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Assessment Work Report On the Jean Iron Property

Thunder Bay Mining District Northwestern Ontario, Canada

Claims

4252101, 4252102, 4252103, 4252104, 4252105, 4252106, 4252107, 4252108, 4252109, 4252110, 4252111, 4252112, 4252113, 4252114, 4252115, 4252116, 4252117, and 4283669

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TABLE OF CONTENTS

1.0	SUMMARY	6
2.0	INTRODUCTION	9
2.1	Purpose of Report	9
2.2	Sources of Information	9
3.0	PROPERTY DESCRIPTION AND LOCATION	9
4.0	ACCESS, CLIMATE, PHYSIOGRAPHY, LOCAL RESOURCES, AND INFRASTRUCTU	JRE14
4.1	Access	14
4.2	Climate	14
4.3	Physiography	15
4.4	Local Resources and Infrastructure	15
5.0	HISTORY	16
5.1	Gunflint Iron Mines Ltd. (1943)	16
5.2	Great Lakes Resources Ltd. (2011-12)	17
6.0	GEOLOGICAL SETTING AND MINERALIZATION	22
6.1	Regional Geology	22
6.2	Local Geology	24
6	5.2.1 Archean Basement Rocks	24
_		
6	5.2.2 Aphebian Animikie Group	24
6 6 3	5.2.2 Aphebian Animikie Group	24 29
6 6.3 6.4	5.2.2 Aphebian Animikie Group Property Geology Mineralization	24 29 32
6.3 6.4 7.0	5.2.2 Aphebian Animikie Group Property Geology Mineralization FXPI ORATION WORK	24 29 32 34
6.3 6.4 7.0 7 1	5.2.2 Aphebian Animikie Group Property Geology Mineralization EXPLORATION WORK First Nations Consultations	24 29 32 34 34
6 6.3 6.4 7.0 7.1 7.2	5.2.2 Aphebian Animikie Group Property Geology Mineralization EXPLORATION WORK First Nations Consultations Prospecting and Outcrop Mapping	29 32 34 34 34
6 6.3 6.4 7.0 7.1 7.2 7.3	5.2.2 Aphebian Animikie Group Property Geology Mineralization EXPLORATION WORK First Nations Consultations Prospecting and Outcrop Mapping Trenching and Channel Sampling	24 29 32 34 34 34 34
6 6.3 6.4 7.0 7.1 7.2 7.3 8.0	5.2.2 Aphebian Animikie Group Property Geology Mineralization EXPLORATION WORK First Nations Consultations Prospecting and Outcrop Mapping Trenching and Channel Sampling EXPLORATION RESULTS.	24 29 32 34 34 34 38 50
6 6.3 6.4 7.0 7.1 7.2 7.3 8.0 8.1	5.2.2 Aphebian Animikie Group Property Geology Mineralization EXPLORATION WORK First Nations Consultations Prospecting and Outcrop Mapping Trenching and Channel Sampling EXPLORATION RESULTS Surface Samples Results	29 32 34 34 34 34 38 50 50
6.3 6.4 7.0 7.1 7.2 7.3 8.0 8.1 8.2	5.2.2 Aphebian Animikie Group Property Geology Mineralization EXPLORATION WORK First Nations Consultations Prospecting and Outcrop Mapping Trenching and Channel Sampling EXPLORATION RESULTS Surface Samples Results Channel Sampling Results	24 29 32 34 34 34 38 50 50 50
6 6.3 6.4 7.0 7.1 7.2 7.3 8.0 8.1 8.2 9.0	 5.2.2 Aphebian Animikie Group Property Geology Mineralization EXPLORATION WORK First Nations Consultations Prospecting and Outcrop Mapping Trenching and Channel Sampling EXPLORATION RESULTS Surface Samples Results Channel Sampling Results SAMPLE PREPARATION, AND QA/QC 	29 32 34 34 34 34 38 50 50 50 57
6.3 6.4 7.0 7.1 7.2 7.3 8.0 8.1 8.2 9.0 10.0	5.2.2 Aphebian Animikie Group Property Geology Mineralization EXPLORATION WORK First Nations Consultations Prospecting and Outcrop Mapping Trenching and Channel Sampling EXPLORATION RESULTS Surface Samples Results Channel Sampling Results SAMPLE PREPARATION, AND QA/QC	24 29 32 34 34 34 38 50 50 50 50 57 59
6 6.3 6.4 7.0 7.1 7.2 7.3 8.0 8.1 8.2 9.0 10.0 10.0	 5.2.2 Aphebian Animikie Group Property Geology Mineralization EXPLORATION WORK First Nations Consultations Prospecting and Outcrop Mapping Trenching and Channel Sampling EXPLORATION RESULTS Surface Samples Results Channel Sampling Results SAMPLE PREPARATION, AND QA/QC DEPOSIT TYPES 1 Deposit Types 	24 29 32 34 34 34 38 50 50 50 50 57 59 59 59
6 6.3 6.4 7.0 7.1 7.2 7.3 8.0 8.1 8.2 9.0 10.0 10.1 10.2	 5.2.2 Aphebian Animikie Group Property Geology Mineralization EXPLORATION WORK First Nations Consultations Prospecting and Outcrop Mapping Trenching and Channel Sampling EXPLORATION RESULTS Surface Samples Results Channel Sampling Results SAMPLE PREPARATION, AND QA/QC DEPOSIT TYPES 1 Deposit Types 2 Deposit Models 	24 29 32 34 34 34 38 50 50 50 50 57 59 59 59 59
6 6.3 6.4 7.0 7.1 7.2 7.3 8.0 8.1 8.2 9.0 10.0 10.1 10.2 11.0	 5.2.2 Aphebian Animikie Group Property Geology Mineralization EXPLORATION WORK First Nations Consultations Prospecting and Outcrop Mapping Trenching and Channel Sampling EXPLORATION RESULTS Surface Samples Results Channel Sampling Results SAMPLE PREPARATION, AND QA/QC DEPOSIT TYPES 1 Deposit Types 2 Deposit Models INTERPRETATION AND CONCLUSIONS 	24 29 32 34 34 34 38 50 50 50 50 57 59 59 59 59 59 59 59 59
6 6.3 6.4 7.0 7.1 7.2 7.3 8.0 8.1 8.2 9.0 10.0 10.1 10.2 11.0 12.0	 5.2.2 Aphebian Animikie Group Property Geology Mineralization EXPLORATION WORK First Nations Consultations Prospecting and Outcrop Mapping Trenching and Channel Sampling EXPLORATION RESULTS Surface Samples Results Channel Sampling Results SAMPLE PREPARATION, AND QA/QC DEPOSIT TYPES 1 Deposit Types 2 Deposit Models INTERPRETATION AND CONCLUSIONS RECOMMENDATIONS 	24 29 32 34 34 34 38 50 50 50 50 57 59 59 59 59 59 59 59 59 61 64
6 6.3 6.4 7.0 7.1 7.2 7.3 8.0 8.1 8.2 9.0 10.0 10.0 10.1 10.2 11.0 12.0 13.0	 5.2.2 Aphebian Animikie Group Property Geology Mineralization EXPLORATION WORK First Nations Consultations Prospecting and Outcrop Mapping Trenching and Channel Sampling EXPLORATION RESULTS Surface Samples Results Channel Sampling Results SAMPLE PREPARATION, AND QA/QC DEPOSIT TYPES 1 Deposit Types 2 Deposit Models INTERPRETATION AND CONCLUSIONS RECOMMENDATIONS REFERENCES 	24 29 32 34 34 34 34 38 50 50 50 50 59 59 59 59 59 59 59 59 59 59 61 64 65

LIST OF FIGURES

Figure 1: Property Location Map	12
Figure 2: Mineral Claim Map	13
Figure 3: Climate Data	14
Figure 4: Location of Historical Drill Holes and Property Geology	20
Figure 5: Regional geological map showing location of iron ranges (G.A Gross 2009)	23
Figure 6: Location of Surface Samples	37
Figure 7: Map of Trench TR 15-01	39
Figure 8: Location of Trench TR 15-02	41
Figure 9: Location of Trenches TR 15-03 and TR 15-05	42
Figure 10: Location of Trenches	49

LIST OF TABLES

Table 1: Claim Data
Table 2: Co-ordinates and Lengths of Drill holes - May-June 2012 Drilling Program
Table 3: Weighted Assay: Lower Taconite Member -May-June 2012 Drilling Program 18
Table 4: Generalized stratigraphic column of the area
Table 5: Stratigraphy of Gunflint Iron Formation 25
Table 6: Average Iron and Silica Content of Mineralized Members in Gunflint Iron Formation
Table 7: List of Grab Rock Samples 36
Table 8: Trench TR 15-01 Log 38
Table 9: Trench TR 15-02 Log 40
Table 10: Trench TR 15-03 Log 42
Table 11: Trench TR 15-04 Log 45
Table 12: Trench TR 15-05 Log 47
Table 13: Grab Samples Assay Results - XRF52
Table 14: Trench TR 15-01 Assay Results - XRF52
Table 15: Trench TR 15-02 Assay Results - XRF53
Table 16: Trench TR 15-03 Assay Results - XRF53
Table 17: TR 15-04 Assay Results - XRF 54
Table 18: TR 15-05 Assay Results - XRF55
Table 19:TR 15-01: Davis Tube Test Results on Composite Sample
Table 20: TR 15-02: Davis Tube Test Results on Composite Sample
Table 21: TR 15-03: Davis Tube Test Results on Composite Sample
Table 22:TR 15-04: Davis Tube Test Results on Composite Sample
Table 23: TR 15-05: Davis Tube Test Results on Composite Sample
Table 24: Results of Field Duplicate Samples 58
Table 25: PHASE 1 BUDGET – Ground Geophysical Survey, Drilling, Trenching and Sampling

1.0 SUMMARY

The Jean Iron Property consists of 18 mineral claims in 115 units covering 1,840 hectares' land located in Thunder Bay Mining District of Northwestern Ontario, Canada. The Property is located about 65 kilometers to the southwest of Thunder Bay, approximately 2 kilometers north of the Whitefish Lake on Highway 588. It can be accessed via the Trans-Canada Highway 11/17, about 20 km west from the Highway 61 junction to Highway 588 (Stanley access), and then a further 45 km southwest along Highway 588. A network of gravel roads and trails traverse the mineral claims and areas of rock exposures.

AsiaBaseMetals Inc. ("ABZ" or "the Company") (Client Number: 412660) owns 100% of the Mineral Claims. The Company initiated exploration work on the property immediately after acquisition of claims from the previous owners by applying for an exploration work permit in April 2015. An exploration work permit (PR15-412660) was issued effective April 07, 2015 to March 06, 2018 for the Property. The exploration work was started in October 2015 and included prospecting, sampling and mapping of the Gunflint Iron Formation outcrops, stripping and channel sampling. The present assessment work report summarizes the exploration work and its findings with recommendations regarding a follow up exploration program.

The Property area is underlain by an Archean granitic basement, which is unconformably overlain by gently southerly-dipping sedimentary rocks of the Aphebian (lower Proterozoic) Animikie group. These sediments are capped by a Helikian (1.0 Ga) Keweenawan diabase sill. Unconsolidated rocks are Pleistocene age glacial till debris which forms an extensive mantle over low –lying areas of the area.

Gunflint Iron formation of Animikie Group is part of extensive Lake Superior-type iron formation (LSTIF) ranges developed along the margins of cratons or epicontinental platforms between 2.4 Ga and 1.9 Ga. It is banded iron formation (BIF) mainly comprised of taconite rocks, and is characterized by unusually high iron content, as well as by a variety of textures, of which the granular texture of the taconite rock being most distinctive. The Gunflint formation, approximately 145 m thick, is divided into lower and upper cycles. Each cycle contains a sequence of members, most of which are common to both. The uppermost member, a limestone bed, is unique to the formation and marks the top of the iron-bearing rocks. The key economic parameters for magnetite iron being economic in BIF are the crystallinity of magnetite, the grade of the iron in the host rock, and the contaminant elements which exist within the magnetite concentrate. The typical grade of iron at which a magnetite-bearing banded iron formation becomes economic is roughly 25% Fe, which can generally yield a 33% to 40% recovery of magnetite by weight, to produce a concentrate grading in excess of 64% iron by weight.

The historical exploration data available for the Property includes geophysical surveys, geological mapping, diamond drilling, bulk surface sampling, and Davis tube testing of core and surface samples. This work was carried out during the period from 1943 to 1962. The

total Fe% obtained through Davis tube separation and acid roasting with magnetic concentration range from 23.95% to 39.85% for feed, from 38.66% to 54.21% for minus 100-mesh and from 43.42% to 56.77% for minus 200-mesh.

In 2011-12, Great Lakes Resources Ltd. (GLR) re-activated exploration work on the current Property which included surface sampling, bulk sampling, diamond drilling, and assaying samples for iron content, Davis Tube Testing (DTT) and Mineral Liberation Analysis (MLA) test. All eight holes intersected iron bearing Lower Taconite Member, whereas two complete Lower Taconite Member vertical intersections were delineated in holes JN12-03 (56.81m) and JN12-05 (57.75m). The average true thickness is estimated to be 57.06m.

During the current exploration work, a total 74 rock samples were collected, out of which 49 were channel samples for XRF analysis and 12 for Davis Tube Testing from 5 trenches, 8 grab rock surface samples for XRF, and 5 field duplicate samples for XRF as part of field QA/QC program.

Prospecting and mapping work indicated that the majority of the property area, particularly the area underlain by the Gunflint Iron Formation is covered by glacial overburden with the exception of diabase sill rocks which are more resistant to weathering. Algal chert and jasper containing rocks are found to be more resistant to weathering and exposed at places; whereas, a few new road cuts were also helpful in locating Taconite and shale outcrops. Iron content of shales were observed to be generally low with rusty brown surface weathering due to disseminated hematite along fractures and bedding planes. Jasper and algal cherts are found to be rich in iron and are more magnetic than other units of Gunflint Iron Formation. Taconite unit visually contains 20% to 30% iron. Lower contact with Archean granites is well exposed in the northern part of the property and adjoining areas.

During 2015 exploration work, a total of five outcrops were mapped for stripping and channel sampling on the property. A rubber tire backhoe and an excavator were used for stripping overburden. Trenching and stripping was carried out at four locations (TR 15-01, TR 15-02, TR 15-03, and TR 15-05). Taconite rock outcrop was found exposed at location of trench TR 15-04 due to a new road cut, therefore, a new claim (Number 4283669) was immediately staked to cover this outcrop. Cumulative length of channel sampling for this program is 60 meters.

The results of eight grab rock samples indicate that total iron is in the range of 12.29% to 41.03%. Trench TR 15-01 results show a relatively consistent values of iron (29 to 36% Fe2O3), silica (52 to 57% SiO2) and other oxides, except for calcium oxide which is higher in sample 1192099 (3.61%). DTT fraction of trench is very low. Trench TR 15-02 is about 400 meters to the southeast of TR 15-01 and have similar results with total iron in the range of 34.94 to 36.55% Fe2O3, silica 52.67 to 53.71% and LOI 8.86 to 9.39%. DTT results indicate 0.02% magnetics.

Trench TR 15-03 and TR 15-04 are the best sections in terms of iron content (average Fe_2O_3 29.45% in TR 15-03 and 34.69% in TR 15-04) and magnetic fraction (average 4.1% in TR 15-03 and 6.19% in TR 15-04).

Trench TR 15-05 represents results of the lowest part of the Gunflint Iron Formation which is in contact with Archean basement granite. Generally, this section has average lower iron content (22.46% Fe₂O₃), higher silica (up to 72%), moderate LOI (3.44%), and lower magnetics in DTT (1.96%).

Based on its favourable geological setting indicating surface and subsurface presence of Gunflint Iron formation (GIF), and the results of present study, it is concluded that the Property is a property of merit and possess a good potential for discovery of economic concentration of iron bearing rocks through further exploration and improvement of beneficiation processes. Good road access, availability of exploration and mining services in the vicinity makes it a worthy mineral exploration target.

Recommendations

The following work program is recommended as a follow up of the current exploration work.

Geological Mapping, Trenching, Sampling, and Diamond Drilling

The present trenching work was focussed more on the western part of the property area. A few small outcrops were mapped and sampled which need follow up detailed geological mapping, stripping and channel sampling to assess the potential of eastern claims. The areas around samples 1192091, 1192092, 1192095 would be interesting to undertake stripping and trenching. A 1,000 metres diamond core drilling program should follow-up if the results of trenching work are encouraging. Total estimated cost of this program is \$212,600.

2.0 INTRODUCTION

2.1 Purpose of Report

The Present report summarizes findings of exploration work carried out by AsiaBaseMetals Inc. ("ABZ" or "the Company") on the Jean Iron Property ("the Property") during period October- November 2015. The work included prospecting and surface sampling, geological mapping of Gunflint Iron Formation (GIF) outcrops, surface trenching, channel sampling, and sample assaying.

2.2 Sources of Information

This report is based on published assessment reports available from the Ministry of Northern Development, Mines and Forestry (MNDMF) Ontario, and published reports by the Ontario Geological Survey (OGS), the Geological Survey of Canada ("GSC"), various researches, websites, and results of present exploration work. All consulted sources are listed in the References section. The sources of the maps are noted on the figures.

The exploration work was carried out under the supervision of the author who visited the property from October 05-18, 2015.

3.0 PROPERTY DESCRIPTION AND LOCATION

The Jean Property consists of 18 mineral claims in 115 units covering 1,840 hectares' land located in Thunder Bay Mining District of Northwestern Ontario, Canada (Figure 1 and 2). It is located about 65 kilometers to the southwest of Thunder Bay, approximately 2 kilometers north of the Whitefish Lake on Highway 588. AsiaBaseMetals Inc. (Client Number 412660) holds 100% interest on the Property.

The Property was acquired by ABZ from Great Lakes Resources Ltd. through an agreement announced by the Company on April 30, 2015.

The Property claims were staked and registered on November 16, 2009 by Great Lakes Resources Ltd., and were transferred to AsiaBaseMetals on June 04, 2015. The claims were staked on ground by erecting physical posts as required by claim staking regulations in Ontario. In Ontario all mineral claims staked are subject to \$400 per unit worth of eligible assessment work to be undertaken before year 2 anniversary, followed by \$400 per unit per year thereafter.

ABZ – 2015 Assessment Work Report

There is no past producing mine on the Property and there were no historical mineral resource or mineral reserve estimates documented.

An exploration work permit (PR15-412660) was issued effective April 07, 2015 to March 06, 2018 for the Property. The permit was issued to carry out trenching, stripping, linecutting, and drilling. Aboriginal communities potentially affected by the exploration permit activities were consulted during the exploration permit application process and at the beginning of the work program.

Claim data is summarized in the Table 1, while a map showing the claims is presented in Figure 2.

