Baffinland Iron Mines LP
Mary River Expansion Stage 3

Definitive Study Report

Section 4 – Mineral Resources

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Date	**Rev.**	**Status**	**Prepared By**	**Checked By**	**Approved By**	**Approved By**
RPA						**Employer**

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4. Mineral Resources

The Mineral Resource estimate for Mary River Deposit Nos. 1, 2 and 3 was carried out by RPA, using Geovia GEMS 6.7.4 mining software by Dassault Systemes Inc.

4.1 Previous Resource Estimates

Several recent NI 43-101 Technical Reports and resource estimates have been completed from 2009 to 2013 incorporating exploration and drilling data up to and including 2009. The generation of newer drilling data in 2010, 2012 and 2014 renders the earlier estimates out of date.

George H. Wahl, P. Geo., completed two estimates in 2009 and 2011 (Wahl and Gharapetian, 2009, 2011). RPA reviewed and audited the Mineral Resource estimate by Mr. Wahl, including his database validation, resource estimation parameters and assumptions, methodology and classification and prepared a Technical Report (David A. Ross et al, 2013). RPA accepted most attributes of the Wahl block models at that time including the grade estimates but made minor modifications to the Mineral Resource classification, adjusted the block size, and developed a new preliminary Whittle open pit shell to constrain the 2013 Mineral Resources. The BIM database used to estimate Mineral Resources in 2009 and 2011 had been previously audited and found acceptable by Mr. Wahl and RPA found the geological interpretations and grades to be appropriate for resource estimation. Methodologies used by BIM to generate its database were reviewed by Mr. Wahl and generally found to be appropriate.

Mineral Resources in this report were estimated in accordance with NI 43-101 and CIM resource classification definitions. The effective date of this Mineral Resource estimate is December 31, 2016 and the estimate is based on the surveyed open pit topographic surface as at year end (EOY) 2016. The resource estimate incorporates exploration and definition diamond drilling, and channel sampling data up to and including 2014 as well as production blast hole drilling to EOY 2016. RPA is not aware of any environmental, permitting, legal, title, taxation, socio-economic, marketing, political, or other relevant factors that could materially affect the Mineral Resource estimate.

Table 4-1 summarizes the Mineral Resource estimates, inclusive of Mineral Reserves, for the Mary River DSO iron deposits with an effective date of December 31, 2016.

Table 4-1 Summary of Mineral Resources – December 31, 2016

Baffinland Iron Mines Corporation – Mary River Project

Category	Tonnes (Mdmt)	Tonnes (Mwmt)	Fe %	P %	S %	Mn %	SiO_2 %	Al_2O_3 %
Deposit No. 1								
Measured	309	311	65.9	0.028	0.25	0.21	2.6	1.2
Indicated	117	118	65.3	0.038	0.36	0.22	3.1	1.0
M+I	426	429	65.7	0.031	0.28	0.21	2.8	1.2
Inferred	73	74	65.5	0.036	0.50	0.28	2.5	0.9
Deposit No. 2								
Indicated	23	23	67.1	0.014	0.01	0.02	3.3	0.5
Inferred	14	15	65.3	0.027	0.01	0.02	4.7	1.1
Deposit No. 3								
Inferred	252	254	66.2	0.035	0.02	0.09	1.9	1.1
Totals Deposit Nos. 1, 2, and 3								
Measured	309	311	65.9	0.028	0.25	0.21	2.6	1.2
Indicated	140	141	65.6	0.034	0.30	0.19	3.1	0.9
M+I	449	452	65.8	0.030	0.27	0.20	2.8	1.1
Inferred	339	342	66.0	0.035	0.12	0.13	2.2	1.1

Notes:
1. CIM Definition Standards are followed for Mineral Resources.
2. Mineral Resources are estimated at a cut-off grade of 55% Fe for Deposits No. 1 and 3 and 62% Fe for Deposit No 2.
3. Mineral Resources are estimated using a long-term iron ore price of $70/t Fe, and a US$/C$ exchange rate of 1.28 C$/US$.
4. Bulk density is based on a formula relating bulk density to iron content.
5. Mineral Resources are reported in dry and wet tonnes, and dry grades. In situ moisture is estimated to be 0.7%.
6. Mineral Resources are inclusive of Mineral Reserves.
7. Numbers may not add due to rounding.

