LRIP 11. LRIP 11 represents a 16% increase in volume compared to LRIP lots 9 and 10. Sales of commercial products within the semiconductor manufacturing sector have experienced strong growth compared to the first nine months of fiscal 2016. Our order intake rate is continuing to follow this growth trend.

In previous fiscal years, our Engineered Materials division has typically generated 10% to 15% of our revenues. We now expect Engineered Materials' proportion of total revenue to increase over the next few years as that segment grows. In the first nine months of fiscal 2017, Engineered Materials generated 30% of our sales.

Engineered Materials continues to implement its capital improvement program. Several items including digital radiography equipment, automated finishing equipment, material handling equipment, and an upgrade to the coordinate measurement machine to accommodate aerospace inspection requirements have been completed. The furnace structural upgrades were installed May 2017, with full automation and other sub-systems to be completed by June 30, 2017. Our supplier is continuing to improve the functionality of the furnace, primarily in the control software. However, they may experience difficulties in achieving optimal performance. When completed, Engineered Materials will have a fully integrated factory automation system controlling the furnace and cooling equipment.

### **Research Initiatives**

From time to time, we sponsor and assist in research and development ("R&D") initiatives with a view to increasing long-term demand and new market opportunities for beryllium and beryllium oxide. Our current R&D focus is on developing scandium-containing aluminum alloys. We have significant in-house expertise in the development of these ultra high-performance alloys, and the head of our Engineered Materials division is a named co-inventor of two pending patents regarding scandium-bearing aluminum alloys. This work was conducted while he was with The Boeing Company, which has actively explored the potential integration of scandium-containing aluminum alloys in commercial aircraft.

In previous years, we actively engaged in R&D regarding the potential use of beryllium oxide in enhanced nuclear fuels. Since 2008, we have sponsored collaborative research agreements with Purdue University and Texas A&M to develop a new type of BeO nuclear fuel. Work to date has confirmed that  $UO_2 - BeO$  fuel is longer lasting and more efficient and provides a larger safety margin than current nuclear fuels. Under the terms of the collaborative research agreements, IBC has an option to enter into an exclusive royalty-bearing license for commercial application to the intellectual property relating to the development of an advanced BeO nuclear fuel with both Purdue and Texas A&M. Purdue has filed provisional patents covering the IBC-funded nuclear fuel research. The next step in this research initiative will be to have an industrial assembly of the BeO-enhanced fuel approved for irradiation in a test reactor. We have not allocated funds to this initiative but are seeking a partner to jointly fund the next development step.

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## Financial

Except as noted, all financial amounts are determined in accordance with IFRS and expressed in thousands of US dollars, except per-share amount.

### SELECTED QUARTERLY INFORMATION

During our most recent eight quarters, we have not incurred any loss from discontinued operations or extraordinary items.

Quarter Ended	Revenue	Loss for the period	Basic and diluted loss per share <sup>1</sup>
	\$000	\$000	\$
June 30, 2015	3,572	(996)	(0.12)
September 30, 2015	4,232	(721)	(0.08)
December 31, 2015	3,324	(1,774)	(0.19)
March 31, 2016	4,741	(296)	(0.03)
June 30, 2016	4,077	(1,139)	(0.06)
September 30, 2016	3,263	(1,607)	(0.05)
December 31, 2016	3,571	(838)	(0.03)
March 31, 2017	4,695	(707)	(0.02)

<sup>1</sup> The sum of quarterly loss per share may not add to year-to-date totals due to rounding

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Factors affecting quarterly losses include:

- June 30, 2015 – While Engineered Materials enjoyed a strong quarter, Copper Alloys operations experienced a weak quarter that reflected a trend towards lower order intake.
- December 31, 2015 – Copper Alloys sales decreased markedly due in part to general sector problems (weak demand, lower price of copper) but also other factors such as ongoing customer equipment-related issues that resulted in lower orders.
- March 31, 2016 – We enjoyed record sales in our Engineered Materials division, and our loss decreased as a result.
- June 30, 2016 – Sales declined in our Engineered Materials division compared to the quarter ended March 31, 2016 due to the timing of shipments.
- September 30, 2016 – Sales declined in our Engineered Materials division compared the fiscal quarter ended September 30, 2015, due to the timing of shipments in prior fiscal quarter. The Copper Alloys division experienced a weak quarter due to the timing of shipments, as the sales order backlog remains strong.
- December 31, 2016 – Engineered Materials enjoyed a strong quarter with increased demand for its products. The Copper Alloys division continued to experience weak demand but was able to improve pricing and reduce operating costs.
- March 31, 2017 – Both Engineered Materials and Copper Alloys enjoyed a strong quarter with increased demand for their products.