ABZ – 2015 Assessment Work Report

Jean Iron Property

Township/Area	Claim Number	Recording Date	Claim Due Date	Status	Claim Units	Area (Ha)	Percent Option	Work Required	Total Applied	Total Reserve	Claim Bank
HARDWICK	<u>4252106</u>	2009-Nov-16	2016-Jan-25	А	8	128	100%	\$3,200	\$12,800	\$0	\$0
JEAN	<u>4252101</u>	2009-Nov-16	2016-Jan-25	А	6	96	100%	\$2,400	\$9,600	\$0	\$0
JEAN	<u>4252102</u>	2009-Nov-16	2016-Jan-25	А	2	32	100%	\$800	\$3,200	\$0	\$0
JEAN	<u>4252103</u>	2009-Nov-16	2016-Jan-25	А	1	16	100%	\$400	\$1,600	\$0	\$0
JEAN	<u>4252104</u>	2009-Nov-16	2016-Jan-25	А	16	256	100%	\$6,400	\$25,600	\$0	\$0
JEAN	<u>4252105</u>	2009-Nov-16	2016-Jan-25	А	8	128	100%	\$3,200	\$12,800	\$0	\$0
JEAN	<u>4252107</u>	2009-Nov-16	2016-Jan-25	А	6	96	100%	\$2,400	\$9,600	\$0	\$0
JEAN	<u>4252108</u>	2009-Nov-16	2016-Jan-25	А	16	256	100%	\$6,400	\$25,600	\$0	\$0
JEAN	<u>4252109</u>	2009-Nov-16	2016-Jan-25	А	2	32	100%	\$800	\$3,200	\$0	\$0
JEAN	<u>4252110</u>	2009-Nov-16	2016-Nov-16	А	16	256	100%	\$6,400	\$32,000	\$110	\$0
JEAN	<u>4252111</u>	2009-Nov-16	2016-Nov-16	А	4	64	100%	\$1,600	\$8,000	\$28	\$0
JEAN	<u>4252112</u>	2009-Nov-16	2016-Jan-25	А	1	16	100%	\$400	\$1,600	\$0	\$0
JEAN	<u>4252113</u>	2009-Nov-16	2016-Nov-16	А	8	128	100%	\$3,200	\$16,000	\$54	\$0
JEAN	<u>4252114</u>	2009-Nov-16	2016-Nov-16	А	3	48	100%	\$1,200	\$6,000	\$20	\$0
JEAN	<u>4252115</u>	2009-Nov-16	2016-Nov-16	А	3	48	100%	\$1,200	\$6,000	\$20	\$0
JEAN	<u>4283669</u>	2015-Nov-12	2017-Nov-12	А	1	16	100%	\$400	\$0	\$0	\$0
WABINDON LAKE AREA	<u>4252116</u>	2009-Nov-16	2016-Jan-25	А	2	32	100%	\$800	\$3,200	\$0	\$0
WABINDON LAKE AREA	<u>4252117</u>	2009-Nov-16	2016-Jan-25	А	12	192	100%	\$4,800	\$19,200	\$4,336	\$0
		TOTAL			115	1840					

Table 1: Claim Data

Figure 1: Property Location Map



Figure 2: Mineral Claim Map



4.0 ACCESS, CLIMATE, PHYSIOGRAPHY, LOCAL RESOURCES, AND INFRASTRUCTURE

4.1 Access

The Jean Property has good year round road access from the town of Thunder Bay, Ontario (Figure 1). Highway 588, located immediately to the south of the Property is a paved all season road. The Property can be accessed via the Trans-Canada Highway 11/17, about 20 km west from the Highway 61 junction to Highway 588 (Stanley access), and then a further 45 km southwest along Highway 588. Travel time by road from Thunder Bay to the Property is approximately one hour. A network of gravel roads and trails traverse the mineral claims and areas of rock exposures.

4.2 Climate

The climate of Thunder Bay region including the Jean Property area is influenced by Lake Superior, resulting in cooler winter temperatures and warmer summer temperatures for an area extending inland as far as 16 km. The average daily temperatures range from a high of 17.6 °C in July and a low of -14.8 °C in January. The summer period is approximately 97 days in length extending from the beginning of June to the beginning of September; fall lasts about 60 days and extends to November. The winter season lasts approximately 6 months extending from November through to May. Although the area normally has about six months of snow-free conditions, exploration and mining work can be carried out throughout the year.



Figure 3: Climate Data

4.3 Physiography

The maximum relief in the area is about 110 metres (from 470 m to 580 m above sea level). Topography is generally flat with the exception of hills located in the southern part of the Property and were formed due to the presence of diabase sill rocks that has resisted erosion and now stands above the surrounding flat lying terrain in the form of large round mesas such as Mink Mountain and Sun Hill (Figures 2 and 4). The southern and western areas of the Property drain southward by the tributaries of the Pigeon River, which enters Lake Superior at Pigeon Point. Drainage in the eastern part of the Property mostly runs through tributaries of the Whitefish River, which joins the Kaministikwia River, and thence flows through Fort Williams to Lake Superior.

The Property area is a part of the Whitefish River watershed. Some of the more common wildlife species that live in the area include otters, beavers, white-tailed deer, black bear, muskrat, pileated woodpecker and various migratory birds. The Whitefish River watershed includes many other mammals, birds, fish and insects that are commonly found in the Great Lakes and Boreal Forest Regions. Most of the watershed is dominated by white spruce, trembling aspen, black ash and balsam fir (Zago 2012). The Property area is mostly covered by forest and bush mostly of second growth.

Exposures of iron-bearing rocks are scarce in the low-lying country adjoining streams and lakes because of drift cover. Beneath the diabase capping of hills and ridges, however, the rocks are well exposed.

4.4 Local Resources and Infrastructure

The town of Thunder Bay, located about 65 kilometres from the Property, is the largest city in Northwestern Ontario, serving as a regional commercial Centre. The town is a major source of workforce, contracting services, and transportation for the forestry, pulp and paper and mining industry. Thunder Bay is a transportation hub for Canada, as the TransCanada highways 11 and 17 link eastern and western Canada. It is close to the Canada-U.S. border and highway 61 links Thunder Bay with Minnesota, United States. Thunder Bay has an international airport with daily flights to Toronto, Ontario and Winnipeg, Manitoba, and the United States. There is a large port facility on the St. Lawrence Seaway System which is a principal north-south route from the Upper Midwest to the Gulf of Mexico.

The city of Thunder Bay has most of the required supplies for exploration work including drilling and geophysical survey companies, grocery stores, hardware stores, exploration equipment supply stores, restaurants, hotels, and a hospital. The population of the city of Thunder Bay was 109,140 people in 2006 (Statistics Canada, www.statcan.gc.ca). Many junior exploration and mining companies are based in Thunder Bay, and thus the city is a source of skilled mining labour.

There are several lakes, rivers and creeks in and around the Jean Property area which can be a source of water. Power lines are also within a few kilometres range.

(Source: http://www.thunderbaydirect.info/about_thunder_bay

http://www.thunderbay.ca/Doing Business/About Thunder Bay.htm)

5.0 HISTORY

The Jean Property is underlain by Gunflint Iron Formation (GIF) which was first discovered in 1850. The earliest recorded geological investigation of the Gunflint was conducted by E. O. Ingall in 1887 who briefly described the iron-bearing strata near Silver Mountain and Whitefish Lake. Other early accounts were made by Smith (1905) and Silver (1906). Van Hise and Leith in 1911 presented a general overview of the iron bearing rocks in the Thunder Bay district. In 1924 J. E. Gill was the first to describe the Gunflint Iron Formation in detail, and in 1926, its stratigraphy northeast of Silver Mountain. T. L. Tanton described the iron prospects at Mink Mountain in 1923, and in 1931 gave an overview of the general geology in the vicinity of Thunder Bay (Pufahl 1996). The Property was part of historical exploration work carried out by various operators in this area. The historical exploration and geological work documented on the Property area is summarized in the following sections, and the work on adjoining properties is summarized in Section 23 of this report.

5.1 Gunflint Iron Mines Ltd. (1943)

Gunflint Iron Mines Ltd. (GIML) in 1943 staked and explored southern portion of Mink Mountain which is now located within the Jean Property with 10-hole diamond drilling program out of which only one was located on the Property. The assessment report on their work is not available. However, drill logs of 10 holes were attached in the 1952 assessment report of Lloyd K. Johnson Exploration.

During 10-hole drilling program, four holes were abandoned because of thick overburden and only six holes, No. 1, No. 3, No. 4, No. 5, No.7 and No. 8, were completed. A compilation of drill hole data indicated that hole number 7 is located on the Jean Property claim 4252106 (Figure 4). The original drill logs were pre-Moorehouse and Goodwin's 1960 stratigraphic classification and nomenclature, and were just purely lithologic descriptions.

In 1960, Moorehouse and Goodwin re-interpreted five (No. 1, No. 3, No. 4, No. 5 and No.7) of six drill logs of completed holes using their adopted stratigraphic classification and nomenclature system and included in their Ontario Department of Mines (ODM)-Report ORV 69.

In 1952, ODM collected four Lower Taconite Member drillcore samples totaling 25.92m from one hole located west of Mink Mountain (possibly GF-04 out of the current Property) and conducted partial chemical analysis together with minus 100- and minus 200-mesh magnetic DTT test.

The partial chemical assays obtained for Lower Taconite Member were 24.44% Fe and 45%

SiO₂. The results from four drillcores samples for minus 100-mesh DTT test were reported as 22.18% to 26.86% Fe for feed, 18.23% to 25.21% for magnetic concentrates recovery and the grade of 34.68% to 52.62% Fe for magnetic concentrates. The non-magnetic concentrates assays ranges from 17.73% to 19.51% Fe.

The corresponding values for minus 200-mesh were 11.51% to 15.13% for magnetic concentrates recovery and the grade of 50.08% to 62.26% Fe for magnetic concentrates. The non-magnetic concentrates graded between 17.73 to 20.97% Fe.

5.2 Great Lakes Resources Ltd. (2011-12)

Great Lakes Resources Ltd. (GLR) staked the Jean Iron Property in 2009 and started exploration work in 2011 with two-phase geologic exploration and surface sampling programs, one in May 2011 and the other in August 2011. A diamond drill program was completed in May-June 2012.

Five grab samples from lower portions of Upper Gunflint Formation, namely Upper Shale, Upper Jasper, Upper Algae Chert Member, were collected and assayed. The assay returns range from 5.58% to 41.06% iron (Fe) and 27.14% to 90.10% Silica (SiO₂).

DTT using -150 mesh size fraction, were also conducted on these grab samples. The size fraction used was -150 mesh and magnetic recoveries ranging from 2.8% to 58.3% were obtained.

In August 2011, a total of 25 saw-cut channel samples, 2.5cm by 2.5cm and of varying length and three 25-kg bulk samples were collected on Lower Taconite and Lower Shale members belonging to Lower Gunflint Formation during the program. In addition, three bulk samples were also collected from Lower Taconite Member exposures. All samples were assayed for iron content.

Assays of channel samples obtained from Lower Taconite Member averaged 25.60% Fe and bulk samples of Lower Taconite Member averaged 26.16% Fe.

DTT conducted on four bulk samples, having average 24.58% Fe feed grade, at minus 200-mesh size indicated the magnetic concentration weight% or recovery% averaged 9.12%, 53.50% Fe respectively for magnetic concentrates and 21.80% Fe for non-magnetic concentrates. The corresponding values for minus 325-mesh sizes were 7.57% for magnetic concentrates recovery, 60.67% Fe for magnetic concentrates and 21.69% Fe for non-magnetic concentrates.

MLA test using two fractions, -106 and +106 mesh, were also conducted on composite sample. The salient information obtained indicated that the sample is composed of 22% combined hematite and magnetite (magnetite estimated as 4%), 61% quartz and 7% Fe-silicates (minnesotiate predominantly) and 6% calcite with traces of apatite, feldspars, Fe-chlorite and kaolinite. MLA test also suggested the average grain size of combined Fe-oxides is between 24 and 53 microns (Aung 2011).

The diamond drill program carried out in May-June 2012 consisted of eight vertical NQ-size diamond drillholes totaling 492.88m. The drilled area bounded by the eight drillholes measured

3km in length and 0.5km in width covering 1.5sq.km. All drillholes were located on the grid with 1000m spacing along baseline and 400-500m along tie-line. Both GPS and grid co-ordinates of drillholes and their lengths are tabulated in Table 2. They were also plotted on the property geology map (Figure 4)

Hole	NAD83-Z15			Grid	Attitude	Depth
Number	Easting	Northing	Elev. (m)	+ Map Elev. (m)		(m)
JN12-01	711270	5347265	485	10E/00N 480m	Vertical	102.00
JN12-02	710989	5347679	477	10E/5N 475m	Vertical	30.00
JN12-03	712073	5347856	541	20E/00N 540m	Vertical	96.00
JN12-04	711865	5348200	513	20E/4N 515m	Vertical	36.88
JN12-05	712910	5348412	538	30E/00N 535m	Vertical	87.00
JN12-06	712665	5348750	518	30E/4N 515m	Vertical	39.00
JN12-07	713705	5349014	498	40E/00N 495m	Vertical	60.00
JN12-08	713591	5349219	500	40E/2+50N 500m	Vertical	42.00

Table 2: Co-ordinates and Lengths of Drill holes - May-lune 2012 Drilling Program	
1 3 M G 7 1 M M M M M M M M M M M M M M M M M M	
1 anic 2. CO-01 alliales alla felletiis 01 01 ill 1101es - 1419A-jaile 2015 Di 11111e Liosia	arn.

(GPS Reading by Garmin 60CSx)

Lower Taconite Member is the main iron bearing stratigraphic horizon within the Jean Iron Property and the weighted assay information obtained from 84 drill core samples from Lower Taconite Member is summarized in Table 5.

 Table 3: Weighted Assay: Lower Taconite Member -May-June 2012 Drilling Program

DDH No.	Length (m)	Fe%	Mn%	SiO2%	P2O5%
JN12-01	49.71	21.65	0.346	43.40	0.03
JN12-02	10.50	24.36	0.299	44.10	0.05
JN12-03	56.81 (complete)	24.39	0.337	47.54	0.03
JN12-04	29.62	24.31	0.259	50.53	0.04
JN12-05	57.722 (complete)	23.88	0.287	47.76	0.04
JN12-06	29.67	25.02	0.364	46.24	0.04
JN12-07	49.05	22.03	0.529	47.37	0.03

JN12-08	31.87	23.37	0.570	44.92	0.04
Weighted Average		23.44	0.377	46.66	0.04

Davis Tube Test

In addition to assaying, DTT on two composite samples combined from drill core samples of Lower Taconite Member of Lower Gunflint Formation, one from JN12-03 and the other from JN12-05, were also contracted to and conducted at ActLabs Laboratories, Ancaster, Ontario.

The weighted average feed grade is 24.08% Fe. For minus 200-mesh size, the magnetic concentrates recovery averaged 7.48% with the magnetic concentrates grade of 57.79% Fe. The non-magnetic concentrates values for this size fraction were 91.45% for recovery and 22.55% Fe for grade.

In regard to minus 325-mesh, the magnetic concentrates recovery was 7.20% and the concentrates grade was 53.62% Fe. The non-magnetic concentrates values are 91.55% and 22.42% Fe respectively.

Mineral Liberation Analysis (MLA test)

MLA test was also conducted on three samples. Two samples, DT Composite #1 and DT Composite #2 were from Lower Taconite Member. The remaining #1078112 was from Lower Shale Member of Lower Gunflint Formation and was included to determine mineralogy of associate iron minerals that elevated Fe% in this member.

The results indicated that, Lower Taconite Members samples are mineralogically fairly similar with average magnetic content of 8.34% (from 9.5% to 7.14%) and average magnetic grain size of 23 microns (20 to 26 microns). The non-magnetic goethite/siderite averaged 4.1% (3.8%-4.4%). The other sample, Lower Shale contains <0.1% magnetite with main iron minerals as pyrite (14.3%) and goethite/siderite contents (combined 17.3%) (Aung 2012).

Figure 4: Location of Historical Drill Holes and Property Geology





Legend	1							
[Jean Iron Property Claims							
Diamond Drill Holes - Year								
٠	2012 - Great Lake Resources							
•	1960 - 62							
0	1952							
•	1943							
•	1942							
Sampling	g							
	Grab samples							
-	Channel samples							
-	Historic sample							
Grid Line	es							
	- cut							
	- uncut							
Geology Legend								
PreCam	PreCambrian							
Keewanawan								
Intrusives								
Diabase								
Animikie Group								
Rove Argillite Fm								
Upper Gunflint Fm								
Upper Taconite Member								
	Upper Jasper Member							
	Upper Algal Chert Member							
Lava Member								
Lower Gunflint Fm								
	Lower Taconite Member							
	Lower Shale / Lower Algal Chert Member							
Archean								
	Granite basement							
Geologi	cal Symbols							
	Faults							
Geological Contacts								

Legend for Figure 4

6.0 GEOLOGICAL SETTING AND MINERALIZATION

6.1 Regional Geology

The Paleoproterozoic iron formations in the seven iron ranges of the Lake Superior region crop out in in northwestern Ontario, east-central and northern Minnesota, northern Wisconsin, and the Upper Peninsula of Michigan as an oval shaped region encompassing 220,000 km². Iron formation strata in the Lake Superior region were the first to be mined on a large scale in North America and to have their geology described in detail (Figure 5). Iron formations in other parts of the world were compared to the Lake Superior ranges and genetic concepts were developed with direct reference to the sedimentary basins in this classical area. Similar iron formation lithofacies and stratigraphic- tectonic settings have been reported on all continents. The iron ranges of the Lake Superior region have provided an excellent type-area for reference and study of iron formation and other stratafer sediments in continental shelf and platform settings (Gross 2009).

Extensive Lake Superior-type iron formation (LSTIF) ranges were developed along the margins of cratons or epicontinental platforms between 2.4 Ga and 1.9 Ga (Figure 5). Thicker iron formations were deposited in shallow basins on continental shelves and platforms in neritic environments, interbedded with mature dolostone, quartz arenite, black shale and argillite. Iron formation units in the Animikie basin were the first examples of LSTIF to be described in detail and remain as the principal type area for reference (area around L. Superior and L. Michigan on Figure 5).

The Paleoproterozoic sedimentary rocks deposited in the Animikie Basin form: a southward-thickening wedge covering the southern margin of the Superior province, which is truncated in east-central Minnesota and northern Wisconsin by: the 'Penokean" magmatic terranes". Sedimentation began approximately 2.1 Ga ago and ceased roughly 1.85 Ga ago. The nature of the sediment varies from volcanic and clastic to the chemical precipitates which form the thick successions of iron formation. The termination of the Penokeani orogeny marked the onset of an intrusive igneous phase which emplaced subduction related tonalitic and granitic plutons into the Anirnikie sediments and the arc related volcanics of the Wisconsin magmatic terranes. The present form of the basin was achieved around 1 Ga ago when a north-northwest trending branch of the-Midcontinental Rift System separated the Animikie sediments into a northwestern and southeastern segment. The northwestern segment of the Anirnikie Group unconformably overlays the Superior Province and consists of a basal sandstone-siltstone (Pokegama Quartzite, Mahnomen Formation), iron formation (Gunflint, Biwabik, Trommald iron formations), and a thick, upper, shale-siltstone sequence (Rove, Virginia and Rabbit Lake Formations) (Gross 2009).



Figure 5: Regional geological map showing location of iron ranges (G.A Gross 2009).