4.2 Resource Database

The exploration database provided to RPA by BIM for Deposit Nos.1 to 3 includes 232 drill holes totalling 37,952.70 m and 61 channel samples totalling 381.06 m. Six WGM holes, and one BIM hole, in Deposit No. 1 were removed for resource estimation purposes where these holes were twinned by more recent BIM drilling, or in the case of the BIM hole, was short and provided less Fe data than the WGM hole. The database also includes three ARD series holes drilled in waste for acid rock drainage testing. Some 25 holes proposed for drilling in 2013 in Deposit Nos. 2 and 3 and elsewhere to the northeast were provided in the database, however, these were not drilled and are not included in the RPA's reporting of the exploration database statistics. A total of 153 drill holes (27,739.54 m) were used to estimate resources for Deposit No. 1. A total of 10 drill holes (1,597.70 m and 22 channel samples over 130.19 m were used to estimate resources for Deposit No. 2 and a total of 11 drill holes (2,658.70 m) and 27 channel samples over 183.01 m were used to estimate resources for Deposit No. 3. Table 4-2 summarizes the databases.

RPA notes that only 10% of the resource drill holes (15% by length) were surveyed downhole. RPA reviewed the impact of the lack of survey and notes that the difference in toe position for a long hole (>300 m) is about 12 m with a maximum difference of 16 m in the down hole trace. With respect to the drill hole spacings and step outs, the potential error in assay location arising from a lack of downhole surveying has only minor impact on resource estimation.

The blast hole database provided by BIM contains 14,231 holes totalling 100,835.40 m dating from 2001 to 2016. Toe and burden of the blast holes is variable at approximately 4 m to,5.5 m. RPA review of the blast hole database has disclosed that there are 86 pairs (521.02 m) with duplicate collar locations, 310 holes lacking dates and a number of erroneous dates ranging up to 2027. Some of the duplicated holes appear to be randomly distributed but a significant number are area specific and appear to have been miss documented as a batch(s). The duplicated holes were flagged by date, with earlier dates taking precedence, and disregarded for resource estimation.

The blast holes were used in part to wireframe and estimate Fe grade for Deposit No. 1 mineralization near surface and those contained within the resource wireframe were coded. Blast holes used for resource estimation total 10,937 over 80,751.81 m. These holes range in length from 2.5 m to 18.58 m and average 7.38 m.

Table 4-2 Drilling and Channel Sampling Database
Baffinland Iron Mines Corporation – Mary River Project

Exploration Database

Year	Company	DDH	Metres	BS*	Metres	Channels	Metres
1963	WGM					52	290.70
1964	WGM	10	1,540.50				
1965	WGM	16	1,777.56				
2004	BIM	13	2,471.50				
2005	BIM	34	8,393.20				
2006	BIM	32	5,964.50			1	4.00
2007	BIM	27	6,344.80	2	173.00	8	86.36
2008	BIM	28	5,179.40	37	378.00		
2009	BIM	13	2,666.50				
2010	BIM	8	963.00				
2012	BIM	6	1,312.74				
2014	BIM	6	788.00				
Total		193	37,401.70	39	551.00	61	381.06

Resource Estimation Database

Deposit No.1	Company	DDH	Metres	BS*	Metres	Channels	Metres
1964	WGM	6	878.82				
1965	WGM	12	1,327.38				
2004	BIM	6	1,341.10				
2005	BIM	28	8,086.70				
2006	BIM	18	3,396.80				
2007	BIM	18	4,135.70	2	173.00		
2008	BIM	27	5,030.40	22	183.00		
2009	BIM	10	2,257.50				
2012	BIM	3	828.14				
2014	BIM	1	101.00				
Total		129	27,383.54	24	356.00		

Deposit No. 2	Company	DDH	Metres	BS*	Metres	Channels	Metres
1963	WGM					22	130.19
2004	BIM	1	122.00				
2006	BIM	7	1,192.70				
2010	BIM	2	283.00				
		10	1,597.70			22	130.19

Deposit No. 3	Company	DDH	Metres	BS*	Metres	Channels	Metres
1963	WGM					19	96.65
2006	BIM	2	403.00				
2007	BIM	8	2,104.70			8	86.36
2010	BIM	1	151.00				