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*RESULTS OF OPERATIONS – THIRD QUARTER 2017*

We incurred a loss of \$707 for the three months ended March 31, 2017 compared to a loss of \$296 in the comparative 2016 period. A summary of our results of operations to loss before other items (“operating income (loss)”) follows:

	Three Months Ended March 31, 2017				Three Months Ended March 31, 2016			
	Copper Alloys \$	Eng. Mat. \$	Corp. \$	Consol- idated \$	Copper Alloys \$	Eng. Mat. \$	Corp. \$	Consol- idated \$
Sales	3,479	1,216	-	4,695	2,891	1,850	-	4,741
Cost of sales								
Materials	1,854	155	-	2,009	1,019	329	-	1,348
Labor	518	322	-	840	777	293	-	1,070
Subcontract	438	162	-	600	323	153	-	476
Overhead	447	384	-	831	459	343	-	802
Depreciation	91	83	-	174	128	86	-	214
Change in finished goods	(154)	173	-	19	(52)	207	-	155
	3,194	1,279	-	4,473	2,654	1,411	-	4,065
Gross profit (loss)	285	(63)	-	222	237	439	-	676
SG&A expenses	386	241	230	857	442	177	296	915
Operating income (loss)	(101)	(304)	(230)	(635)	(205)	262	(296)	(239)
Gross margin	8%	(5%)	-	5%	8%	24%	-	14%

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We incurred a loss of \$3,152 for the nine months ended March 31, 2017 compared to a loss of \$2,791 in the comparative 2016 period. A summary of our results of operations to loss before other items ("operating income (loss)") follows:

	Nine Months Ended March 31, 2017				Nine Months Ended March 31, 2016			
	Copper Alloys \$	Eng. Mat. \$	Corp. \$	Consol- idated \$	Copper Alloys \$	Eng. Mat. \$	Corp. \$	Consol- idated \$
Sales	8,767	2,762	-	11,529	8,617	3,680	-	12,297
Cost of sales								
Materials	4,510	664	-	5,174	4,499	746	-	5,245
Labor	1,649	850	-	2,499	1,718	832	-	2,550
Subcontract	438	162	-	600	719	610	-	1,329
Overhead	1,346	1,133	-	2,479	1,228	1,053	-	2,281
Depreciation	384	248	-	632	386	260	-	646
Change in finished goods	(152)	273	-	121	(154)	186	-	32
	8,175	3,330	-	11,505	8,396	3,687	-	12,083
Gross profit (loss)	592	(568)	-	24	221	(7)	-	214
SG&A expenses	1,229	691	1,136	3,056	1,373	598	905	2,876
Operating income (loss)	(637)	(1,259)	(1,136)	(3,032)	(1,152)	(605)	(905)	(2,662)
Gross margin	7%	(21%)	-	0%	3%	(0%)	-	2%

*Segment Analysis*

A discussion about the significant components of the segment operating loss and net loss follows.

*Copper Alloys*

- Sales increased \$856 compared to the quarter ended December 31, 2016, from \$2,623 to \$3,479, a 33% increase. If the average price per pound had remained the same as the previous quarter, sales would have increased \$1,203 because of the additional weight shipped during the current quarter. Sales would have increased an additional \$341 because average copper Comex values increased 10% from \$2.50 to \$2.70 per pound. However, the product mix included a significant proportion of cast products, which normally sell for a lower price per pound than forged products, reducing the potential sales increase by \$688. Sales to metal service center customers improved, as did sales to original equipment manufacturers. These increases were offset by reduced sales to a multinational manufacturing customer in Asia as we experienced a temporary disruption in our supply chain for these products. Gross profit declined \$122 based on the product mix described above.