6.2 Local Geology

Locally, the Jean Lake Property area is underlain by an Archean granitic basement, which is unconformably overlain by gently southerly-dipping sedimentary rocks of the Aphebian (lower Proterozoic) Animikie group. These sediments are capped by a Helikian (1.0 Ga) Keweenawan diabase sill. Unconsolidated rocks are Pleistocene age glacial till debris which forms an extensive mantle over low -lying parts of the area (Table 7).

Era	Group	Formation/ Rocks				
Pleistocene and Recent	Glacial Till	Unconsolidated gravel, sand, and				
		clay				
Unconformity						
Helikian (1.0 GA)	Keweenawan Group	Diabase sill and related rocks				
Intrusive Contact						
Aphebian (Lower	Animikie Group	Rove Formation argillites				
Proterozoic)		Gunflint Iron Formation				
Unconformity marked by Kakabeka Formation Conglomerate						
Archean	Algoman	Granite, granite gneiss, with				
		inclusion of chlorite and mica schist				

Table 4: Generalized stratigraphic column of the area

Source: Goodwin, A.M. (1952)

6.2.1 Archean Basement Rocks

Basement related Algoman-type granitic rocks consist predominantly of normal, pink granite and granite gneiss. The texture ranges from conspicuously gneissic to coarsely pegmatitic. Numerous inclusions of chloritic and micaceous schist, and gneiss of various shapes and sizes, occur within the granite.

6.2.2 Aphebian Animikie Group

Sedimentary and volcanic rocks of Animikie Group consist of two formations: the lower Gunflint iron formation, and the upper, the Rove argillite formation. These rocks gently dip south at an average angle of 5 degrees.

Gunflint Iron Formation

The Gunflint iron formation consists mainly of sedimentary rocks that are unusually rich in iron. Zircon dating of the Gunflint formation yielded an age of 1878.3 ± 1.3 million years. The formation is characterized by unusually high iron content, as well as by a variety of textures, the granular texture of the taconite rock being most distinctive. The Gunflint formation is approximately 145 m thick is divided into lower and upper cycles. Each cycle contains a sequence of members, most of which are common to both. The uppermost

member, a limestone bed, is unique to the formation and marks the top of the ironbearing rocks. The general stratigraphy of Gunflint formation is presented in the following table.

Cycle	Member	Thickness (metres)
Upper Gunflint	Upper Limestone	1.5 – 6
	Upper Taconite	45 – 55
	Upper Shale	1.5 – 5
	Upper Jasper	12-20
	Upper Algal Chert	2.5 – 6.5
	Lava Flow Locally	0-12
	Total Upper Gunflint	62.5 – 104.5
Lower Gunflint	Lower Taconite	46 - 64
	Lower Shale	1-6
	Lower Algal Chert	0.6 – 4.5
	Basal Conglomerate	0-0.3
	Total Lower Gunflint	47.6 – 74.8
Total Thickness of Gu	Inflint Iron Formation	110.1 - 179.3

Table 5: Stratigraphy of Gunflint Iron Formation

Source: Goodwin (1952)

Basal Conglomerate

The pebbles of the conglomerate are formed of white vein quartz, milky white chert, and occasionally jasper. Most pebbles are around 2.5 centimeter in diameter, although several with diameters of 15 centimeters are present, and the majority is well rounded. The matrix consists of sandy quartz grains with considerable admixed chloritic material.

Lower Algal Chert

The algal chert is commonly in the form of reef-like mounds, which are roughly elliptical in plan view and average 3-meter-long, 1.5-meter-wide, and 0.6 meter thick. The chert forming the mounds is finely contorted in the manner typical of algal structures. Small brown, white, and red granules are often closely associated. The algal chert typically grades upwards into green and white banded chert with massive texture.

<u>Lower Shale</u>

The shale is soft, black and typically fissile. Thin-section examination carried by previous workers revealed much fine-grained clastic material together with carbonaceous matter. Bands of grey to black chert, commonly flecked with pyrite, are present near the top of the member.

Lower Taconite

The lower taconite is approximately 60 m thick and contains roughly 26% iron 46% silica. The upper unit is 40-50m thick and averages 31% iron with 43% silica (Goodwin 1961). Weathered rocks of the member are characterized by a shingly appearance due to numerous closely spaced parting planes, rusty colour, and finely granular texture. Under the microscope, the typical rock of this member is seen to consist of small granules up to 2 millimeters in diameter, in a fine-grained chert or carbonate matrix. The granules consist of a mixture of fine-grained chert, a green silicate mineral (probably greenalite), and iron oxide. The iron oxide is commonly an intimate mixture of hematite and magnetite, or near the weathered surfaces, the hydrated equivalents. The oxides often form the rims of granules.

The matrix to the granules is fine-grained chert or ferruginous carbonate. Where the carbonate is present the granules are not well formed. Carbonate nodules are common in certain beds. In cross-section, the nodules are characteristically round and occasionally slightly elliptical. The individual nodule when fresh is typically composed of salmon pink, finely crystalline carbonate, commonly with a rim of greenalite. The carbonate shows rusty weathering, the colour being yellow, orange, brown, or black, depending on the degree of oxidation and hydration. There is a variation in the relative proportions of chert, greenalite, hematite, and magnetite, within the unweathered beds of the member. Some beds are unusually rich in the iron oxide minerals, whereas adjacent beds contain a high proportion of chert and greenalite.

Upper Algal Chert

This member can be further divided into three parts based on the mode of occurrence of chert; which include from bottom to top: i) Granular chert with jasper veinlets (0.6m - 3m thick); ii) Algal-oolitic chert, lava flow locally (1.2m - 15m thick); and iii) Coarse granular ferruginous chert (0.6m - 2m thick).

Hematite bearing veinlets are present in the flow rock. Thin-section study reveals oolitic granules formed of concentrically banded red hematite and chert up to 5 millimetres in diameter, in a fine-grained chert matrix (Goodwin 1952).

Upper Jasper Member

The rocks of this member grade upwards by increase in shaly material to shale of the overlying member. The jasper lenses consist of abundant, close-packed, small red granules in a chert matrix having a granular texture. Not all granules are red; occasionally a lens has a local concentration of green granules or a general intermixture of red and green. There is an increase of green granules relative to red granules towards the top of the member, and the uppermost lenses are predominantly green. The lower beds of the member are characterized by granules and small lenticles, or beads, of jaspery chert; this

grades upwards into beds consisting of thick lenses of granular jaspery chert with shaly partings.

Upper Shale Member

The member consists largely of black, fissile shale. Locally, small concretions are present; they are generally 5-7 cm in diameter and composed of black sideritic carbonate. A prominent feature of the Shale Member, and a good horizon marker, is the presence of a pisolite layer near the top of the member. The layer is 22-45 cm thick. It consists of pisolites averaging 1/8 inch in diameter that are somewhat flattened along the bedding plane. They weather characteristically to a rusty brown colour and are easily noticed against the background of black shale.

Upper Taconite Member

The rocks of this member consist of thick-bedded granular chert with shaly partings. The chert layers are commonly green in colour, due to abundant greenalite granules. The thickness of the chert layers' ranges from 12 to 60 centimeters. An occasional layer is of uniform thickness, but most are noticeably wavy banded; such bands pinch and swell within a lateral distance of 3-7 metres. Within a vertical section, chert lenses are arranged so that the thick part of a particular lens rests in the hollow formed by the tapered extensions of subjacent lenses. The plan view of a lens is typically circular to elliptical, so far as was determined.

The shaly partings that separate chert beds range in thickness from 2-30 centimetres, most commonly about 10 cm. The partings are dark-brown to black and very fine grained. They consist of an intermixture of ferruginous carbonate, magnetite, and occasional fragmental grains. Beds within 25 metres of the diabase sills have considerably higher magnetite content than normal. In such beds, the magnetite grains are up to 3 millimetres in diameter; they occur in both the chert layers and shaly partings, but more abundantly in the partings. Bands up to 12 cm thick, rich in magnetite were observed; however, cherty material is usually intimately associated.

The upper 7 metres of this member consists locally of beds that have been highly contorted and brecciated. The rock now consists of chert fragments, up to 15 cm thick and 60 cm long, within a matrix of magnetite, secondary iron bearing amphibole minerals, and calcite. The chert of the fragments is commonly dark-grey to black and finely laminated. The rock appears to have consisted originally of thinly inter-banded chert and ferruginous carbonate.

Upper Limestone Member

The limestone of this member is typically dark-grey to black and very fine grained. It is easily confused with the finer-grained phases of diabase. There are usually thin interbandings of grey-to-black massive chert up to 5 cm thick.

Rove Formation

The Rove formation consists typically of thinly-bedded, black to dark-grey argillite. They are several hundreds of metres thick, intruded by the Keweenanwan diabase sills and cut by steeply dipping northwest and northeast trending normal faults. Within the Rove formation, quartz carbonate veins emplaced along these faults in a belt extending northeast and southwest of Thunder Bay are mineralized with native silver, argentite, sphalerite, galena, pyrite, pyrrhotite, and chalcopyrite. The veins are predominantly hosted in the flat-lying Rove formation sediments, but also occur in the diabase sills and rarely in the Archean basement. This type of mineralization supported several mines, the largest of which were the Beaver, Silver Mountain, and Badger.

6.2.3 Helikian Keweenawan Group

Rocks of the Kewaneenawan in the Jean Property area consist of diabase intrusives dipping gently southward, conforming more or less with the attitude of enclosing sedimentary rocks.

6.2.4 Pleistocene and Recent

Unconsolidated sand and gravel of Pleistocene and Recent age are widespread and at places very thick. Most of the material is unsorted and appears to represent glacial debris; along the river banks, however there has been considerable reworking and sorting. The thickness of the debris ranges from a thin discontinuous mantle of boulders on top of the diabase-capped hills to sand and boulder deposits up to 75 metres thick, such as occur on the southeast side of Mink Mountain. There is a gravel pit adjacent to the southwest corner of claim 4252106 where quaternary deposits exposed thickness is approximately 30 meters.

<u>Structure</u>

The Animikie sedimentary rocks are essentially flat-lying and rest upon a granite terrain of low relief. The principal disturbance has been due to normal gravity faults which are common throughout the area. The beds of Gunflint iron formation are gently dipping southward with an average angle of 5 degrees. Local folding and brecciation occur in the uppermost part of the Gunflint iron formation due to violent volcanic disturbances that occurred towards the end of the deposition of iron-bearing rocks. There appear to be two principal systems of normal gravity faults within the map area. One system strikes northeast; the other, generally northward. The age relationship between them was not determined, as individual faults cannot be traced with certainty for more than a few kilometres.

One example of an east-trending fault is located between Silver Bluff and Divide Ridge, in which the north side appears to have moved down about 30 m relative to the south side. Another example is the fault southeast of Mink Mountain, where the south side has moved down about 75 m.

The north-trending system is illustrated by the two faults, one on either side of the North River, that together have formed a down-faulted block, or graben. Movement has been about 60 m.

A fault is indicated between Silver Bluff and Silver Mountain. The diabase capping rocks at both localities are at the same elevation, but whereas the capping rock at Silver Bluff is underlain by iron-bearing rocks of the Gunflint formation, there is 60 m of Rove argillite beneath the capping rock of Silver Mountain. There are probably many other faults in the area but with such limited vertical movement that they are not readily discernible.

6.3 **Property Geology**

The Jean Property is underlain by an Archean granitic basement, which is unconformably overlain by gently southerly-dipping sedimentary rocks of the Aphebian (lower Proterozoic) Animikie group. These sediments are capped by a Helikian (1.0 Ga) Keweenawan diabase sill which covers the entire south slope of the hill north of Whitefish Lake (Figure 4).

The basal conglomerate member of Gunflint Iron formation is well exposed along the north fringe of the iron formation, where it forms a thin skin on top of the basement complex. The thickness of the conglomerate is seldom more than 30 centimetres, even where completely preserved, and is usually only a few centimetres. The conglomerate was found to be completely missing in trench TR15-05 where Algal Chert member is directly overlying the basement granite. There are excellent exposures north of Burnt Bridge on the Whitefish River. The total thickness of the member ranges from 0.6 to 4.5 metres.

The algal chert member is commonly in the form of reef-like mounds, which are roughly elliptical in plan view and average 3 m long, 1.2 m wide, and 0.6 m thick. The chert forming the mounds is finely contorted in the manner typical of algal structures. Small brown, white, and red granules are often closely associated. The algal chert typically grades upwards into green and white banded chert with massive texture. The algal chert member was intersected in trenches TR 15-03 and TR 15-05.

Rocks of the Lower Taconite member are exposed along the north slope of Mink Mountain, on the banks of the Whitefish River, and on numerous small hills and ridges north of this river. Lower Taconite member was intersected in trenches TR 15-03 and TR 15-05.

Rocks of the Upper Algal chert member are exposed on the west and east flanks of Mink Mountain, beneath the diabase sill of Divide Ridge, along the banks of the Whitefish River, and within the North River down-faulted block. The thickness of the member ranges from 2.5 to 7 metres. There is a scattering of large boulders containing considerable amounts of hematite and magnetite, distributed over the area that is apparently underlain by flow rock. The boulders are up to 2 metres in diameter, and typically contain hematite and magnetite in the form of large granules up to 0.5 cm in diameter, and lenticles as much as 5 cm long (Goodwin 1961). Under the microscope, the granules and lenticles are seen to consist of an intimate intergrowth of specular hematite and magnetite.

Beds of Upper Jasper Member are exposed the east and west sides of Mink Mountain. There are also good exposures beneath the capping sill of Divide Ridge. The member ranges in thickness from 12 m to 20 m.

The Upper Shale member is exposed in the same localities as the underlying Jasper member. It ranges in thickness from 1.5m to 5m and is persistent throughout the Property area. This member was intersected in trenches TR 15-01, TR 15-02, and TR 15-04.

Upper Taconite beds are exposed beneath the capping sills of the hills and ridges of the area. There are particularly good exposures on the north face of Silver Bluff. The member is 45-55 metres thick. The Upper Limestone member is exposed immediately north of the abandoned railway on the south slope of Sun Mountain; the thickness is estimated to range from 1.3 to 6 m.

Drill Hole Geology

Geology obtained from the diamond drill program of 2012 verified known surface geology with additional detailed stratigraphic information.

The drill area is underlain by northeast trending (approximately 055° azimuth) gently 4-5° southeast dipping Lower Gunflint Formation. Lower Taconite Member of Lower Gunflint Formation was the main economically-interested stratigraphic horizon investigated in this program.

The summary drill logs of 2012 diamond drilling program is provided as follows:

<u>JN12-01</u>

0.00-3.00m: Casing/Overburden 3.00-59.40m: Lower Gunflint Formation (56.40m) 3.00-52.68m: Lower Taconite Member

52.68-55.60m: Lower Shale Member

55.60-58.26m: Lower Algae Chert Member

58.26-59.40m: Basal Conglomerate

59.40-102.00m: Archean Basement

102.00m- End of Hole (EOH)

<u>JN12-02</u>

0.00-3.00m: Casing/Overburden

3.00-19.25m: Lower Gunflint Formation (16.5m)

3.00-13.50m: Lower Taconite Member

13.50-15.75m: Lower Shale Member

15.75-19.25m: Lower Algae Chert Member

19.25-19.50m: Diorite Sill

19.50-30.00m: Archean Basement

30.00m-EOH

<u>JN12-03</u>

0.00-10.00m: Casing/Overburden **10.00-31.89m: Upper Gunflint Formation (21.89m)** 10.00-15.50m: Upper Shale Member 15.50-29.48m: Upper Jasper Member 29.48-31.89m: Upper Algae Chert Member **31.89-95.20m: Lower Gunflint Formation (63.31m)** 31.89-88.70m: Lower Taconite Member 88.70-90.77m: Lower Shale Member 90.77-95.00m: Lower Algae Chert Member 95.00-95.20m: Basal Conglomerate **95.20-96.00m: Archean Basement 96.00m-EOH**

<u>JN12-04</u>

0.00-3.00m: Casing/Overburden 3.00-36.00m: Lower Gunflint Formation (33.0m) 3.00-32.62m: Lower Taconite Member 32.62-35.70m: Lower Shale Member 35.70-36.00m: Lower Algae Chert Member 36.00-36.88m: Diorite Sill 36.88m-EOH

<u>JN12-05</u>

0.00-21.00m: Casing/Overburden **21.00-23.12m: Upper Gunflint Formation (2.12m)** 21.00-23.12m: Upper Algae Chert Member

23.12-86.87m: Lower Gunflint Formation (63.75m)

23.12-80.90m: Lower Taconite Member

80.90-82.82m: Lower Shale Member

82.82-86.87m: Lower Algae Chert Member

86.87-87.00m: Archean Basement

87.00m-EOH

<u>JN12-06</u>

0.00-1.50m: Casing/Overburden

1.50-36.67m: Lower Gunflint Formation (35.17m)

1.50-31.17m: Lower Taconite Member

31.17-33.45m: Lower Shale Member

33.45-36.32m: Lower Algae Chert Member

36.32-36.67m: Basal Conglomerate

36.67-39.00m: Archean Basement

39.00m-EOH

<u>JN12-07</u>

0.00-3.00m: Casing/Overburden **1.50-57.20m: Lower Gunflint Formation (55.7m)** 5.00-52.05m: Lower Taconite Member 52.05-53.40m: Lower Shale Member 53.40-57.05m: Lower Algae Chert Member 57.05-57.20m: Basal Conglomerate **57.20-60.00m: Archean Basement 60.00m-EOH**

<u>JN12-08</u>

0.00-3.00m: Casing/Overburden **1.50-40.90m: Lower Gunflint Formation (39.4m)** 3.00-35.70m: Lower Taconite Member 35.70-36.88m: Lower Shale Member 36.88-40.90m: Lower Algae Chert Member **40.90-42.00m: Archean Basement 42.00m-EOH**

6.4 Mineralization

Partial analyses are available to determine the average composition of mineralized beds of the Gunflint iron formation. The members considered in this respect are the Lower Taconite member, Upper Jasper member, and the Upper Taconite member. The other members of the formation are relatively thin and contain less iron.

Member	Number of Historical	Iron (Fe)	Silica (SiO ₂)
	Assays	(Percent)	(Percent)
Lower Taconite	18	25.71	46.44
Upper Jasper	20	25.50	46.36
Upper Taconite	20	30.70	43.16

Table 6: Average Iron and Silica Content of Mineralized Members in Gunflint Iron Formation

Source: Goodwin 1961

7.0 EXPLORATION WORK

The present exploration work included prospecting, mapping, surface sampling, trenching and channel sampling. An exploration work permit (PR15-412660) was issued effective April 07, 2015 to March 06, 2018 for the Property. Aboriginal communities potentially affected by the exploration permit activities were consulted during the exploration permit application process and at the beginning of the work program. Details of the exploration work are provided in the following sections; the results are discussed in Section 8.

7.1 First Nations Consultations

The Jean Iron property is located in traditional area of interest of the following three First Nations.