Total	11	2,658.70			27	183.01
Resource Total	**150**	**31,639.94**	**24**	**356.00**	**49**	**313.20**

*DDH-diamond drill hole; BS-short grade control DDH; Channels-surface channel sampling

4.2.1 Assay Database

The drill hole data base for BIM drilling in deposits 1 to 3 contains 10,549 sample intervals variously tested/analyzed for Fe, FeO, Lump, MAG, P, MnO, SiO_2, Al_2O_3, CaO, K_2O, MgO, Na_2O, P_2O_5, H_2O and LOI. The BIM exploration drilling accounts for 9,591 sample intervals over 18,937.73 m. Analyses for samples are almost complete except for MAG and LOI (Table 4-3), The BS series holes have 127 sample intervals over 332.35 m for which analyses for samples are complete except for only 59.8% analyzed for FeO, Lump, MAG, MgO, Na_2O, K_2O, H_2O and LOI.

Whole rock analyses for MnO and P_2O_5 were converted to Mn and P in the sampling databases.

Core samples from 25 of the 26 WGM holes in the database were analyzed only for Fe, P, S and SiO2. Analyses total 701 over 2,728.09 m.

The drill hole database includes 67 channel samples totalling 260.29 m which were obtained at bedrock surface from deposits 1, 2 and 3.. Samples range in length from 1.52 m to 21.69 m. Channel samples were used in resource estimation for deposits 2 and 3, however, those from Deposit 1 were not used for estimation since the channel sampled area was subject to close-spaced grade control and short hole drilling. Samples (41) were analyzed for Fe, Al_2O3, MnO, P_2O_5, S, SiO_2 in the WGM channels and Fe, FeO, Lump, MAG, P, MnO, SiO_2, Al_2O_3, CaO, K_2O, MgO, Na_2O, P_2O_5, and H_2O for 89 samples in the eight BIM channels.

The production blast holes totalling 14,231 over 100,835.40 m, were all drilled in the footwall of Deposit 1 Lower Zone. The samples were analyzed variously for Fe, FeO, MAG, P, Mn, SiO_2, Al_2O_3, C, CaO, K_2O, Na_2O and LOI. Qualitative entries, indicating the presence of magnetite, hematite, and specularite were variously included in the assay intervals. Sample intervals ranged from 2.5 m to 18.58 m.

The metallurgical testwork database contains 369 samples taken over 13,155.90 m from 92 holes within the resources outlined for the five zones of Deposit 1. Samples consisted of drill core composites ranging in length from 7.6 m to 191.2 m. The composites were tested for apparent density, moisture%, tumble abrasion, tumble strength, reduction index and reduction under load index.

TABLE 4-3 BIM EXOLORATION DDH ANALYSES
Baffinland Iron Mines Corporation – Mary River Project

Attribute	No. Analyzed	Length (m)	Non-Analyzed	% Analyzed
Al_2O_3	9,585	18,924.63	6	99.9%
CaO	9,584	18,922.63	7	99.9%
Fe	9,585	18,924.63	6	99.9%
FeO	9,585	18,924.63	6	99.9%
H_2O	9,584	18,922.63	7	99.9%
K_2O	9,585	18,924.63	6	99.9%
LOI	9,311	18,384.63	280	97.1%
LUMP	9,582	18,918.63	9	99.9%
MAG	9,392	18,538.63	199	97.9%
MgO	9,585	18,924.63	6	99.9%
Mn	9,584	18,922.63	7	99.9%
Na_2O	9,585	18,924.63	6	99.9%
P	9,584	18,922.63	7	99.9%
S	9,585	18,924.63	6	99.9%
SiO_2	9,585	18,924.63	6	99.9%

4.3 Solids Modelling

4.3.1 Deposit No. 1

For Deposit No. 1, the hanging wall and footwall outlines of high grade iron formation were interpreted for each drill section spaced at approximately 75 m. RPA notes that a number of BIM drill holes were terminated in iron mineralization and did not reach the Lower Zone footwall on the west side of the zone and thus leaving the width of the zone open to interpretation. Wireframe solids were then prepared from the sectional interpretation. All wireframe polylines were snapped to drill hole assay intercepts. A cut off of 55% Fe over a minimum horizontal width of five metres was used to define hanging wall and footwall solid boundaries, however, where the massive iron formation grades along strike into banded iron formation, a lower cut-off was used to allow grade interpolation parameters to define gradational extent of lower grade mineralization along strike between drill sections. A majority of the cross-strike contacts were defined by very sharp declines in high grade iron content. The Lower Zone wireframe on the North Limb was extended to depth some 100 m to 175 m from the deepest drilling to the 95 m and 25 m elevations respectively, which is up to 675 m depth from surface. The narrower Middle, Upper and NE zones on the North Limb were extended 75 m to 80 m to depth beyond the deepest drill intercepts. The depth extents of the zones on the South Limb are constrained by drilling.