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- Sales increased \$588 compared to the quarter ended March 31, 2016 from \$2,891 to \$3,479, a 20% increase. If the average price per pound had remained the same from quarter to quarter, sales would have increased \$974 because of the additional weight shipped during the current quarter. Sales would have increased an additional \$378 because average copper Comex values increased 20% from \$2.16 to \$2.70 per pound. However, the product mix in the current quarter relative to the quarter ended March 31, 2016, contained a higher proportion of cast products, which normally sell for a lower price per pound than forged product, reducing the potential sales increase by \$763. All industry sectors showed increased sales, with the exception of sales to a multinational customer in Asia as described above. Gross profit was essentially unchanged.
- Sales improved \$150 for the year-to-date compared to the prior year, from \$8,617 to \$8,767, a 2% increase. The increase from sales volume was negligible. Sales would have increased an additional \$766 because average copper Comex values increased 7% from \$2.27 to 2.44 for the year-to-date. However, this was offset by \$616 as the pricing to several customers was fixed throughout the fiscal year-to-date.
- During the quarter ended March 31, 2017, operating income and loss improved from losses of \$(126) in January and \$(139) in February to income of \$164 in March.
- We try to pass prices changes (favorable or unfavorable) through to our customers but sharp declines in price adversely affect our profitability due to holding losses on inventory.

*Engineered Materials*

- Sales improved \$268 compared to the quarter ended December 31, 2016. Increases in sales volume of commercial products contributed to the increase. Sales declined \$635 compared to the quarter ended March 31, as we elected to discontinue subcontract machining as part of a customer contract. The operating risk and costs associated with the subcontract machining did not justify the incremental revenue. This was offset by volume increases of \$903 in sales of specialty castings.
- Sales declined \$919 for the year-to-date compared to prior year as we mitigated the risk as described above.
- During the quarter, operating income and loss improved from \$(284) in January and \$(74) in February to income of \$54 in March.

*Corporate*

- Corporate expenses decreased \$236 compared to the quarter ended December 31, 2016 and decreased \$66 compared to the quarter ended March 31, 2016. We completed payments on a consulting agreement with a director related to the private placement in May 2016.
- Corporate expenses increased \$231 compared to the year-to-date March 31, 2016. Compensation for the Board of Directors was reinstated in June 2016. We continued to incur additional expenses related to the closure of our corporate office in Vancouver, B.C. Substantially all costs related to closing the Vancouver office were incurred by March 31, 2017. Stock-based compensation expense is higher than the prior year, related to management compensation and the private placement in May 2016.

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*CHANGES IN FINANCIAL POSITION SINCE JUNE 30, 2016*

Changes in our financial position since June 30, 2016 relate to operations in the ordinary course.

*LIQUIDITY AND CAPITAL RESOURCES*

At March 31, 2017, we had working capital of \$2,958 including cash and equivalents of \$238, as compared to working capital of \$4,297 at June 30, 2016. Factors affecting our liquidity include:

- We have raised \$375, of which \$75 has been repaid, through the issuance of promissory notes which were due in the third quarter of fiscal 2017. We have agreed to extend these notes by one additional year.
- Engineered Materials has a history of losses, but generated income in the third quarter of fiscal 2016 and order rate is improving compared to the prior fiscal year.
- Through to December 2016, the main limitation on our cash position was the cost of maintaining our corporate office and corporate development initiatives. We have closed the corporate office in Vancouver, BC and expect that this will be less of an issue in future periods. We have begun to recognize the impact of these savings.
- Our banks have imposed restrictions that currently prevent us from transferring funds from Copper Alloys to our other segment. During the year ended June 30, 2016, the Company breached certain covenants associated with the line of credit. On January 31, 2017, BMO Harris Bank renewed the line of credit and waived the June 30, 2016 covenant violations. The line of credit was renewed on substantially the same terms as the prior agreement, but the interest rate was increased to one-month LIBOR plus 3.75% from 3.5%.
- Effective July 1, 2016, non-executive directors have agreed to receive the majority of their compensation in common shares until the Company's financial position improves. Furthermore, our CEO has agreed to take part of his compensation in common shares, as described in further detail under *Related Party Transactions*.
- Resource prices, particularly for copper, have a bearing on our manufacturing costs and selling prices, as copper is a large component of most of our products.
- The Company has committed to purchase capital equipment for our Engineered Materials division in the amount of \$296 and \$35 for our Copper Alloys division. These purchases are expected to be completed within the current fiscal year.
- We may be obliged to incur material expenditures on purchases of property, plant and equipment to maintain our productive capacity or service customers.