- Metis Nation of Ontario (MNO)
- Red Sky Métis Independent Nation
- Fort William First Nation

Several emails regarding work program details were sent to all three First Nations groups with a request for face to face meeting. Red Sky Metis Independent Nation asked for a meeting which took place in their community office on October 08, 2015 at 406 East Victoria Avenue, Thunder Bay. A brief outline of scope of current exploration work, general market consideration for iron ore depressed prices, and struggle of junior mining industry was provided by the author. The group indicated their support of the project and it was agreed to keep touch if the project moves forward.

Similarly, another meeting took place with Mr. Kevin Muloin, Coordinator for Metis Nation of Ontario October 14, 2015 in his office at 226 May Street, Thunder Bay which was also attended by Andrew Kane, Mineral Exploration and Development Consultant from the Ministry of Northern Development and Mines. A brief outline of scope of current exploration work, general market consideration for iron ore depressed prices, and struggle of junior mining industry was provided by the author. Mr. Muloin provided details of activities related to his office and potential mutual collaboration in case Jean iron project moves forward. Potential availability of other iron ore projects in Ontario also came under discussion.

7.2 Prospecting and Outcrop Mapping

The prospecting and mapping work commenced from October 05-31, 2015 and its purpose was to map Gunflint Iron Formation outcrops for trenching and channel sampling, and to collect representative samples for iron analysis. A total of eight grab

rock samples were collected during this work from different outcrops or subcrops as listed in Table 7.

Majority of the property area, particularly the area underlain by the Gunflint Iron Formation is covered by glacial overburden with the exception of diabase sill rocks which are more resistant to weathering. The overburden is especially thick in the southeastern part of the property, on claims 4252105, 4252106, and 4252107 where a gravel pit operation has exposed approximately 50-meter-thick layer of overburden. Algal chert and jasper containing rocks are found to be more resistant to weathering and exposed at places; whereas, a few new road cuts were also helpful in locating Taconite and shale outcrops. Several Gunflint Iron Formation outcrops were mapped, out of which five outcrops were selected for stripping and channel sampling work on the property. Iron content of shales were observed to be generally low with rusty brown surface weathering due to disseminated hematite along fractures and bedding planes. Jasper and algal cherts are found to be rich in iron and are more magnetic than other units of Gunflint Iron Formation. Taconite unit visually contains 20% to 30% iron. Lower contact with Archean granites is well exposed in the northern part of the property and adjoining areas. Basal conglomerate at the base of Lower Gunflint Iron Formation is thin and not well exposed. Similarly, upper contact with diabase sills is well marked in the southern part of the property and adjoining areas. Daily prospecting and mapping activity log is presented in Appendix D.



Photo 1: Taconite outcrop exposed after stripping



Photo 2: Taconite sample
Table	7:	List of	Grab	Rock	Samples
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Sample ID	Easting	Northing	Claim Number	Туре	Description
1192091	715513	5349284	Grab, 4252108 outcrop/ subcrop		TACONITE: Dark grey, fine to medium grained, medium bedded, brown weathered surface due to hematite, siliceous, 20% magnetite.
1192092	715544	5349214	Grab, 4252108 outcrop/ subcrop		TACONITE: dark grey, fine to medium grained, medium bedded, brown weathered patches and layers due to hematite, siliceous, 25% magnetite.
1192093	711433	5348511	4252110	Grab, outcrop	TACONITE: Dark grey to brown, hematite staining and patches, reddish jasper at places, less magnetic (<20%), fine grained, green clayey parts.
1192094	714452	5348539	4252110	Grab, outcrop	TACONITE: Greenish grey to dark grey, brown haematitic weathering, reddish jasper at places, shingly to massive, <20% magnetite.
1192095	714123	5348607	4252110	Grab outcrop	TACONITE: Dark grey, shingly to massive, hematite along fractures and bedding planes, less green minerals more magnetic (30% magnetite).
1192096	711275	5347266	4283669	Grab outcrop	TACONITE: Dark grey, thinly to medium bedded, hematite weathering with red jasper at places, highly magnetic (35% magnetite).
1192097	711302	5347200	4283669	Grab, outcrop	Same as above but massive and more jasper.
1192098	711696	5347568	4252114	Grab, outcrop	TACONITE: Dark grey, massive, jasper at places, highly magnetic (30% magnetite), sample at the claim boundary.

Figure 6: Location of Surface Samples



7.3 Trenching and Channel Sampling

Majority of the property area is covered by quaternary overburden of varying thicknesses. Outcrops of Taconite bearing Lower Gunflint Iron Formation were marked for stripping and channel sampling work. A rubber tire backhoe and an excavator were used for stripping overburden. Trenching and stripping was carried out at four locations (TR 15-01, TR 15-02, TR 15-03, and TR 15-05). One Taconite rock outcrop was found exposed at location of trench TR 15-04 due to a new road cut, therefore, a new claim (Number 4283669) was immediately staked to cover this outcrop. Details of trenching work is provided as follows:

Trench TR 15-01:

This trench was excavated to uncover a partially exposed Lower Shale Member of Lower Gunflint Iron Formation. The shale member is dark grey to brownish grey in colour with rustier brown on weathered surface due to staining and fracture filling of hematite. It is thin to medium bedded, calcareous at places, strongly to moderately magnetic, and laterally it changes to dark grey siltstone. A total of four samples were collected to determine iron content, where each sample was chipped across 0.75 m channel length. One composite sample (1192064) from entire 3-meter channel length was collected for Davis Tube Testing (DTT).

		Claim Number:		
Start Date: October 11, 2015		425	2113	End Date October 11, 2015
	Sample	Length	Sample	
Coordinates	ID XRF	(m)	ID DTT	Lithology
				SHALE/ARGILLACEOUS TACONITE: Dark
				grey to brownish grey, more shaly at
				places, Lower Shale Member of the
				Lower Gunflint Iron Formation (GIF), thin
				bedded, brown rusty weathering, pyrite
5348391N / 0711391E /				nodules, calcareous at places, magnetic
508m	1192061	3		to weakly magnetic (10-15% magnetite)
				SILTSTONE/SHALE: Dark grey to
				brownish grey, medium bedded,
				splintery, breaks in columns, vertical and
	1192062	2.25		bedding joints, 15% magnetite
	1192063	1.5	1192064	Same as above

Table 8: Trench TR 15-01 Log

			TACONITE/SILTSTONE: I weathering colour, hem bedding planes, more an splintery, medium bedd	Dark grey, brown atite filling along rgillaceous, ed, 10%
WP 244:			magnetite, flat dipping 3	3 degree south
5348393N/0711392E/506m	1192099	0.75	with E-W strike	



Photo 3: Trench TR 15-01



Figure 7: Map of Trench TR 15-01

Trench TR 15-02:

This trench is located approximately 400 m to the south of Trench TR 15-01 in the extension the same shale outcrop belonging to Lower Shale Member. A total of two chip channel samples, each with one-meter thickness, were collected for XRF analysis to determine the iron content, and one composite sample for DTT along the entire exposed thickness of outcrop.

Table 9: Trench TR 15-02 Log

Coordinates	Sample ID XRF	Length (m)	Sample ID DTT	Lithology
Start Date: October 11, 2015	Claim Nur 4252115	nber:	End Date	October 11, 2015
WP 211: 5348134N/0711036E/504m	1192065	2		SHALE: Dark grey with brown weathering, thinly bedded, splintery, fissile, carbonaceous at places, hematite patched and filling along bedding, 15% magnetite, Lower Shale Member of the Lower GIF
WP 212: 5348132N/0711038E/502m	1192066	1	1192067	Same as above, more magnetic (20%)



Photo 4: Trench TR 15-02 sampling



Figure 8: Location of Trench TR 15-02

Trench TR 15-03:

This trench was excavated to strip the taconite outcrop of Lower Gunflint Iron Formation by using a rubber tire backhoe and an excavator. A total of 21-meter-long channel was cut using a saw and blades. Each sample was collected across one-meter length of the cut channel for XRF analysis to determine its iron content. A total of 21 samples, each one-meter-long, were taken out of this trenching location. Additionally, four composite samples were taken for DTT to determine magnetic and no-magnetic fraction. Three duplicate samples were also collected as part of field quality control and quality assurance (QA/QC) purposes.

The overall lithology of this section is comprised of dark grey to greenish grey taconite, strongly to moderately magnetic, shingly to massive in nature, showing internal micro-folding and fracturing at places. Greenish color is due to greenalite mineral in taconite.



Figure 9: Location of Trenches TR 15-03 and TR 15-05

Coordinates	Sample ID XRF	Length (m)		Sample ID DTT
Start Date: October 14, 2015	Claim Nur 42521	nber: 16	End Date C 2015	October 15, 2015, Extended on October 17,
5347719N/0710217E/482m	1192235 plus 1192236 DUP	21		TACONITE: Dark grey, shingly to massive, fine grained, brown hematite weathering, 2 cm quartz vein, 20% magnetite
	1192234	20		Same as above
	1192233	19	1192237	TACONITE: Dark grey to greenish grey, fine to medium grained, shingly due to micro jointing, up to 10cm thick quartz vein, 20% magnetite, 30% green minerals (greenalite)

Coordinates	Sample ID XRF	Length (m)		Sample ID DTT
	1192232	18		TACONITE: Dark grey, fine siliceous, shingly due to jointing, patches of secondary magnetite concentration, brown hematite along fractures and bedding plane, concentric rings of green minerals due to internal microfolding, 15% magnetite
5347726N/0710216E/474m	1192089	17		TACONITE: Greenish grey, shingly, magnetite seams, hematite along fracture planes, 20% magnetite
	1192088	16	1192090	TACONITE: Greenish grey, shingly, some jasper, cherty, concentric ring structures (algal material), magnetite seams, hematite along fracture planes, 10% magnetite
	1192086	15		Same as above
	1192085	14		TACONITE: Dark greenish grey, more greenalite, some hematite as fracture filling and along bedding planes, cherty patches, 15% magnetite.
	1192084	13		TACONITE: Dark grey to brownish, cherty with jasper, hematite patches and fracture filling, white siliceous patches, voids are filled with hematite, massive to shingly, 20% magnetite
	1192083	12		TACONITE: Greenish grey to brown, hematite as fracture filling and patches, some jasper, up to 1 cm thick quartz veins, siliceous chert layers along green minerals, 15% magnetite
	1192082 & 1192081			TACONITE: Greenish grey to brownish, magnetite specks and lenses due to secondary concentration, hematite as
	(DUP)	11	1192087	Fracture filling, some jasper, 15% magnetite Same as 1192078, with greenalite mineral which is generally aligned along bedding planes with internal microfolding, a few
	1192079	10		magnetite lenses
	1192078	9		TACONITE: Grey to greenish grey, shingly to massive, some hematite patches and fracture filling, layers of green minerals, 15% magnetite
	1192077	8	1192080	TACONITE: Greenish grey to brown, shingly, thin to medium bedded, haematitic weathering along bedding and joints, 10% magnetite

	Sample ID	Length		
Coordinates	XRF	(m)		Sample ID DTT
				TACONITE: Dark grey to brown, argillaceous,
				shingly, thin bedded, brown hematite along
				bedding and fractures, 30% magnetite, 10%
	1192076	7		argillites, rest silicates and hematite
				TACONITE: Dark grey to greenish grey,
				shingly, haematitic brown fracture fillings,
				some jasper /chert, <cm quartz="" td="" thick="" veins,<=""></cm>
				magnetite seams and nodules as secondary
	1192075	6		filling, 20% magnetite
				TACONITE: Dark grey to greenish grey,
				brownish colour hematite veins and fracture
				fillings, reddish colour jasper, a few pyrite
	1192073	5		nodules, 20% magnetite
				TACONITE: Dark grey to brownish grey,
				massive to shingly, with concentric rings of
				green silicate minerals with stromatolites,
				one cm thick quartz vein, some jasper and
	1192072	4		hematite, 20% magnetite
				TACONITE: Grey to brownish grey, magnetite
				seam 3cm long and one cm wide, greenalite
	1192070 &			mineral surrounding magnetite secondary
	1192071			concentration, hematite fracture fillings and
	(DUP)	3		specks, 20% magnetite
	1192069	2		Same as 1192074
				TACONITE: dark grey to brownish grey,
				massive to shingly, medium bedded, some
				jasper, magnetite seams cutting across
				bedding planes indicate secondary
				concentration, hematite nodules and fracture
5347720/0710194/471	1192068	1	1192074	fillings, 15% magnetite



Photo 5









Photo 7

Phot 8

Photos 5-8 of Trench TR 15-03

Trench TR 15-04: (Excluded from Assessment Credit)

This trench was sampled at a location where a road cut exposed approximately 20 m wide area of Lower Gunflint Iron Formation. A new claim (Number 4283669) was staked immediately to cover this outcrop. The exposed rock is very shingly and fractured, therefore chip channel sampling was carried out with sample length of 2 m each.

Table 11: Trench TR 15-04 Log

	Sample	Length	Sample	
Coordinates	ID XRF	(m)	ID DTT	Lithology
		Claim	Number:	
Start Date: October 16, 2015		4283669		End Date: October 17, 2015
				TACONITE: Greenish grey, thin to
				medium bedded, fine silty, brown
WP 242:				haematitic weathering and fracture
5347382N/0711324E/480m	1192212	20		filling, 20% magnetite
	1192210			
	plus			
	1192211			
	DUP	18		Same as above
				TACONITE: Dark grey to brownish grey,
				fine grained, thin to medium bedded,
	1192209	16	1192213	20% magnetite

119220814Same as above119220712Same as 119205, more shingly119220712Same as 119205, more shingly119220510TACONITE: Dark grey to greenish grey, shingly to massive, more green minerals, some jasper, hematite along bedding planes and fractures, 15% magnetiteTACONITE: Dark grey to brownish, fine grained, thin bedded to massive, hematite weathering, voids are filled with hematite, magnetite concretion	Coordinates	Sample ID XRF	Length (m)	Sample ID DTT	Lithology
119220814Same as above119220712Same as 119205, more shingly119220712Same as 119205, more shingly119220510TACONITE: Dark grey to greenish grey, shingly to massive, more green minerals, some jasper, hematite along bedding planes and fractures, 15% magnetite119220510 <td< td=""><td></td><td></td><td></td><td></td><td></td></td<>					
119220712Same as 119205, more shinglyTACONITE: Dark grey to greenish grey, shingly to massive, more green minerals, some jasper, hematite along bedding planes and fractures, 15% magnetite119220510TACONITE: Dark grey to brownish, fine grained, thin bedded to massive, hematite weathering, voids are filled with hematite, magnetite concretion		1192208	14		Same as above
TACONITE: Dark grey to greenish grey, shingly to massive, more green minerals, some jasper, hematite along bedding planes and fractures, 15% magnetite119220510TACONITE: Dark grey to brownish, fine grained, thin bedded to massive, hematite weathering, voids are filled with hematite, magnetite concretion		1192207	12		Same as 119205, more shingly
shingly to massive, more green minerals, some jasper, hematite along bedding planes and fractures, 15% magnetiteTACONITE: Dark grey to brownish, fine grained, thin bedded to massive, hematite weathering, voids are filled with hematite, magnetite concretion					TACONITE: Dark grey to greenish grey,
some jasper, hematite along bedding planes and fractures, 15% magnetite119220510TACONITE: Dark grey to brownish, fine grained, thin bedded to massive, hematite weathering, voids are filled with hematite, magnetite concretion					shingly to massive, more green minerals,
119220510planes and fractures, 15% magnetiteTACONITE: Dark grey to brownish, fine grained, thin bedded to massive, hematite weathering, voids are filled with hematite, magnetite concretion					some jasper, hematite along bedding
TACONITE: Dark grey to brownish, fine grained, thin bedded to massive, hematite weathering, voids are filled with hematite, magnetite concretion		1192205	10		planes and fractures, 15% magnetite
grained, thin bedded to massive, hematite weathering, voids are filled with hematite, magnetite concretion					TACONITE: Dark grey to brownish, fine
hematite weathering, voids are filled with hematite, magnetite concretion					grained, thin bedded to massive,
with hematite, magnetite concretion					hematite weathering, voids are filled
					with hematite, magnetite concretion
1192204 8 along bedding planes, 20% magnetite		1192204	8		along bedding planes, 20% magnetite
WP241:	WP241:				
5347368N/0711326E/488m 1192203 6 Same as above	5347368N/0711326E/488m	1192203	6		Same as above
WP240.	W/P240.				
53/7369N/0711329E//68m	53/7369N/0711329E//68m				
offset at A m 1192202 A Same as above	offset at 1 m	1102202	л		Same as above
TACONITE: Dark grow to brown thin		1152202	4		TACONITE: Dark grow to brown thin
hedded benatite along hedding and					hadded bematite along bedding and
WP 230:	W/D 220.				fractures giving rock brown colour, some
E247264N/0711220E/489m 1102201 2 1102206 roddich iscner colintery 200 magnetite	E247264N1/0711220E/400m	1102201	2	1102206	roddich issper splintery 20% magnetite



Photo 9 Photo 9-10: Trench TR 15-04



Photo 10

Trench TR 15-05:

This trench is located across the road to the north from trench TR 15-03, and represents lower part of the same taconite outcrop. The lower contact with Archean basement granite was also uncovered through stripping. A total of 14 saw cut channel samples were collected where each representing one-meter width of outcrop. Three composite samples, each covering 4 or 5 m width were also collected for Davis Tube Testing. One duplicate sample was taken as part of field QA/QC program. Trench log is presented in Table xx. General lithology of the trench area comprised of greenish grey to dark grey taconite, massive to shingly due to micro fracturing, magnetite and hematite occur as fracture filling, coating and disseminated in rock. This part of taconite appears to be good in terms of overall iron grade and its liberation due to coarser nature of host rock.

Coordinates	Sample ID XRF	Length (m)	Sample ID DTT	Lithology
Start Date: October				End Date October 17, 2015, Extended on October
16, 2015	Claim Numbe	r: 425211	.6	17, 2015
WP 247: 5347738 /0710229/ 481m	1192230	14		TACONITE: Greenish grey to brownish, some green mineral, jasper specks and patches, shingly due to micro fracturing, internal microfolding, 20% iron.
	1192229	13		TACONITE: Greenish grey to brownish, reddish jasper specks and patches, shingly due to micro fracturing, internal microfolding, 20% iron.
	1192228	12		TACONITE: Greenish grey to brownish grey, internal microfolding of green minerals, shingly due to micro fracturing, 20% iron.
	1192227	11	1192231	Same as above
	1192224 plus 1192225 DUP	10		TACONITE: Brownish grey to greenish grey, fine siliceous, hematite staining and fracture filling, some jasper, 0.5 cm quartz vein, 20% iron.
	1192223	9		TACONITE: Brown grey to greenish grey, fine to medium grained, more greenalite mineral, voids and fractures filled with brown hematite, internal microfolding, 20% magnetite
	1192222	8	1192226	TACONITE: Brownish grey to greenish grey, shingly due to micro fracturing, chert nodules, hematite staining and fracture filling, some greenalite, 20% iron.