Plots of production blast hole assays and midpoints of the assay composites were used to model the near surface extents of the Lower zone. A polygon containing the assays above the 55% Fe cut-off was built and used to clip the top of the Lower zone solid to model level 13 at the 620 EL bench. This solid was used for blast hole Fe grade interpolation in an independent partial model which subsequently replaced the drill hole interpreted portion of the block model for Fe. Other attributes in this upper portion of the Lower Zone were estimated based on the exploration drilling composites only.

In order to manage the impact of highly skewed deleterious grades during grade interpolation, two high deleterious zones with grades >1% S and >1% Mn were solid-modeled separately. These zones occur over a limited distance along the South Limb footwall (rock code 1400) and the North Limb footwall (rock code 1300). S and Mn grades were estimated independently of the North and South limbs only using samples contained within the deleterious zone solids.

High phosphorus was not solid modeled separately since its distribution is far more random from hanging wall to footwall. Two small, poorly defined areas of elevated phosphorus occur within Deposit No. 1 and both have a limited extent. Higher grade phosphorus (0.1% to 0.3%) is concentrated in the extreme north end of the main rock code 100 solid representing approximately 300 m of strike extent and within portions of the two solids located in the inner hanging wall portion of the fold hinge (rock codes 300 and 400).

High K2O (1% to 6%) occurs predominantly along the waste rock hanging wall and footwall contacts with the iron formation solids and should be avoided during mining. Otherwise only rare isolated two metre to four metre wide intervals of high K2O were noted within the iron formation zone solids and would be easily diluted during normal mining conditions.

Three internal waste zones (1000, 1100, 1200) were also solid modelled inside the iron formation wireframe solids. The waste zones were at least eight metres wide, and are either chlorite schist, amphibolite, volcanic tuff or low grade banded iron formation. These zones had been modelled in the previous resource estimates. RPA noted that projection of the waste zones between drill hole intercepts and extrapolation past the drill hole limits was inconsistent with respect to projections for the mineral zones. The greater extent of waste zones with respect to the previous estimates was borne out by blast hole results which were not available for previous estimates. Waste zone extents for this 2017 estimate have been modified accordingly. Other minor waste zones and discontinuous waste intercepts less than five metres horizontal width were incorporated in the mineral solids as internal waste. The modelled waste zones were used to clip voids into the mineral solids under the premise that such waste can be separated from the ore in the pit.

A specularite sub-zone (150) was also modelled at the north end of the Lower zone (100) in Deposit No. 1. The sub-zone was polylined on cross section based on lithology from core logging and where information was available in blast hole logs. The assay/composite grades for the specularite zone were included in the overall iron and other grade attribute estimates for the Lower Zone (100). The specularite zone was coded as “oretype 2” in the grade model used for the Whittle open pit design with the objective of estimating lump/fines production and for stock pile planning.

A digital terrain model (DTM) derived from Lidar topographic surveying by Terrapoint with a 30 cm resolution was created by BIM, merged with an overburden depth surface and used to clip the upper surface of Mineral Resource solids where appropriate. The initial bulk sampling bench is reflected in the DTM. Open pit production benches, mined in the Deposit No. 1 Lower Zone footwall on its west side, have been surveyed and the end of year 2016 (EOY2016) surface integrated by BIM with the LIDAR-overburden topographic surface for reporting of the EOY2016 resources and reserves. This surface was modified and validated by RPA.

A total of five mineralized solids were modelled for Deposit No. 1. Within the main mineralized zone, four stacked stratigraphic zones were modelled. The Lower Zone represents the highest grade, most continuous and thickest zone. The overlying Middle and two upper zones are limited in thickness, lateral extent, and confined largely within the fold hinge. Finally, a narrow mineralized zone (600), striking northeast and diverging from the hanging wall of the Lower Zone, was modelled where defined by drilling at its southern extent. Airborne geophysics defines a continuous anomaly over several hundred metres to the northeast of this zone, however, this portion of the zone is not included in resources because it lacks drilling. Airborne magnetic information aided in defining the width extents of mineralization in the South Limb.