We expect that we will need to raise additional funds in the short-term to finance working capital and growth initiatives. We may be able to generate additional cash by expanding our bank facilities or through short-term debt, but there can be no assurance that we will be successful in obtaining such funds.

*COMMITMENTS*

At March 31, 2017, we had commitments to lease premises over the next five years with an aggregate payment obligation of \$1,978. We are also committed to raw materials purchases over the next year aggregating \$1,344.

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*RELATED PARTY TRANSACTIONS*

Except as described below, we do not have any contractual relationships with directors or officers other than employment contracts in the ordinary course of business. The employment contracts are not financially material to our business except that our CEO is eligible to receive payment of up to \$200 in the event of a change of control of IBC, if certain conditions are met. In October 2016, we reached a settlement with our Vice President of Corporate Relations and Special Projects (who previously served as the Company's President and CEO) under which he tendered his resignation as an officer and director in exchange for a settlement of C\$119 to be paid in installments over the period ending February 28, 2017. All installments have been paid as of February 20, 2017.

Our non-executive directors were paid \$36 per year, but in October 2012, agreed to temporarily reduce annual director compensation to \$18 as part of a broader initiative to reduce overhead expenses. In fiscal 2017, the non-executive directors' compensation was returned to \$36 per year but the directors agreed to receive the bulk of this amount in common shares. In December 2016, we issued 52,927 common shares to our directors as partial payment for services rendered for the quarter ended September 30, 2016. The issue date value of these shares was \$23. Mark Smith and Geoff Hampson each received 17,259 common shares and Mike Jarvis received 18,409 common shares. In February 2017, we issued 48,457 common shares to our directors as partial payment for services rendered for the period from October 1, 2016 to January 18, 2017. The issue date value of these shares was \$21. Mark Smith and Geoff Hampson each received 17,728 common shares and Mike Jarvis received 13,001 common shares. The balance of their director fees was paid in cash.

In the quarter ended March 31, 2016, we borrowed \$225 from our CEO under two promissory notes. We have repaid \$75. The loans are secured by the accounts receivable and inventory of our Engineered Materials division and bear interest at an annual rate of 10%. We borrowed a further \$150 from individuals related to our CEO. The loans are secured by the accounts receivable and inventory of our Engineered Materials division and bear interest at an annual rate of 12%.

Our CEO has agreed to be partially compensated in common shares, an arrangement which has been accepted by the TSX-V. For the period January 2016 to July 2016, we paid our CEO cash compensation to cover necessary payroll withholdings with the balance paid in our common shares. From July 2016 to January 2017, we paid a combination of cash and shares. The share price used was the closing price of IBC's common shares on the TSX-V on the last trading day of the month. This arrangement was discontinued after one year and has been replaced by cash compensation, well below market rates. In September 2016, we issued to our CEO 203,681 common shares with an issue-date value of \$104, in November 2016, we issued to our CEO 23,153 common shares with an issue-date value of \$8 and in February 2017, we issued to our CEO 83,210 common shares with an issue-date value of \$29 as compensation for services.

As noted above, we entered into an advisory agreement with KMSMITH LLC, a consulting company owned by Mark Smith, a director of the Company, which concluded on December 2016. We have also granted KMSMITH LLC options to purchase up to 907,000 common shares in accordance with our stock option plan at an exercise price of C\$0.375 until May 22, 2021.

*FINANCIAL INSTRUMENTS AND OTHER INSTRUMENTS*

Our activities expose us to a variety of financial risks, including foreign exchange risk, interest rate risk, commodity price risk and credit risk. We do not have a practice of trading derivatives. We attempt to employ a natural hedge for foreign currency by holding funds in the currency in which we expect to spend the monies.



*Foreign Exchange Risk*

While the majority of our administrative and manufacturing activities occur in the United States, we incur some corporate administration costs in Canada and raise equity proceeds in Canadian dollars. We manage exchange risk on equity capital by converting expected United States expenditures to United States dollars at the time the money is raised.

*Interest Rate Risk*

Our interest rate risk mainly arises from the interest rate impact on cash and cash equivalents and interest expense on the BMO Harris Bank line of credit. Our term loan has a fixed interest rate and is not exposed to short-term interest rate risk.