Table 12: Trench TR 15-05 Log

	Sample ID	Length	Sample						
Coordinates	XRF	(m)	ID DTT	Lithology					
	1192221	7		TACONITE: Dark grey to brownish, hematite staining, shingly, thin to medium bedded, less green minerals, 30% iron.					
	1192220	6		TACONITE: Greenish grey to brown, medium grained to fine grained, hematite staining, fractures are aligned NE and NW, 30% iron.					
	1192218	5		TACONITE: Brownish grey to greenish grey, brown weathering, more argillaceous, fine grained, shingly, 20% iron.					
	1192217	4		shingly, 20% iron. TACONITE: Greenish grey to brown, hematite specks and fracture fillings, concentric ring like structures, some chert and siliceous matter, shingly, 30% iron.					
	1192216	3		TACONITE: Brownish grey, more jasper and hematite, some green minerals, fine, massive to shingly, 30% iron.					
	1192215	2		TACONITE: Greenish grey to brownish grey, fine siliceous, jasper patches, massive, haematitic veins and fracture filling, some green minerals, 30% iron.					
WP 243:	1192214	1	1192219	TACONITE: Greenish grey to brownish, fine siliceous, brown hematite as patches and fracture filling, foliation cut by faulting and secondary magnetite filling, massive, lower contact with granite, 30% magnetite hematite nodules and fracture fillings, 15% magnetite					



Photo 11: Excavator used for stripping



Photo 12: Taconite contact with granite



Figure 10: Location of Trenches

8.0 EXPLORATION RESULTS

Results of eight grab rock samples, xxx channel samples for XRF and xxx channel samples for Davis Tube Testing are discussed in the following sections.

8.1 Surface Samples Results

Surface samples assay results indicate total iron is in the range of 12.29% to 41.03% Fe₂O₃ (Table 13). Samples 1192091 and 1192092 were collected from an outcrop of 50 m x 75 m on a flat area with mostly siliceous cherty iron formation having total iron 26 to 29%, silica 63 to 69%, and low values of aluminum and magnesium. On the other hand, samples 1192093 and 1192094 were taken from an outcrop where green minerals were dominant and visual iron content was low. Assay results of these samples show higher aluminum values (13-14% Al2O3), low total iron (12-15% Fe2O3), moderate silica values (47 to 54% SiO2), and higher values of MgO and K2O. Samples 1192095 to 1192097 have lithology and results which are typical of taconite average composition. Whereas sample 1192098 which was collected from a reddish jasper outcrop, hard siliceous, and highly magnetic. Daily prospecting and mapping activity log is presented in Appendix D.

8.2 Channel Sampling Results

<u>Trench TR 15-01</u>

The results of samples from this channel indicate a relative consistent values of iron (29 to 36% Fe2O3), silica (52 to 57% SiO2) and other oxides, except for calcium oxide which is higher sample 1192099 (3.61%). Loss on ignition (LOI) is in the range of 6 to 10% which is relatively on higher side (Table 14). Davis Tube Testing (DTT) results of one sample from this channel indicate very low magnetic fraction (0.02%) which can be either presence of more hematite or the grinding limits of the sample preparation in the laboratories (Table 19).

<u>Trench TR 15-02</u>

As this trench is approximately 400 m in the southwestern extension of the same outcrop as exposed in trench TR 15-01 and the assay results show similarity in results. Total iron is in the range of 34.94 to 36.55% Fe2O3, silica 52.67 to 53.71% and LOI 8.86 to 9.39% (Table 15). DTT results also indicate 0.02% magnetics (Table 20).

Trench TR 15-03

This part of the Gunflint Iron Formation represents the best section in terms of iron and silica contents, low LOI, and higher magnetic fraction. The lower five meters have iron in the range of 32.73 to 42.41% Fe2O3, silica 52.15 to 64.22% SiO2, and LOI 1.49 to 3.63% (Table 16). DTT results for corresponding composite sample for this five-meter interval

show 2.57% magnetics. The next five meters have iron 26.08 to 70.66% Fe2O3, silica 24.42 to 62.74% SiO2, and LOI 3.55 to 5.87% (Table 21). The composite sample for DTT in this five-meter interval has magnetic content 10.26%. The next five-meter interval has a wider range of iron (5.52 to 47.27% Fe2O3) and silica (51.97 to 93.63%), however, the composite sample for DTT in this five-meter interval has magnetic content 5.36% indicating more magnetic content compared to average iron content of this interval. The next two-meter interval is low in iron values (11.19 and 14.04% Fe2O3) and high silica (84.27 and 86.74%) with 1.32% magnetics. The top five-meter intersection also has a wide range of iron (7.59% to 41.92% Fe2O3) and silica (53.01 to 90.71%) with 1.01% magnetics in DTT.

Trench TR 15-04 (excluded from assessment credit)

This trench represents a taconite outcrop with uniform lithology, iron and silica content and variable LOI. Five samples from the lower ten meters have iron content ranging 26.6 to 48.49% Fe2O3, silica 29.42 to 68.67%, LOI 3.68 to 11.5%, and DTT of composite sample from this 10m interval has 8.49% magnetics. Five samples from the upper ten meters have more consistent assay results with iron content in the range of 30.53 to 36.27% (Fe2O3), silica 53.02 to 63.67% (SiO2), LOI 3.58 to 7.25%, and DTT for 10m composite have 3.89% magnetics (Table 17 and 22).

Trench TR 15-05

This trench represents results of the lowest part of the Gunflint Iron Formation which is in contact with Archean basement granite. Generally, this section has lower iron content, higher silica, moderate LOI, and lower magnetics in DTT (Tables 18 and 23). The lowest five-meter part has iron in the range of 13.94 to 41.52% (Fe2O3), silica 51.94 to 83.02% (SiO2), LOI 1.75 to 4.09%, and 3.27% magnetics in composite sample DTT. The next 5 m section has 14.37 to 23.3% iron, 68.76 to 80.45% silica, 3.03 to 4.86% LOI, and 0.47% magnetics in composite sample DTT. The upper four-meter section has 21.53 to 27.54% iron, 66.58 to 73.28% silica, 3.65 to 4.60% LOI, and 2.15% magnetics in composite sample DTT.

Table 13: Grab	Samples Ass	ay Results - XRF
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Analyte Symbol	SiO2	TiO2	AI203	Fe2O3(T)	MnO	MgΟ	CaO	Na2O	к20	P205	Cr2O3	101	V205	Total
Unit Symbol	%	%	<u> </u>	%	%	%	%	%	%	%	%	<u> </u>	%	%
Detection														
Limit	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01		0.003	0.01
Analysis	FUS-	FUS-	FUS-		FUS-	FUS-	FUS-	FUS-						
Method	XRF	XRF	XRF	FUS-XRF	XRF	XRF	XRF	XRF						
1192091	67.79	0.01	0.05	26.34	0.2	0.23	0.86	0.02	0.01	0.01	< 0.01	3.91	< 0.003	99.42
1192092	63.63	0.01	0.02	29.38	0.36	0.27	0.63	0.04	0.01	0.02	< 0.01	4.88	< 0.003	99.23
1192093	47.61	1.63	14.43	15.56	0.18	5.89	0.77	0.08	6.61	0.2	< 0.01	6.73	0.058	99.75
1192094	54.47	1.66	13.13	12.29	0.11	4.37	1.11	0.11	7.18	0.2	< 0.01	5	0.048	99.69
1192095	68.22	0.03	0.24	27.35	0.09	0.27	0.16	0.02	0.04	0.02	< 0.01	3.54	< 0.003	99.98
1192096	65.11	0.01	0.06	27.64	0.18	0.42	1.08	0.03	0.02	0.01	< 0.01	4.7	< 0.003	99.25
1192097	75.45	0.03	0.42	22.33	0.06	0.3	0.13	0.02	0.15	0.04	< 0.01	1.33	< 0.003	100.3
1192098	50.53	0.13	2.19	41.03	0.06	1.35	0.96	0.03	0.13	0.04	< 0.01	3.22	< 0.003	99.68

Table 14: Trench TR 15-01 Assay Results - XRF

Analyte																
Symbol			SiO2	TiO2	Al2O3	Fe2O3(T)	MnO	MgO	CaO	Na2O	К2О	P2O5	Cr2O3	LOI	V2O5	Total
Unit Symbol			%	%	%	%	%	%	%	%	%	%	%	%	%	%
Detection																
Limit			0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01		0.003	0.01
Analysis	Length	Sample	FUS-	FUS-	FUS-		FUS-	FUS-	FUS-	FUS-						
Method	(m)	ID DTT	XRF	XRF	XRF	FUS-XRF	XRF	XRF	XRF	XRF						
1192061	3		52.62	0.01	0.25	36.48	0.2	0.71	0.1	0.08	0.03	0.03	< 0.01	9.01	< 0.003	99.53
1192062	2.25		57.62	0.02	0.26	33.14	0.12	1.02	0.79	0.04	0.02	0.03	< 0.01	6.51	< 0.003	99.56
1192063	1.5		56.3	0.01	0.23	34.49	0.14	0.92	0.59	0.04	0.03	0.03	< 0.01	6.7	< 0.003	99.48
1192099	0.75	1192064	53.6	0.02	0.32	29.42	0.33	1.7	3.61	0.03	0.04	0.03	< 0.01	10.51	< 0.003	99.59

Table 15: Trench TR 15-02 Assay Results - XRF

Analyte																
Symbol			SiO2	TiO2	AI2O3	Fe2O3(T)	MnO	MgO	CaO	Na2O	К2О	P2O5	Cr2O3	LOI	V2O5	Total
Unit Symbol			%	%	%	%	%	%	%	%	%	%	%	%	%	%
Detection																
Limit			0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01		0.003	0.01
Analysis	Length	Sample	FUS-	FUS-	FUS-		FUS-	FUS-	FUS-	FUS-						
Method	(m)	ID DTT	XRF	XRF	XRF	FUS-XRF	XRF	XRF	XRF	XRF						
1192065	2		53.71	0.02	0.3	34.94	0.15	0.54	0.12	0.05	0.02	0.03	< 0.01	9.39	< 0.003	99.27
1192066	1	1192067	52.67	0.02	0.25	36.55	0.19	0.81	0.18	0.04	0.02	0.03	< 0.01	8.86	< 0.003	99.62

Table 16: Trench TR 15-03 Assay Results - XRF

Analyte																
Symbol			SiO2	TiO2	Al2O3	Fe2O3(T)	MnO	MgO	CaO	Na2O	К2О	P2O5	Cr2O3	LOI	V2O5	Total
Unit Symbol			%	%	%	%	%	%	%	%	%	%	%	%	%	%
Detection																
Limit			0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01		0.003	0.01
Analysis	Length	Sample						FUS-			FUS-		FUS-			
Method	(m)	ID DTT	FUS-XRF	FUS-XRF	FUS-XRF	FUS-XRF	FUS-XRF	XRF	FUS-XRF	FUS-XRF	XRF	FUS-XRF	XRF	FUS-XRF	FUS-XRF	FUS-XRF
1192235	21		53.01	0.02	0.3	41.92	0.3	0.12	0.2	0.04	0.02	0.06	< 0.01	3.76	< 0.003	99.74
1192234	20		62.76	0.02	0.43	31.95	0.2	0.13	0.81	0.04	0.02	0.04	< 0.01	3.24	< 0.003	99.64
1192233	19		81.77	0.02	0.64	11.53	0.16	0.16	2.07	0.03	0.02	0.03	< 0.01	3.17	< 0.003	99.6
1192232	18	1192237	90.71	0.01	0.01	7.59	0.13	0.05	0.04	0.03	0.02	0.02	0.01	0.91	0.003	99.53
1192089	17		86.74	0.02	0.18	11.19	0.12	0.09	0.05	0.03	0.03	0.03	< 0.01	1.1	< 0.003	99.56
1192088	16	1192090	84.27	0.01	0.09	14.04	0.19	0.05	0.04	0.04	0.01	0.02	< 0.01	0.92	< 0.003	99.67
1192086	15		51.97	0.01	0.13	47.27	0.2	0.05	0.04	0.03	0.01	0.02	< 0.01	0.22	< 0.003	99.97
1192085	14		92.88	0.01	0.17	6.62	0.12	0.04	0.06	0.03	0.02	0.01	< 0.01	0.51	< 0.003	100.5
1192084	13		93.63	0.01	0.32	5.52	0.06	0.09	0.06	0.04	0.03	0.01	< 0.01	0.51	< 0.003	100.3
1192083	12		91.18	0.01	0.59	6.8	0.14	0.17	0.11	0.04	0.02	0.01	< 0.01	0.76	< 0.003	99.84
1192081	11	1192087	75.64	0.02	0.29	20.29	0.46	0.09	1.28	0.06	0.03	0.02	< 0.01	1.98	< 0.003	100.2
1192079	10		62.74	0.03	0.26	26.08	0.72	0.22	3.84	0.05	0.04	0.04	< 0.01	5.87	< 0.003	99.89
1192078	9		60.09	0.02	0.13	30.08	0.67	0.14	3.19	0.03	0.02	0.03	< 0.01	5.26	< 0.003	99.65
1192077	8		39.94	0.03	0.28	53.77	0.54	0.24	0.11	0.04	0.04	0.05	< 0.01	4.13	< 0.003	99.17
1192076	7		40.73	0.03	0.26	52.25	0.7	0.18	0.95	0.03	0.02	0.06	< 0.01	4.23	< 0.003	99.43
1192075	6	1192080	24.42	0.03	0.25	70.66	0.59	0.22	0.12	0.03	0.01	0.04	< 0.01	3.55	< 0.003	99.94
1192073	5		59.12	0.02	0.17	37.42	0.32	0.12	0.15	0.04	0.02	0.03	0.01	2.04	< 0.003	99.44
1192072	4	1192074	61.88	0.01	0.28	35.51	0.18	0.08	0.42	0.04	0.02	0.02	< 0.01	1.49	< 0.003	99.93

Analyte																
Symbol			SiO2	TiO2	Al2O3	Fe2O3(T)	MnO	MgO	CaO	Na2O	К2О	P2O5	Cr2O3	LOI	V2O5	Total
1192070	3		52.15	0.02	0.36	42.41	0.33	0.16	0.11	0.03	0.02	0.04	< 0.01	3.63	< 0.003	99.25
1192069	2		62.94	0.01	0.21	32.74	0.3	0.15	0.09	0.03	0.02	0.03	< 0.01	2.56	< 0.003	99.08
1192068	1		64.22	0.01	0.17	32.73	0.26	0.13	0.07	0.02	0.02	0.02	< 0.01	1.96	< 0.003	99.61
Table 17: TR 15-04 Assav Results - XRF																

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Analyte																
Symbol			SiO2	TiO2	Al2O3	Fe2O3(T)	MnO	MgO	CaO	Na2O	К2О	P2O5	Cr2O3	LOI	V2O5	Total
Unit Symbol			%	%	%	%	%	%	%	%	%	%	%	%	%	%
Detection																
Limit			0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01		0.003	0.01
Analysis	Length	Sample	FUS-	FUS-	FUS-		FUS-	FUS-	FUS-	FUS-						
Method	(m)	ID DTT	XRF	XRF	XRF	FUS-XRF	XRF	XRF	XRF	XRF						
1192212	20		63.67	0.01	0.04	30.53	0.09	0.42	0.79	0.03	0.01	0.02	< 0.01	3.58	< 0.003	99.2
1192210	18		60.42	0.01	0.06	31.01	0.14	0.5	2.51	0.03	0.01	0.01	< 0.01	4.9	< 0.003	99.6
1192209	16		53.02	0.01	0.09	33.65	0.2	0.43	5.19	0.04	0.01	0.02	< 0.01	7.25	< 0.003	99.9
1192208	14	-	57.53	0.01	0.05	34.09	0.12	0.42	2.52	0.03	0.01	0.01	< 0.01	4.79	< 0.003	99.58
1192207	12	1192213	56.92	0.01	0.01	36.27	0.21	0.43	0.92	0.02	0.02	0.01	< 0.01	4.69	< 0.003	99.51
1192205	10		58.36	0.01	0.04	36	0.15	0.38	0.49	0.04	0.02	0.01	< 0.01	4.32	< 0.003	99.82
1192204	8		55.94	0.01	0.07	32.1	0.21	0.37	4.82	0.03	0.01	0.01	< 0.01	6.58	< 0.003	100.1
1192203	6		68.67	0.01	0.05	26.6	0.1	0.26	0.18	0.02	0.02	0.01	< 0.01	3.68	< 0.003	99.61
1192202	4		29.42	0.01	0.18	48.49	0.34	0.95	9.35	0.04	0.01	0.01	< 0.01	11.5	< 0.003	100.3
1192201	2	1192206	45.59	0.02	0.17	38.16	0.18	0.33	7.52	0.06	0.03	0.02	< 0.01	8.25	< 0.003	100.3

Table 18: TR 15-05 Assay Results - XRF

Analyte																
Symbol			SiO2	TiO2	Al2O3	Fe2O3(T)	MnO	MgO	CaO	Na2O	К2О	P2O5	Cr2O3	LOI	V2O5	Total
Unit Symbol			%	%	%	%	%	%	%	%	%	%	%	%	%	%
Detection																
Limit			0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01		0.003	0.01
Analysis	Length	Sample	FUS-	FUS-	FUS-		FUS-	FUS-	FUS-	FUS-						
Method	(m)	ID DTT	XRF	XRF	XRF	FUS-XRF	XRF	XRF	XRF	XRF						
1192230	14		73.28	0.01	0.11	21.53	0.6	0.22	0.08	0.03	0.02	0.01	< 0.01	3.65	< 0.003	99.54
1192229	13		68.7	0.01	0.11	26.03	0.46	0.19	0.1	0.02	0.01	0.02	< 0.01	3.72	< 0.003	99.37
1192228	12		66.58	0.01	0.09	27.54	0.56	0.25	0.08	0.03	0.02	0.02	< 0.01	4.03	< 0.003	99.2
1192227	11	1192231	66.7	0.01	0.03	26.73	0.69	0.28	0.06	0.03	0.01	0.02	< 0.01	4.6	< 0.003	99.16
1192224	10		73.57	0.01	0.07	20.62	0.73	0.23	0.11	0.04	0.01	0.01	< 0.01	3.82	< 0.003	99.22
1192223	9		80.45	0.01	0.04	14.37	1.09	0.22	0.08	0.03	0.01	0.01	< 0.01	3.32	< 0.003	99.64
1192222	8		74.97	0.01	0.09	19.52	0.9	0.23	0.1	0.03	0.02	0.02	< 0.01	3.6	< 0.003	99.49
1192221	7		68.76	0.01	0.14	23.3	1.58	0.32	0.14	0.03	0.02	0.01	< 0.01	4.86	< 0.003	99.17
1192220	6	1192226	75.45	0.01	0.09	19.67	0.8	0.25	0.25	0.03	0.01	0.01	< 0.01	3.03	< 0.003	99.61
1192218	5		78.61	0.01	0.2	17.06	0.7	0.2	0.11	0.04	0.02	0.01	< 0.01	2.73	< 0.003	99.69
1192217	4		69.29	0.01	0.16	23.67	1.74	0.24	0.08	0.02	0.02	0.02	< 0.01	4.09	< 0.003	99.35
1192216	3		51.94	0.01	0.17	41.52	2.58	0.23	0.11	0.03	0.04	0.02	< 0.01	2.93	< 0.003	99.59
1192215	2		76.68	0.01	0.17	18.98	1	0.25	0.17	0.03	0.02	0.01	0.01	2.08	< 0.003	99.43
1192214	1	1192219	83.02	0.01	0.17	13.94	0.51	0.09	0.1	0.03	0.03	0.01	< 0.01	1.75	< 0.003	99.66

			Non-		Calculated	
Sample	Start	Magnetic	Mag	Weight %	Start	% Loss
ID	Mass	Fraction	Fraction	Magnetics	Mass	Mass
	g	g	g	%	g	%
1192064	30	0.006	29.572	0.02	29.578	1.44

Table 19:TR 15-01: Davis Tube Test Results on Composite Sample

Table 20: TR 15-02: Davis Tube Test Results on Composite Sample

			Non-		Calculated	
Sample	Start	Magnetic	Mag	Weight %	Start	% Loss
ID	Mass	Fraction	Fraction	Magnetics	Mass	Mass
	g	g	bo	%	g	%
1192067	30	0.007	29.536	0.02	29.543	1.55

Table 21: TR 15-03: Davis Tube Test Results on Composite Sample

			Non-		Calculated	
	Start	Magnetic	Mag	Weight %	Start	% Loss
Sample ID	Mass	Fraction	Fraction	Magnetics	Mass	Mass
	g	g	g	%	g	%
1192074	30	0.771	28.886	2.57	29.657	1.15
1192080	30	3.079	26.103	10.26	29.182	2.74
1192087	30	1.609	28.139	5.36	29.748	0.85
1192090	30	0.398	29.329	1.32	29.726	0.94
1192237	30	0.304	29.215	1.01	29.52	1.63

Table 22:TR 15-04: Davis Tube Test Results on Composite Sample

	Start	Magnetic	Weight %	Calculated Start	% Loss
Sample ID	Mass	Fraction	Magnetics	Mass	Mass
	g	g	%	g	%
1192206	30	1.168	3.89	29.802	0.67
1192213	30	2.548	8.49	29.502	1.68

Table 23: TR 15-05: Davis Tube Test Results on Composite Sample

			Non-		Calculated	
	Start	Magnetic	Mag	Weight %	Start	% Loss
Sample ID	Mass	Fraction	Fraction	Magnetics	Mass	Mass
	g	g	g	%	g	%
1192219	30	0.98	28.549	3.27	29.529	1.58
1192226	30	0.141	29.441	0.47	29.583	1.4
1192231	30.3	0.652	29.403	2.15	30.055	0.94

9.0 SAMPLE PREPARATION, AND QA/QC

All the rock samples collected for the present study work were prepared and analyzed by Activation laboratories (Actlabs) in Thunder Bay and Toronto. Actlabs is ISO 17025 accredited and/or certified to 9001: 2008, and is independent of ABZ. All rock samples were crushed to -10 mesh followed by pulverizing a 250-gram split to -150 mesh (95%). Each sample was analyzed for Iron Ore Analysis or XRF, and several composite samples were tested for Davis Tube Magnetic Separation at -200 mesh fraction. All of the samples are recorded in Excel spreadsheets.

Activation Laboratories has its own quality assurance and quality control program on sample preparation, analysis and security. Five field duplicate samples were collected from channel sampling work as part of field QA/QC program. The results of sample and its field duplicate with standard deviation and percent difference are shown in Table 24.

For the present study, field and laboratories QA/QC procedures are considered adequate. Historical grades and assay data used for the present study are taken from MNDM assessment reports and OGS geological reports which are deemed reliable. Historical geological descriptions taken from the above mentioned sources were prepared and approved by the professional geologists or engineers and are deemed reliable. No officer, director, employee or associate of ABZ was involved in sample preparation and analysis.

Jean Iron Property

Table 24: Results of Field Duplicate Samples

Analyte Symbol		SiO2	TiO2	Al2O3	Fe2O3(T)	MnO	MgO	CaO	Na2O	К2О	P2O5	Cr2O3	LOI	V2O5	Total
Unit Symbol		%	%	%	%	%	%	%	%	%	%	%	%	%	%
Detection Limit		0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01		0.003	0.01
		FUS-	FUS-	FUS-		FUS-	FUS-	FUS-	FUS-	FUS-	FUS-	FUS-	FUS-	FUS-	FUS-
Analysis Method	Туре	XRF	XRF	XRF	FUS-XRF	XRF	XRF	XRF	XRF	XRF	XRF	XRF	XRF	XRF	XRF
							TR 15-03								
1192070	Sample	52.15	0.02	0.36	42.41	0.33	0.16	0.11	0.03	0.02	0.04	< 0.01	3.63	< 0.003	99.25
1192071	Duplicate	43.44	0.03	0.28	51.37	0.33	0.15	0.11	0.03	0.02	0.03	< 0.01	3.62	< 0.003	99.41
Standard															1
Deviation		6.16	0.01	0.06	6.34	0.00	0.01	0.00	0.00	0.00	0.01	0.00	0.01	0.00	0.11
Difference %		16.70	-50.00	22.22	-21.13	0.00	6.25	0.00	0.00	0.00	25.00	0.00	0.28	0.00	-0.16
															ļ
1192081	Sample	75.64	0.02	0.29	20.29	0.46	0.09	1.28	0.06	0.03	0.02	< 0.01	1.98	< 0.003	100.2
1192082	Duplicate	78.12	0.02	0.29	18.5	0.42	0.12	0.65	0.05	0.03	0.02	< 0.01	1.45	< 0.003	99.67
Standard															l
Deviation		1.75	0.00	0.00	1.27	0.03	0.02	0.45	0.01	0.00	0.00	0.00	0.37	0.00	0.37
Difference %		-3.28	0.00	0.00	8.82	8.70	-33.33	49.22	16.67	0.00	0.00	0.00	26.77	0.00	0.53
1192235	Sample	53.01	0.02	0.3	41.92	0.3	0.12	0.2	0.04	0.02	0.06	< 0.01	3.76	< 0.003	99.74
1192236	Duplicate	58.68	0.01	0.29	37.52	0.24	0.11	0.21	0.03	0.02	0.05	< 0.01	2.8	< 0.003	99.96
Standard															l
Deviation		4.01	0.01	0.01	3.11	0.04	0.01	0.01	0.01	0.00	0.01	0.00	0.68	0.00	0.16
Difference %		-10.70	50.00	3.33	10.50	20.00	8.33	-5.00	25.00	0.00	16.67	0.00	25.53	0.00	-0.22
	1				1		TR 15-04	1							
1192210	Sample	60.42	0.01	0.06	31.01	0.14	0.5	2.51	0.03	0.01	0.01	< 0.01	4.9	< 0.003	99.6
1192211	Duplicate	61.76	0.01	0.08	30.58	0.13	0.47	2.07	0.02	0.01	0.01	< 0.01	4.49	< 0.003	99.63
Standard															
Deviation		0.95	0.00	0.01	0.30	0.01	0.02	0.31	0.01	0.00	0.00	0.00	0.29	0.00	0.02
Difference %		-2.22	0.00	-33.33	1.39	7.14	6.00	17.53	33.33	0.00	0.00	0.00	8.37	0.00	-0.03
TR 15-05															
1192224	Sample	73.57	0.01	0.07	20.62	0.73	0.23	0.11	0.04	0.01	0.01	< 0.01	3.82	< 0.003	99.22
1192225	Duplicate	68.59	0.01	0.06	24.87	0.98	0.22	0.15	0.03	0.02	0.02	< 0.01	4.66	< 0.003	99.59
Difference %		6.77	0.00	14.29	-20.61	-34.25	4.35	-36.36	25.00	-100.00	-100.00	0.00	-21.99	0.00	-0.37
Standard															
Deviation		3.52	0.00	0.01	3.01	0.18	0.01	0.03	0.01	0.01	0.01	0.00	0.59	0.00	0.26

10.0 DEPOSIT TYPES

10.1 Deposit Types

There are four major types of iron deposits around the world being worked currently, depending on the mineralogy and geology of the deposits. These are magnetite, titan magnetite, massive hematite and pissolitic ironstone deposits. Banded Iron Formation (BIF) also known as taconite in North America are metamorphosed sedimentary rocks composed predominantly of thinly bedded iron minerals and silica (as quartz). Jean Property is mainly underlain by Gunflint Iron Formation, a BIF which is mainly comprised of taconite rocks. The formation is similar to the taconite deposits of the Mesabi Iron Range in northern Minnesota, where iron mining occurred for over 100 years and continues to expand into the future.

The key economic parameters for magnetite ore being economic in BIF are the crystallinity of the magnetite, the grade of the iron in the host rock, and the contaminant elements which exist within the magnetite concentrate. Non-economic rock types interbedded with the iron formation must be sufficiently segregated from the economic iron-bearing areas. At the Jean Property, however, hematite appears to be the dominant iron species rather than magnetite. The thin magnetite bands are mixed with chert, limestone and shale.

The typical grade of iron (Fe) at which a magnetite-bearing banded iron formation becomes economic is roughly 25% Fe, which can generally yield a 33% to 40% recovery of magnetite by weight, to produce a concentrate grading in excess of 64% Fe by weight. The typical magnetite iron ore concentrate has less than 0.1% phosphorus, 3–7% silica and less than 3% aluminum. Generally, most magnetite BIF deposits must be ground to between 32 and 45 micrometers in order to provide a low-silica magnetite concentrate. Magnetite concentrate grades are generally in excess of 63% Fe by weight and usually are low phosphorus, low aluminum, low titanium and low silica and demand a premium price (USGS 2010).

10.2 Deposit Models

Stratigraphically, to the southwest, the Gunflint Iron formation of Jean Property strikes into Minnesota where it is known as the Biwabik formation. In Canada the formation is relatively undeformed, but in Minnesota it was folded during the Penokean Orogeny (1.85 Ga). In this deformed part of the belt the cherty iron formation was sporadically oxidized and leached creating zones of enrichment containing between 50% and 70% iron. It is a similar setting and age to the iron deposits in the Labrador trough. These high-grade ore deposits in Minnesota were known as the Iron Range, the largest of which was the Mesabi Iron Range. Since their discovery in 1890, they have produced in excess of 3.6 billion tonnes of iron ore, 2.3 billion of which was from the high grade lenses. It is the largest iron

resource in the United States and still produces significant portion of the nation's iron output. Shortly after the Second World War the high grade resource was largely exhausted. There was still, however, a huge resource of what was called "taconite" ore. Taconite was a term given to the unoxidized (unweathered) cherty iron formation (as occurs in the Gunflint formation on Jean Property) grading in excess of 25% iron. This taconite ore became economic with the development of a beneficiation process. The ore is ground, concentrated with magnetic separators, mixed with clay and dolomite, and roasted into pellets. The final grade of these pellets is typically 60-65% iron.

The taconite ore in the Biwabik formation in Minnesota appears texturally to be of finegrained cherty fragmental or sandstone. Although it appears to be clastic sediment, it is felt that 95% of this material was deposited as a chemical precipitate. Iron was probably precipitated as an "oxy-hydroxyl carbonate gel" with minimal clastic component. The clastic textures observed are probably due to reworking of the precipitate; possibly by wave or current action, or by slumping (turbidity currents). Magnetite distribution appears in some cases to be related to porosity and permeability of the host rocks. Finegrained, silty, and presumably less permeable, horizons are typically barren.

To be of value as concentrating material, the iron-bearing rock must be of appropriate chemical and textural composition and readily available in large quantities. The iron-bearing rocks of the Lower and Upper Taconite members on the jean Property are considered with this in mind. There are widespread exposures of Lower Taconite rocks in the general area north of Mink Mountain and Whitefish River. Thicknesses in the range of 15 m to 70 m have been encountered in drill holes. Furthermore, the material is relatively soft and friable, and is exposed over a large area without capping rock to hinder extraction.

The analyses of Upper Taconite rocks indicate that they contain more iron and less silica than the Lower Taconite rocks, and the magnetite content in proximity to diabase sills is considerably higher.

Exploration Criteria:

Since the average composition of the iron-bearing rock contains too much silica for its use as ore material, good exploration criteria is to search for parts of the iron-bearing rock that have been concentrated by natural processes, or are amenable to commercial beneficiating methods.

There is no direct evidence that natural concentrations of iron have formed within the Jean Property area. However, the iron bearing rocks show oxidation of magnetite to hematite, and there is secondary concentration of iron in micro-fractures and bedding planes. Rocks of the Lower Taconite member appear to have been weathered more than other parts of the formation, particularly in the ridges and mounds north of the Whitefish River. However, close inspection of the outcrops reveals that alteration is restricted to a

rim 2-5 cm thick. The chemical analyses demonstrate that there has been little, if any, removal of silica and other impurities.

Outcrops, trenches and drill core of Upper Jasper rocks apparently give indication of surface alteration, and hold little promise of large scale, natural concentrations. A 30 cm bed of soft hematite ore, assaying 52 percent iron and 3-8 percent silica, was reported to have been encountered at a depth of 250 feet, in the region south of Mink Mountain, by Gunflint Iron Mines Limited, in 1943 (Goodwin 1961).

It is possible that rocks of the Upper Taconite member that formerly overlay the diabase sill underwent oxidation and leaching of impurities before removal. Such iron-enriched material might have been concentrated in low-lying areas, such as Whitefish Lake and vicinity, and thus protected from erosion. However, there is no direct evidence that such a concentration exists.

Concentrations of iron-rich material can also occur along fault planes. Fault zones that might repay investigation lie between Silver Bluff and Divide Ridge, between Silver Bluff and Silver Mountain east of North River where the iron-bearing rocks abut on granite, and southeast of Mink and Sun mountains.

In conclusion, the economic future of the iron-bearing rocks appears to depend upon a process that can produce a commercial concentrate. More detailed experimental investigation might reveal such a process.

11.0 INTERPRETATION AND CONCLUSIONS

The Jean Iron Property consists of 18 mineral claims in 115 units covering 1,840 hectares' land located in Thunder Bay Mining District of Northwestern Ontario, Canada. The Property is located about 65 kilometers to the southwest of Thunder Bay, approximately 2 kilometers north of the Whitefish Lake on Highway 588. It can be accessed via the Trans-Canada Highway 11/17, about 20 km west from the Highway 61 junction to Highway 588 (Stanley access), and then a further 45 km southwest along Highway 588. A network of gravel roads and trails traverse the mineral claims and areas of rock exposures.

AsiaBaseMetals Inc. ("ABZ" or "the Company") (Client Number: 412660) owns 100% of the Mineral Claims. The Company initiated exploration work on the property immediately after acquisition of claims from the previous owners by applying for an exploration work permit in April 2015. An exploration work permit (PR15-412660) was issued effective April 07, 2015 to March 06, 2018 for the Property. The exploration work was started in October 2015 and included prospecting, sampling and mapping of the Gunflint Iron Formation outcrops, stripping and channel sampling. The present

assessment work report summarizes the exploration work and its findings with recommendations regarding a follow up exploration program.

The Property area is underlain by an Archean granitic basement, which is unconformably overlain by gently southerly-dipping sedimentary rocks of the Aphebian (lower Proterozoic) Animikie group. These sediments are capped by a Helikian (1.0 Ga) Keweenawan diabase sill. Unconsolidated rocks are Pleistocene age glacial till debris which forms an extensive mantle over low –lying parts of the area.

Gunflint Iron formation of Animikie Group is part of extensive Lake Superior-type iron formation (LSTIF) ranges developed along the margins of cratons or epicontinental platforms between 2.4 Ga and 1.9 Ga. It is banded iron formation (BIF) mainly comprised of taconite rocks, and is characterized by unusually high iron content, as well as by a variety of textures, of which the granular texture of the taconite rock being most distinctive. The Gunflint formation, approximately 145 m thick, is divided into lower and upper cycles. Each cycle contains a sequence of members, most of which are common to both. The uppermost member, a limestone bed, is unique to the formation and marks the top of the iron-bearing rocks. The key economic parameters for magnetite iron being economic in BIF are the crystallinity of magnetite, the grade of the iron in the host rock, and the contaminant elements which exist within the magnetite concentrate. The typical grade of iron at which a magnetite-bearing banded iron formation becomes economic is roughly 25% Fe, which can generally yield a 33% to 40% recovery of magnetite by weight, to produce a concentrate grading in excess of 64% iron by weight.

The historical exploration data available for the Property area includes geophysical surveys, geological mapping, diamond drilling, bulk surface sampling, and magnetic tube testing of core and surface samples. This work was carried out during the period from 1943 to 1962. The total Fe% obtained through magnetic tube separation and acid roasting with magnetic concentration range from 23.95% to 39.85% for feed, from 38.66% to 54.21% for minus 100-mesh and from 43.42% to 56.77% for minus 200-mesh.

In 2011-12, Great Lakes Resources Ltd. (GLR) re-activated exploration work on the current Property which included surface sampling, bulk sampling, diamond drilling, and assaying samples for iron content, Davis Tube Testing (DTT) and Mineral Liberation Analysis (MLA) test. All eight holes intersected iron bearing Lower Taconite Member, whereas two complete Lower Taconite Member vertical intersections were delineated in holes JN12-03 (56.81m) and JN12-05 (57.75m). The average true thickness is estimated to be 57.06m.

During the current exploration work, a total 74 rock samples were collected, out of which 49 were channel samples for XRF analysis and 12 for Davis Tube Testing from 5 trenches, 8 grab rock surface samples for XRF, and 5 field duplicate samples for XRF as part of field QA/QC program.

Prospecting and mapping work indicated that the majority of the property area, particularly the area underlain by the Gunflint Iron Formation is covered by glacial

overburden with the exception of diabase sill rocks which are more resistant to weathering. Algal chert and jasper containing rocks are found to be more resistant to weathering and exposed at places; whereas, a few new road cuts were also helpful in locating Taconite and shale outcrops. Iron content of shales were observed to be generally low with rusty brown surface weathering due to disseminated hematite along fractures and bedding planes. Jasper and algal cherts are found to be rich in iron and are more magnetic than other units of Gunflint Iron Formation. Taconite unit visually contains 20% to 30% iron. Lower contact with Archean granites is well exposed in the northern part of the property and adjoining areas.

A total of five outcrops were mapped for stripping and channel sampling work on the property. A rubber tire backhoe and an excavator were used for stripping overburden. Trenching and stripping was carried out at four locations (TR 15-01, TR 15-02, TR 15-03, and TR 15-05). Taconite rock outcrop was found exposed at location of trench TR 15-04 due to a new road cut, therefore, a new claim (Number 4283669) was immediately staked to cover this outcrop. Cumulative length of channel sampling for this program is 60 meters.

The results of eight grab rock samples indicate that total iron is in the range of 12.29% to 41.03%. Trench TR 15-01 results show a relative consistent values of iron (29 to 36% Fe2O3), silica (52 to 57% SiO2) and other oxides, except for calcium oxide which is higher sample 1192099 (3.61%). DTT fraction of trench is very low. Trench TR 15-02 is about 400 meters to the southeast of TR 15-01 and have similar results with total iron is in the range of 34.94 to 36.55% Fe2O3, silica 52.67 to 53.71% and LOI 8.86 to 9.39%. DTT results also indicate 0.02% magnetics.

Trench TR 15-03 and TR 15-04 are the best sections in terms of iron content (average Fe_2O_3 29.45% in TR 15-03 and 34.69% in TR 15-04) and magnetic fraction (average 4.1% in TR 15-03 and 6.19% in TR 15-04).