*Commodity Price Risk*

Our profitability and long-term viability depend, in some measure, on the market prices of copper, aluminum and beryllium. The market prices for metals can be volatile and are affected by factors beyond our control, including the following: global or regional consumption patterns; the supply of, and demand for, these metals; speculative activities; the availability and costs of metal substitutes; expectations for inflation; and political and economic conditions, including interest rates and currency values. We cannot predict the effect of these factors on metal prices. We do not engage in hedging but, where possible, structure selling arrangements in a way that passes commodity price risk through to the customer.

*Credit Risk*

We manage credit risk by trading with recognized creditworthy third parties and by insuring international trade receivables. In addition, we monitor receivable balances with the result that the Company's exposure to bad debt is generally not significant.

We also manage our credit risk by investing surplus cash in low-risk, liquid securities, typically short-term deposits with large financial institutions.

**Environmental and Occupational Safety Issues**

We melt and machine materials that have the potential, if not controlled and handled appropriately, to have a negative effect on individual's health and the environment. In addition, our operations use materials such as cutting and hydraulic fluids, which have the capacity to cause environmental contamination if left uncontained.

To mitigate these potential risks we:

- employ a full-time health and safety manager to administer and monitor our safety programs;
- employ manufacturing practices to minimize and eliminate dispersal of fumes and dust;
- use trap basins and fluid reservoirs to capture and retrieve possible overages;
- use active exhaust vents/hoods located in equipment areas to capture and filter air;
- regularly schedule assessments and maintenance of in-house ventilation systems;
- require our employees to use appropriate personal protective equipment (such as respirators, outer garments, gloves, etc.) selected to limit and protect them from any potential exposures;
- conduct beryllium lymphocyte proliferation tests (BeLPT) to determine employees' potential for sensitivity to beryllium prior to possible exposure;

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- undertake ongoing air quality monitoring and perform periodic employee health exams as per occupational health guidelines; and
- limit access to areas that may have a potential exposure to beryllium dust particles.

In spite of these procedures, we remain subject to risk in this regard.

As with all industry, we are subject to periodic inspection by state and local safety, health and environmental authorities. If during an inspection a failing was noted in our system, the potential for the temporary or permanent closure of the facilities could exist. If during the periodic employee health screening, an employee displays elevated exposure to metals, it could require us to place the employee on sick leave, which would have the potential to impact both our direct and indirect costs and cause a disruption of production. There is also the potential that an inherent safety or environmental exposure, if uncontrolled, could initialize legal action by employees, neighbors or those who visit our facilities.

To minimize the risks arising from pre-acquisition activities, we commissioned phase one environmental reviews prior to acquiring our copper alloys businesses. It may be possible that environmental problems remain at our facilities that these phase one assessments did not uncover.

## **Shareholders' Equity**

### *POTENTIAL SHARE ISSUANCE*

Our board and the TSX-V have approved the issuance of 3,333 shares to settle a contingent liability of \$30 with a supplier but we have not yet issued the shares.

### *SHARE CONSOLIDATION*

As described above, we consolidated our share capital on the basis of one post-consolidation common share for every ten pre-consolidation common shares. We previously had 98,085,813 common shares issued and outstanding and had 9,808,492 common shares issued and outstanding on completion of the consolidation, after adjusting for rounding. All share and per-share amounts have been restated to reflect the effect of the consolidation.

### *SHARE ISSUANCE*

In September 2016, we issued to our CEO 203,681 common shares with an issue-date value of \$104, in November 2016, we issued to our CEO 23,153 common shares with an issue-date value of \$8 and in February 2017, we issued to our CEO 83,210 common shares with an issue-date value of \$29 as compensation for services.

In December 2016, we issued to our directors 52,927 common shares with an issue-date value of \$23, and in February 2017, we issued to our directors 48,457 common shares with an issue-date value of \$21 as compensation for services.

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*OUTSTANDING SHARE DATA*

As at the date of this MD&A, we have issued:

- A total of 30,346,590 common shares. In addition, we plan to issue 3,333 common shares to settle a contingent liability to a supplier.
- Warrants to purchase 22,015,070 common shares.
- Share options to purchase 2,092,375 common shares.

The maximum number of shares potentially issuable is therefore 54,454,035.