Trench TR 15-05 represents results of the lowest part of the Gunflint Iron Formation which is in contact with Archean basement granite. Generally, this section has average lower iron content (22.46% Fe₂O₃), higher silica (72%), moderate LOI (3.44%), and lower magnetics in DTT (1.96%).

Based on its favorable geological setting indicating surface and subsurface presence of Gunflint Iron formation (GIF), and the results of present study, it is concluded that the Property is a property of merit and possess a good potential for discovery of economic concentration of iron bearing rocks through further exploration and improvement of beneficiation processes. Good road access, availability of exploration and mining services in the vicinity makes it a worthy mineral exploration target.

12.0 RECOMMENDATIONS

In the author's opinion the character of the Jean Property is sufficient to merit the following work program.

Geological Mapping, Trenching, Sampling, and Diamond Drilling

The present trenching work was focussed more on the western part of the property area. A few small outcrops were mapped and sampled which need follow up detailed geological mapping, stripping and channel sampling to assess the potential of eastern claims. The areas around samples 1192091, 1192092, 1192095 would be interesting to undertake stripping and trenching. A 1,000 metres diamond core drilling program should follow-up if the results of trenching work are encouraging.

This work will be of six weeks' duration with a budget of \$212,600 (Table 25).

		Unit	Number	
Item	Unit	Rate (\$)	of Units	Total (\$)
Trenching and channel				
sampling	meters	\$500	50	\$25,000
Geological mapping and				
sampling	day	\$650	10	\$6,500
Prospecting and sampling	day	\$450	15	\$6,750
Diamond drilling	meters	\$1,000	80	\$80,000
Core logging geologist	day	\$550	15	\$8,250
Core cutting and sampling	meters	\$1,000	3	\$3,000
Excavator for trenching and				
drilling	hrs	\$135	40	\$5,400
	lump			
Equipment rentals	sum	\$5,000	1	\$5,000
Transportation air	airfare	\$1,000	2	\$2,000
Transportation ground	day	\$150	50	\$7 <i>,</i> 500
	lump			
Field supplies	sum	\$2,000	1	\$2,000
Meal and board	day	\$200	50	\$10,000
Sample assays and DTT testing	sample	\$120	200	\$24,000
GIS work	hrs	\$60	20	\$1,200
Data compilation	day	\$650	15	\$9,750
Report and filing	day	\$650	15	\$9,750
Project management	day	\$650	10	\$6,500
TOTAL BUDGET ESTIMATE				\$212,600

Table 25: PHASE 1 BUDGET – Ground Geophysical Survey, Drilling, Trenching and Sampling

13.0 REFERENCES

- Aung Myint Thein, 2011; Assessment Report on the Jean Iron Property, Jean Township, Thunder Bay South Mining Division, Ontario, Claims 4252101, 4252102, 4252103, 4252104, 4252105, 4252106, 4252107, 4252108, 4252109, 4252110, 4252111, 4252112, 4252113, 4252114, 4252115, 4252116 and 4252117, October 26, 2011.
- Aung Myint Thein, 2012; Assessment Report on the Jean Iron Property, Jean Township, Thunder Bay South Mining Division, Ontario, Claims 4252101, 4252102, 4252103, 4252104, 4252105, 4252106, 4252107, 4252108, 4252109, 4252110, 4252111, 4252112, 4252113, 4252114, 4252115, 4252116 and 4252117, August 30, 2012.
- 3.0 Flint Rock Mines Limited, 1962; Drill Hole Logs Whitefish Lake Property; Port Arthur Mining Division, May 07, 1962.
- 4.0 G.A. Gross, 2009; Iron Formation in Canada, Genesis and Geochemistry; Geological Survey of Canada Open File 5987.
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- 13.0 Zago Neal, and Gutta Blair, 2012; Whitefish River assessment report, prepared for Lakehead Region Conservation Authority; August 2012.
- 14.0 Websites:

http://www.canadaironinc.com/66901/67301.html

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http://minerals.usgs.gov/minerals/pubs/commodity/iron_ore/mcs-2010-feore.pdf

14.0 CERTIFICATE OF AUTHOR

I, Afzaal Pirzada, P.Geo., as an author of this report entitled, "Assessment Report on the Jean Iron Property, Thunder Bay Mining District, Northwestern Ontario, Canada; Dated December 07, 2015 (Revised January 19, 2016)", do hereby certify that:

- 1. I am a consulting geologist of: GEOMAP EXPLORATION INC. 12430 76thAvenue, Surrey, British Columbia, Canada, V3W 2T5.
- 2. I have M.Sc. degree in Geology from Punjab University, Lahore, Pakistan in 1979.
- 3. This certificate applies to the report entitled "Assessment Report on the Jean Iron Property, Thunder Bay Mining District, Northwestern Ontario, Canada; Dated December 07, 2015 (Revised January 19, 2016)".
- 4. I am registered as a Professional Geologist in British Columbia (License #: 28657) Canada.
- 5. I have been practicing my profession continuously since 1979, and have over twenty years of experience in mineral exploration for uranium, iron, titanium, lithium, rare metals, base metals, coal, PGE, and gold.
- 6. The exploration work was carried out under my supervision. I visited the property from October 05-18, 2015, and I am the Author of the report. I am responsible for all items of this report.
- 7. I have no interest, direct or indirect in the Jean Property, nor do I have any interest in any other properties of ABZ, nor do I own directly or indirectly any of the securities of neither ABZ, nor do I expect to receive any such interest or securities in the future.

Dated: January 19, 2016



Signed and Sealed Afzaal Pirzada, P.Geo.

APPENDIX A

LIST OF PERSONNEL WORKED ON EXPLORATION WORK

List of Personnel / Contractors Worked on the Project

- Afzaal Pirzada, P.Geo., Geologist / Project Manager of Surrey, British Columbia (Geomap Exploration Inc.)
- 2. Alex Pleson Geologist of Nipigon, Ontario (Pleson Geoscience)
- 3. Mike Goodman Prospector / Channel Sampler of Beardmore, Ontario (Pleson Geoscience)
- 4. Phil Houghton Prospector / Channel Sampler, of Beardmore, Ontario (Pleson Geoscience)
- 5. Ben Kuzmich Prospector of Thunder Bay, Ontario (Pleson Geoscience)

APPENDIX B

STATEMENT OF EXPENDITURES
Friend			linit of	No.	Cost Per	
Date	To Date	Work Type	Work	or units	Work (\$)	Actual Cost
05-Oct-15	31-Oct-15	Channel sampling and logging time Afzaal	Day	7	\$650.00	\$4,550.00
05-Oct-15	31-Oct-15	First Nation consultation time Afzaal	Day	1	\$650.00	\$650.00
08-Oct-15	31-Oct-15	Channel sampling and logging time Alex	Day	6	\$550.00	\$3,300.00
08-Oct-15	31-Oct-15	Channel sampling time Mike Goodman	Day	6	\$425.00	\$2,550.00
09-Oct-15	31-Oct-15	Channel sampling time Phil Houghton	Day	6	\$425.00	\$2,550.00
08-Oct-15	31-Oct-15	Accommodation and Meals Afzaal	Day	8	\$150.00	\$1,200.00
08-Oct-15	31-Oct-15	Accommodation and Meals Alex and Crew	Lump sum	1	\$790.00	\$790.00
08-Oct-15	31-Oct-15	Transportation Alex and crew	Lump sum	1	\$450.00	\$450.00
08-Oct-15	31-Oct-15	Rental Truck and Gas Afzaal	Lump sum	1	\$627.50	\$627.50
08-Oct-15	31-Oct-15	Sample assay	Lump sum	1	\$3,135.75	\$3,135.75
08-Oct-15	31-Oct-15	Pump, saw and blades	Lump sum	1	\$2,200.00	\$2,200.00
10-Oct-15	11-Oct-15	Backhoe rental and Mob	Day	1	\$895.00	\$895.00
16-Oct-15	17-Oct-15	Excavator rental and mob	Day	2	\$600.00	\$1,200.00
01-Nov-15	07-Dec-15	Data compilation Afzaal	Day	3	\$650.00	\$1,950.00
01-Nov-15	07-Dec-15	GIS Work	hrs	5	\$60.00	\$300.00
01-Nov-15	07-Dec-15	Assessment report Afzaal	Day	5	\$650.00	\$3,250.00
01-Oct-15	07-Dec-15	Total Cost Stripping, Trenching, and Channel Sampling				\$29 <i>,</i> 598.25

Cost Table: Stripping, Trenching, and Channel Sampling Work

From			Unit of	No. of	Cost Per Unit of	
Date	To Date	Work Type	Work	units	Work (\$)	Actual Cost
		Fieldwork preparation and work scheduling				
01-Oct-15	05-Oct-15	(Afzaal)	Day	1	\$650.00	\$650.00
05-Oct-15	31-Oct-15	Fieldwork time Afzaal	Day	6	\$650.00	\$3,900.00
08-Oct-15	31-Oct-15	Fieldwork time Alex	Day	6	\$550.00	\$3,300.00
08-Oct-15	31-Oct-15	Fieldwork time Ben Kuzmich	Day	6	\$425.00	\$2,550.00
08-Oct-15	31-Oct-15	Fieldwork time Mike Goodman	Day	3	\$425.00	\$1,275.00
08-Oct-15	31-Oct-15	Accommodation and Meals Afzaal	Day	6	\$150.00	\$900.00
08-Oct-15	31-Oct-15	Accommodation and Meals Alex and Crew	Lump sum	1	\$790.00	\$790.00
08-Oct-15	31-Oct-15	Transportation Alex and crew	Lump sum	1	\$450.00	\$450.00
08-Oct-15	31-Oct-15	Rental Truck and Gas Afzaal	Lump sum	1	\$627.50	\$627.50
08-Oct-15	31-Oct-15	Sample assay	Lump sum	1	\$588.25	\$588.25
08-Oct-15	31-Oct-15	Field supplies	Lump sum	1	\$100.00	\$100.00
01-Nov-15	07-Dec-15	Data compilation Afzaal	Day	1	\$650.00	\$650.00
01-Nov-15	07-Dec-15	GIS Work	hrs.	5	\$60.00	\$300.00
01-Nov-15	07-Dec-15	Assessment report Afzaal	Day	4	\$650.00	\$2,600.00
01-Oct-15	07-Dec-15	TOTAL COST PROSPECTING, SAMPLIMG MAPPING				\$18,680.75

Cost Table: Prospecting, Mapping and Sampling

Cost Allocation Table

Claim Number	Claim Due Date	Claim Units	Area (Ha)	Work Required	Work Performed (PRO/MAP/SAMP)	Work Performed (TREN/CHEN/SAMP)	Total Work Performed	Amount of Credit Applied to this Claim (\$)	Amount of Credits Assigned to Other Mining Claims (\$)	Amount of work drwan from other claims	Bank (Amount of credits to be distributed at a future date
					\$18,680.75	\$29,598.25	48,279.00				
<u>4252106</u>	2016-Jan-25	8	128	\$3,200						\$3,200	
<u>4252101</u>	2016-Jan-25	6	96	\$2,400						\$2,400	
<u>4252102</u>	2016-Jan-25	2	32	\$800						\$800	
<u>4252103</u>	2016-Jan-25	1	16	\$400						\$400	
<u>4252104</u>	2016-Jan-25	16	256	\$6,400	\$3,050		3,049.92	\$3,049.92		\$3,350.08	
<u>4252105</u>	2016-Jan-25	8	128	\$3,200	\$1,525		1,524.96	\$1,524.96		\$1,675.04	
<u>4252107</u>	2016-Jan-25	6	96	\$2,400	\$1,144		1,143.72	\$1,143.72		\$1,256.28	
<u>4252108</u>	2016-Jan-25	16	256	\$6,400	\$3,050		3,049.92	\$3,049.92		\$3,350.08	
<u>4252109</u>	2016-Jan-25	2	32	\$800	\$381		381.24	\$381.24		\$418.76	
<u>4252110</u>	2016-Nov-16	16	256	\$6 <i>,</i> 400	\$3,050		3,049.92				\$3,049.92
<u>4252111</u>	2016-Nov-16	4	64	\$1,600	\$762		762.48				\$762.48
<u>4252112</u>	2016-Jan-25	1	16	\$400	\$191		190.62	\$190.62		\$209.38	
<u>4252113</u>	2016-Nov-16	8	128	\$3,200	\$1,525	\$4,440	5,964.70				\$5,964.70
<u>4252114</u>	2016-Nov-16	3	48	\$1,200	\$572		571.86				\$571.86
<u>4252115</u>	2016-Nov-16	3	48	\$1,200	\$572	\$4,440	5,011.60				\$5,011.60
<u>4283669</u>	2017-Nov-12	1	16	\$400	\$0	\$0	0	\$0	\$0		\$0
<u>4252116</u>	2016-Jan-25	2	32	\$800	\$381	\$14,799	15,180.36	\$1,600.00	\$13,000.00		\$580.36
4252117	2016-Jan-25	12	192	\$4,800	\$2,287		2,287.44	\$2,287.44			
TOTAL		98	1568		\$18,489.75	\$23,678.25	33099.00	\$13,227.81	\$13,000	\$17,059.63	\$15940.91

APPENDIX C

LABORATORY CERTIFICATE OF ANALYSIS



Innovative Technologies

Date Submitted:16-Oct-15Invoice No.:A15-08781Invoice Date:19-Nov-15Your Reference:

GEOMAP EXPLORATION INC. 12430-7G AVENUE SURRY BC V3W 2T5 Canada

ATTN: Alex Pleson

CERTIFICATE OF ANALYSIS

30 Rock samples were submitted for analysis.

The following analytical package was requested:

Code 8-Iron Ore Analysis XRF-Tbay Fusion-XRF

REPORT A15-08781

This report may be reproduced without our consent. If only selected portions of the report are reproduced, permission must be obtained. If no instructions were given at time of sample submittal regarding excess material, it will be discarded within 90 days of this report. Our liability is limited solely to the analytical cost of these analyses. Test results are representative only of material submitted for analysis.

Notes:

CERTIFIED BY:

Emmanuel Eseme , Ph.D. Quality Control



ACTIVATION LABORATORIES LTD.

1201 Walsh Street West, Thunder Bay, Ontario, Canada, P7E 4X6 TELEPHONE +807 622-6707 or +1.888.228.5227 FAX +1.905.648.9613 E-MAIL Tbay@actlabs.com ACTLABS GROUP WEBSITE www.actlabs.com

Page 1/4



Innovative Technologies

Date Submitted:16-Oct-15Invoice No.:A15-08781Invoice Date:19-Nov-15Your Reference:

GEOMAP EXPLORATION INC. 12430-7G AVENUE SURRY BC V3W 2T5 Canada

ATTN: Alex Pleson

CERTIFICATE OF ANALYSIS

30 Rock samples were submitted for analysis.

The following analytical package was requested:

Code Davis Tube Davis Tube Test

REPORT A15-08781

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Notes:

CERTIFIED BY:

Emmanuel Eseme , Ph.D. Quality Control



ACTIVATION LABORATORIES LTD.

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Page 2/4

Results

Analyte Symbol	SiO2	TiO2	AI2O3	Fe2O3(T)	MnO	MgO	CaO	Na2O	К2О	P2O5	Cr2O3	LOI	V2O5	Total	Start Mass	Magnetic Fraction	Non-Mag Fraction	Weight % Magne tics	Calculate d Start Mass	% Loss Mass
Unit Symbol	%	%	%	%	%	%	%	%	%	%	%	%	%	%	g	g	g	%	g	%
Lower Limit	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	1	0.003	0.01						
Method Code	FUS-XR F	FUS-XR F	FUS-XR F	FUS-XR F	FUS-XR F	FUS-XR F	FUS-XR F	FUS-XR F	FUS-XR F	FUS-XR F	FUS-XR F	FUS-XR F	FUS-XR F	FUS-XR F	DT	DT	DT	DT	DT	DT
1192061	52.62	0.01	0.25	36.48	0.20	0.71	0.10	0.08	0.03	0.03	< 0.01	9.01	< 0.003	99.53						
1192062	57.62	0.02	0.26	33.14	0.12	1.02	0.79	0.04	0.02	0.03	< 0.01	6.51	< 0.003	99.56						
1192063	56.30	0.01	0.23	34.49	0.14	0.92	0.59	0.04	0.03	0.03	< 0.01	6.70	< 0.003	99.48						
1192065	53.71	0.02	0.30	34.94	0.15	0.54	0.12	0.05	0.02	0.03	< 0.01	9.39	< 0.003	99.27						
1192066	52.67	0.02	0.25	36.55	0.19	0.81	0.18	0.04	0.02	0.03	< 0.01	8.86	< 0.003	99.62						
1192068	64.22	0.01	0.17	32.73	0.26	0.13	0.07	0.02	0.02	0.02	< 0.01	1.96	< 0.003	99.61						
1192069	62.94	0.01	0.21	32.74	0.30	0.15	0.09	0.03	0.02	0.03	< 0.01	2.56	< 0.003	99.08						
1192070	52.15	0.02	0.36	42.41	0.33	0.16	0.11	0.03	0.02	0.04	< 0.01	3.63	< 0.003	99.25						
1192071	43.44	0.03	0.28	51.37	0.33	0.15	0.11	0.03	0.02	0.03	< 0.01	3.62	< 0.003	99.41						
1192072	61.88	0.01	0.28	35.51	0.18	0.08	0.42	0.04	0.02	0.02	< 0.01	1.49	< 0.003	99.93						
1192073	59.12	0.02	0.17	37.42	0.32	0.12	0.15	0.04	0.02	0.03	0.01	2.04	< 0.003	99.44						
1192075	24.42	0.03	0.25	70.66	0.59	0.22	0.12	0.03	0.01	0.04	< 0.01	3.55	< 0.003	99.94						
1192076	40.73	0.03	0.26	52.25	0.70	0.18	0.95	0.03	0.02	0.06	< 0.01	4.23	< 0.003	99.43						
1192077	39.94	0.03	0.28	53.77	0.54	0.24	0.11	0.04	0.04	0.05	< 0.01	4.13	< 0.003	99.17						
1192078	60.09	0.02	0.13	30.08	0.67	0.14	3.19	0.03	0.02	0.03	< 0.01	5.26	< 0.003	99.65						
1192079	62.74	0.03	0.26	26.08	0.72	0.22	3.84	0.05	0.04	0.04	< 0.01	5.87	< 0.003	99.89						
1192081	75.64	0.02	0.29	20.29	0.46	0.09	1.28	0.06	0.03	0.02	< 0.01	1.98	< 0.003	100.2						
1192082	78.12	0.02	0.29	18.50	0.42	0.12	0.65	0.05	0.03	0.02	< 0.01	1.45	< 0.003	99.67						
1192083	91.18	0.01	0.59	6.80	0.14	0.17	0.11	0.04	0.02	0.01	< 0.01	0.76	< 0.003	99.84						
1192084	93.63	0.01	0.32	5.52	0.06	0.09	0.06	0.04	0.03	0.01	< 0.01	0.51	< 0.003	100.3						
1192085	92.88	0.01	0.17	6.62	0.12	0.04	0.06	0.03	0.02	0.01	< 0.01	0.51	< 0.003	100.5						
1192086	51.97	0.01	0.13	47.27	0.20	0.05	0.04	0.03	0.01	0.02	< 0.01	0.22	< 0.003	99.97						
1192088	84.27	0.01	0.09	14.04	0.19	0.05	0.04	0.04	0.01	0.02	< 0.01	0.92	< 0.003	99.67						
1192089	86.74	0.02	0.18	11.19	0.12	0.09	0.05	0.03	0.03	0.03	< 0.01	1.10	< 0.003	99.56						
1192064															30.0	0.006	29.572	0.02	29.578	1.44
1192067															30.0	0.007	29.536	0.02	29.543	1.55
1192074															30.0	0.771	28.886	2.57	29.657	1.15
1192080		1													30.0	3.079	26.103	10.26	29.182	2.74
1192087		1													30.0	1.609	28.139	5.36	29.748	0.85
1192090															30.0	0.398	29.329	1.32	29.726	0.94

Analyte Symbol	SiO2	TiO2	AI2O3	Fe2O3(T)	MnO	MgO	CaO	Na2O	K2O	P2O5	Cr2O3	LOI	V2O5	Total
Unit Symbol	%	%	%	%	%	%	%	%	%	%	%	%	%	%
Lower Limit	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01		0.003	0.01
Method Code	FUS-XR F	FUS-XR F	FUS-XR F	FUS-XR F	FUS-XR F	FUS-XR F	FUS-XR F	FUS-XR F	FUS-XR F	FUS-XR F	FUS-XR F	FUS-XR F	FUS-XR F	FUS-XR F
IF-G Meas	40.69	0.01	0.13	56.63	0.04	1.87	1.50	0.04	0.01	0.06				
IF-G Cert	41.2	0.0140	0.150	55.8	0.0420	1.89	1.55	0.0320	0.0120	0.0630				
AC-E Meas	69.99	0.11	14.56	2.51	0.06	0.02	0.34	6.68	4.51					
AC-E Cert	70.35	0.11	14.70	2.56	0.058	0.03	0.34	6.54	4.49					
DTS-2b Meas	39.33		0.41			49.19	0.12				2.29			
DTS-2b Cert	39.4		0.450			49.4	0.120				2.27			
SCH-1 Meas	8.12	0.06	0.96	87.42	1.02	0.06		0.06	0.03	0.12				
SCH-1 Cert	8.09	0.052	0.962	86.84	1.003	0.033		0.026	0.031	0.124				
NCS DC19003a Meas	3.98	13.08	4.43	74.81	0.36	3.24	1.07						0.560	
NCS DC19003a Cert	3.96	12.96	4.40	75.45	0.364	3.17	1.05						0.559	
1192084 Orig	93.21	0.01	0.34	5.51	0.06	0.09	0.07	0.04	0.03	0.01	< 0.01	0.50	< 0.003	99.86
1192084 Dup	94.06	0.02	0.30	5.52	0.05	0.08	0.06	0.03	0.03	0.01	< 0.01	0.51	< 0.003	100.7
Method Blank	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01		< 0.003	

QC



Innovative Technologies

 Date Submitted:
 19-Oct-15

 Invoice No.:
 A15-08809

 Invoice Date:
 19-Nov-15

 Your Reference:

GEOMAP EXPLORATION INC. 12430-7G AVENUE SURRY BC V3W 2T5 Canada

ATTN: Afzaal Pirzada

CERTIFICATE OF ANALYSIS

46 Rock samples were submitted for analysis.

The following analytical package was requested:

Code Davis Tube Davis Tube Test

REPORT A15-08809

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Notes:

CERTIFIED BY:

Emmanuel Eseme , Ph.D. Quality Control



ACTIVATION LABORATORIES LTD.

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 Date Submitted:
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GEOMAP EXPLORATION INC. 12430-7G AVENUE SURRY BC V3W 2T5 Canada

ATTN: Afzaal Pirzada

CERTIFICATE OF ANALYSIS

46 Rock samples were submitted for analysis.

The following analytical package was requested:

Code 8-Iron Ore Analysis XRF-Tbay Fusion-XRF

REPORT A15-08809

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Notes:

CERTIFIED BY:

Emmanuel Eseme , Ph.D. Quality Control



ACTIVATION LABORATORIES LTD.

1201 Walsh Street West, Thunder Bay, Ontario, Canada, P7E 4X6 TELEPHONE +807 622-6707 or +1.888.228.5227 FAX +1.905.648.9613 E-MAIL Tbay@actlabs.com ACTLABS GROUP WEBSITE www.actlabs.com

Page 2/4

Results

Analyte Symbol	SiO2	TiO2	AI2O3	Fe2O3(T)	MnO	MgO	CaO	Na2O	К2О	P2O5	Cr2O3	LOI	V2O5	Total	Start Mass	Magnetic Fraction	Non-Mag Fraction	Weight % Magne tics	Calculate d Start Mass	% Loss Mass
Unit Symbol	%	%	%	%	%	%	%	%	%	%	%	%	%	%	g	g	g	%	g	%
Lower Limit	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01		0.003	0.01						
Method Code	FUS-XR F	FUS-XR F	FUS-XR F	FUS-XR F	FUS-XR F	FUS-XR F	FUS-XR F	FUS-XR F	FUS-XR F	FUS-XR F	FUS-XR F	FUS-XR F	FUS-XR F	FUS-XR F	DT	DT	DT	DT	DT	DT
1192214	83.02	0.01	0.17	13.94	0.51	0.09	0.10	0.03	0.03	0.01	< 0.01	1.75	< 0.003	99.66						
1192215	76.68	0.01	0.17	18.98	1.00	0.25	0.17	0.03	0.02	0.01	0.01	2.08	< 0.003	99.43						
1192216	51.94	0.01	0.17	41.52	2.58	0.23	0.11	0.03	0.04	0.02	< 0.01	2.93	< 0.003	99.59						
1192217	69.29	0.01	0.16	23.67	1.74	0.24	0.08	0.02	0.02	0.02	< 0.01	4.09	< 0.003	99.35						
1192218	78.61	0.01	0.20	17.06	0.70	0.20	0.11	0.04	0.02	0.01	< 0.01	2.73	< 0.003	99.69						
1192098	50.53	0.13	2.19	41.03	0.06	1.35	0.96	0.03	0.13	0.04	< 0.01	3.22	< 0.003	99.68						
1192099	53.60	0.02	0.32	29.42	0.33	1.70	3.61	0.03	0.04	0.03	< 0.01	10.51	< 0.003	99.59						
1192220	75.45	0.01	0.09	19.67	0.80	0.25	0.25	0.03	0.01	0.01	< 0.01	3.03	< 0.003	99.61						
1192221	68.76	0.01	0.14	23.30	1.58	0.32	0.14	0.03	0.02	0.01	< 0.01	4.86	< 0.003	99.17						
1192222	74.97	0.01	0.09	19.52	0.90	0.23	0.10	0.03	0.02	0.02	< 0.01	3.60	< 0.003	99.49						
1192223	80.45	0.01	0.04	14.37	1.09	0.22	0.08	0.03	0.01	0.01	< 0.01	3.32	< 0.003	99.64						
1192224	73.57	0.01	0.07	20.62	0.73	0.23	0.11	0.04	0.01	0.01	< 0.01	3.82	< 0.003	99.22						
1192225	68.59	0.01	0.06	24.87	0.98	0.22	0.15	0.03	0.02	0.02	< 0.01	4.66	< 0.003	99.59						
1192227	66.70	0.01	0.03	26.73	0.69	0.28	0.06	0.03	0.01	0.02	< 0.01	4.60	< 0.003	99.16						
1192228	66.58	0.01	0.09	27.54	0.56	0.25	0.08	0.03	0.02	0.02	< 0.01	4.03	< 0.003	99.20						
1192229	68.70	0.01	0.11	26.03	0.46	0.19	0.10	0.02	0.01	0.02	< 0.01	3.72	< 0.003	99.37						
1192230	73.28	0.01	0.11	21.53	0.60	0.22	0.08	0.03	0.02	0.01	< 0.01	3.65	< 0.003	99.54						
1192232	90.71	0.01	0.01	7.59	0.13	0.05	0.04	0.03	0.02	0.02	0.01	0.91	0.003	99.53						
1192233	81.77	0.02	0.64	11.53	0.16	0.16	2.07	0.03	0.02	0.03	< 0.01	3.17	< 0.003	99.60						
1192234	62.76	0.02	0.43	31.95	0.20	0.13	0.81	0.04	0.02	0.04	< 0.01	3.24	< 0.003	99.64						
1192235	53.01	0.02	0.30	41.92	0.30	0.12	0.20	0.04	0.02	0.06	< 0.01	3.76	< 0.003	99.74				ļ		
1192236	58.68	0.01	0.29	37.52	0.24	0.11	0.21	0.03	0.02	0.05	< 0.01	2.80	< 0.003	99.96						
1192206															30.0	1.168	28.634	3.89	29.802	0.67
1192213															30.0	2.548	26.954	8.49	29.502	1.68
1192219															30.0	0.980	28.549	3.27	29.529	1.58
1192226															30.0	0.141	29.441	0.47	29.583	1.40
1192231															30.3	0.652	29.403	2.15	30.055	0.94
1192237	07.70	0.01	0.05	00.04	0.00			0.00	0.04	0.04	0.04	0.04		00.40	30.0	0.304	29.215	1.01	29.520	1.63
1192091	67.79	0.01	0.05	26.34	0.20	0.23	0.86	0.02	0.01	0.01	< 0.01	3.91	< 0.003	99.42						
1192092	63.63	0.01	0.02	29.38	0.36	0.27	0.63	0.04	0.01	0.02	< 0.01	4.88	< 0.003	99.23						
1192093	47.01	1.03	14.43	10.00	0.18	0.09	0.77	0.08	0.01	0.20	< 0.01	6.73 5.00	0.058	99.75						
1192094	04.47	1.00	13.13	12.29	0.11	4.37	1.11	0.11	7.18	0.20	< 0.01	5.00	0.048	99.69						-
1192095	00.22 65.11	0.03	0.24	27.35	0.09	0.27	0.10	0.02	0.04	0.02	< 0.01	3.54	< 0.003	99.98						
1192090	75 45	0.01	0.00	27.04	0.16	0.42	0.12	0.03	0.02	0.01	< 0.01	4.70	< 0.003	99.25 100.2						
1102201	15.45	0.03	0.42	22.33	0.00	0.30	7.52	0.02	0.15	0.04	< 0.01	9.25	< 0.003	100.3						
1192201	40.09	0.02	0.17	30.10 49.40	0.10	0.33	0.35	0.00	0.03	0.02	< 0.01	0.20	< 0.003	100.3						
1102202	69.67	0.01	0.10	26.60	0.34	0.95	9.33 0.19	0.04	0.01	0.01	< 0.01	3.69	< 0.003	00.61						<u> </u>
1192203	55.04	0.01	0.05	20.00	0.10	0.20	1 92	0.02	0.02	0.01	< 0.01	5.00 6.59	< 0.003	100 1						
1192205	58 36	0.01	0.04	36.00	0.15	0.38	0.49	0.04	0.02	0.01	< 0.01	4 32	< 0.003	99.82	l	+		<u> </u>		
1192207	56 92	0.01	0.01	36.27	0.21	0.43	0.92	0.02	0.02	0.01	< 0.01	4 69	< 0.003	99.52		1				
1192208	57 53	0.01	0.05	34.09	0.12	0.42	2.52	0.02	0.02	0.01	< 0.01	4 79	< 0.003	99.58	l	+		<u> </u>		
1192209	53.02	0.01	0.09	33.65	0.20	0.43	5 19	0.04	0.01	0.02	< 0.01	7 25	< 0.003	99 an		-				
1192210	60.42	0.01	0.06	31.01	0.14	0.50	2.51	0.03	0.01	0.01	< 0.01	4 90	< 0.003	99.60		-				
1192211	61 76	0.01	0.08	30.58	0.13	0.47	2.07	0.02	0.01	0.01	< 0.01	4 49	< 0.003	99.63				<u> </u>	<u> </u>	
1192212	63.67	0.01	0.04	30.53	0.09	0.42	0.79	0.03	0.01	0.02	< 0.01	3.58	< 0.003	99.20		1				

Analyte Symbol	SiO2	TiO2	AI2O3	Fe2O3(T)	MnO	MgO	CaO	Na2O	K2O	P2O5	Cr2O3	LOI	V2O5	Total
Unit Symbol	%	%	%	%	%	%	%	%	%	%	%	%	%	%
Lower Limit	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01		0.003	0.01
Method Code	FUS-XR F	FUS-XR F	FUS-XR F	FUS-XR F	FUS-XR F	FUS-XR F	FUS-XR F	FUS-XR F	FUS-XR F	FUS-XR F	FUS-XR F	FUS-XR F	FUS-XR F	FUS-XR F
IF-G Meas	40.69	0.01	0.13	56.63	0.04	1.87	1.50	0.04	0.01	0.06				
IF-G Cert	41.2	0.0140	0.150	55.8	0.0420	1.89	1.55	0.0320	0.0120	0.0630				
AC-E Meas	69.99	0.11	14.56	2.51	0.06	0.02	0.34	6.68	4.51					
AC-E Cert	70.35	0.11	14.70	2.56	0.058	0.03	0.34	6.54	4.49					
DTS-2b Meas	39.33		0.41			49.19	0.12				2.29			
DTS-2b Cert	39.4		0.450			49.4	0.120				2.27			
SCH-1 Meas	8.12	0.06	0.96	87.42	1.02	0.06		0.06	0.03	0.12				
SCH-1 Cert	8.09	0.052	0.962	86.84	1.003	0.033		0.026	0.031	0.124				
NCS DC19003a Meas	3.98	13.08	4.43	74.81	0.36	3.24	1.07						0.560	
NCS DC19003a Cert	3.96	12.96	4.40	75.45	0.364	3.17	1.05						0.559	
1192234 Orig	62.54	0.02	0.40	31.86	0.20	0.14	0.81	0.04	0.02	0.04	< 0.01	3.25	< 0.003	99.33
1192234 Dup	62.97	0.02	0.46	32.04	0.20	0.13	0.81	0.04	0.02	0.04	< 0.01	3.23	< 0.003	99.95
1192211 Orig	61.68	0.01	0.08	30.53	0.13	0.47	2.07	0.03	0.01	0.01	< 0.01	4.49	< 0.003	99.50
1192211 Dup	61.85	0.01	0.08	30.62	0.13	0.48	2.06	0.02	0.01	0.01	< 0.01	4.48	< 0.003	99.76
Method Blank	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01		< 0.003	

QC

APPENDIX D ACTIVITY LOG AND MAPS PROSPECTING



Prospecting and Mapping Activity Log – Afzaal (Geo), Alex, Phil, Mike and Ben (Prospectors)

Date	Claim Number	Activity Details
October 06,	4252115, 4252116,	Prospecting to locate suitable outcrop for stripping and
2015	4252117,	trenching. One Lower Gunflint, Iron Formation (GIF) outcrop
		found on southeast corner of claim 4252117, strike 320°,
		dip 5°SW, reddish brown thinly to medium bedded shale /
		siltstone, in contact with grey splintery taconite, magnetic.
October 07,	4283669 , 425113,	Prospecting and mapping of outcrops for surface sampling,
2015	4252114, 4252115	stripping and trenching. A road cut exposed Greenish grey,
		Taconite outcrop suitable for channel sampling, shingly, thin
		to medium bedded, strike N40°E, dip 4° SE. New claim
		4283669 staked later. Two more outcrops located on claims
		425113 and 425115, which are brown silty shale with hematite
		and magnetite, magnetic, suitable for trenching and channel
		sampling. Started trenching.
October 08,	4252113, 4252115,	Afzaal-Meeting with Red Sky Metis Independent Nation which
2015	4252116	took place in their community office on October 08, 2015 at 406
		East Victoria Avenue, Thunder Bay.
		Alex, Phil, Mike – prospected for additional iron formation to
		represent both the under and lower portion of the GIF, examined
		the know Jasper occurrences and historic Iron workings
October 09,	4252105, 4252106,	Gravel pit located on claim 5252106, very thick overburden
2015	4252107,	up to 50 m exposed around the pit, 5252105 and 5252107
		are also mostly covered with overburden, prospected
		outcrop on mountain side, facing south, north face of
		mountain, exposed from old historic rail-line which is now a
		quad/skidoo trail
October 10,	4252108, 4252109,	Prospecting and mapping of outcrops, found four taconite
2015	4252110	outcrops collected five samples, granitic basement contact
		with GIF is exposed on claim 4252109 at
		715522E/5350190N/elev. 506m.
October 11,	4252113, 4252114,	Prospecting and mapping of outcrops, found two taconite
2015	4252115	outcrops for channel sampling. Taconite is dark grey to
		brown, hematite staining and patches, jasper at places.
		Channel sampling of TR15-01 and TR15-02.

October 12,		Afzaal -Data compilation
2015		Alex-Mike-Phil, Returned home for Thanksgiving (included
		as travel day)
October 13,	4252104, 4252105,	Alex, Mike, Phil and now Ben, returned to property from
2015	4252116	Beardmore/Thunder Bay, prospecting and mapping of
		outcrops continued, most of the area on claims 4252104
		and 4252105 is covered by glacial overburden. Two
		taconite outcrops found on claim 4252116 which are
		suitable for stripping and channel sampling. Taconite is dark
		grey, medium bedded, shingly, shingly, strike 100°, dip 8°
		S.
October 14,	4252116, 4252110,	Afzaal -Meeting with Mr. Kevin Muloin, Coordinator for Metis
2015	4252108	Nation of Ontario October 13, 2015 in his office at 226 May
		Street, Thunder Bay, also attended by Andrew Kane, Mineral
		Exploration and Development Consultant from the Ministry of
		Northern Development and Mines.
		Afternoon (just Afzaal) – All Day (prospectors) - Logging and
		sampling of trench TR15-03, prospecting extents of trench for
		purposes of identifying contact to granite/other sediments
		Alex- Staked new mining claim as it was determined that claim
		4252115 was actually more to the west than how it was
		recorded. New claim is 4283669.
October 15,	4252116, 4252113	Afzaal - Logging and sampling of trench TR 15-03
2015		continued.
		Prospectors – examined outcrops north of TR 15-03, found
		up contact of GIF, identified areas to be examined by next
		trenching campaign
		Phil- Mike
October 16,	4283669, 4252113	Afzaal -Logging and sampling of trench TR 15-04
2015		Prospectors – continue prospecting 4252113 while Afzaal
		finished mapping 04, established
October 17,	4252116, 4252110,	Afzaal -Logging and sampling of trench TR 15-05
2015	4252108, 4252107	Prospectors – Examined east claims to identify extents of
		GIF and establish contacts for preparation of potential
		winter drilling, examined multiple Jasper outcrops and

		magnetite veins/pods, located suitable access and found
		potential area for Geophysics grid and/or diamond drilling
		pads
October 18,	Georeferencing	(Prospectors) - Started Geo-referencing claims
2015		Afzaal- travelled home (Oct 18-19 th)

APPENDIX E

DETAILED TRENCH MAPS