4.3.2 Deposit Nos. 2 and 3

A main zone and hanging wall zone solid were defined for Deposit No. 2. These are labelled as rock codes 2000 and 2010. A single main zone (rock code 3000) was interpreted for Deposit No. 3.

For the 2009-2011 resource estimates (Wahl and Gharapetian, 2009, 2011), wireframe boundaries for Deposit Nos. 2 and 3 had been snapped to GPS locations of high grade extent in surface outcrops as well as to the drill hole traces. RPA maintained these boundaries where practicable. Iron grades at 55% cut-off were to define boundaries with the objective of achieving an iron product grade greater than 65% with a minimum horizontal mining width of five metres. Lateral extents of solids were limited by either lack of high grade Fe in surface outcrops or by the lack of assays meeting cut-off in step out drill holes.

Iron mineralization in Deposit Nos. 2 and 3 is dominated by specular hematite and as such no sub-zoning for specularite was undertaken.

The iron formation solids were used to constrain grade interpolation. The internal waste solids were used to clip/remove material from the iron formation solids. The deleterious zone solids were used to independently estimate the higher S and Mn grades within the iron formation resource solids. The volumes for each of the solids developed by RPA are listed in Table 4-4.

With respect to the solids used in the previous 2009-2013 resource estimates, total volume of the solids increased 3.5%. The differences are summarized as follows:

- The Lower Zone (zone 100) was thickened near surface as per the blast hole results, and thickened at fold hinge owing to results from the 2009 drilling.
- Specular hematite (zone 150) occurring within the Lower Zone modelled as a sub-zone.
- Some redistribution between zones 200 and 300 occurred where they merge in the South Limb.
- The depth projection of zones 200 to 400 was modified.
- The strike extent of Zone 600 strike was reduced.
- The depth project of Deposit No. 2 (zone 2000) was limited to 200 m RL.
- Internal waste zones in the Lower Zone (zone 100) were extended as dictated by blast hole results and for consistency.
- Internal waste zones in Deposit Nos. 2 and 3 modelled.

Drill hole intersections in the mineralization and deleterious wireframe solids were used to identify enclosed sample intervals which were flagged in the assay and composite databases.

Table 4-4 Zones and Other Solids Used to Constrain Grade Interpolation
Baffinland Iron Mines Corporation – Mary River Project

Zone	Geology Solid			Rock Code	Volume m^3 (000's)	Tonnes[1,2] (000's)
Deposit No. 1 Lower	RT100	RPA	Allclip	100	101,252	455,633
Deposit No. 1 Middle	RT200	RPA	Topoclip	200	14,776	66,491
Deposit No. 1 Upper 1	RT300	RPA	Topoclip	300	7,851	35,331
Deposit No. 1 Upper 2	RT400	RPA	Topoclip	400	1,158	5,209
Deposit No. 1 NE	RT600	RPA	Topoclip	600	1,981	8,915
	Subtotal				**127,018**	**571,579**
Deposit No. 2	RT2000	RPA 2017	Topoclip	2000	15,270	68,715
Deposit No. 2	RT2010	Hanging Wall Lens	Topoclip	2010	944	4,248
	Subtotal				**16,214**	**72,963**
Deposit No. 3	Deposit 3	RPA 2107	Topoclip	3000	**99,933**	**449,699**
	Total Resource Solids				**243,165**	**1,094,240**
Internal Waste/Deleterious						
Specularite	Specularite	Final	Clipped	150	5,881	26,466
North Waste 1	RT1000	Internal Waste		1000	348	1,567
North Waste 2	RT1100	Internal Waste		1100	1,074	4,833
South Waste	RT1200	Internal Waste		1200	136	612
North Deleterious	RT1300	S&Mn	deleterious	1300	2,152	9,684
South Deleterious	RT1400	S & Mn deleterious	RT100clip	1400	2,375	10,687

1) Bulk density generalized at 4.5 t/m^3

2) Waste tonnes represent loss in pre-clipped Lower Zone mineral solid

4.4 Dry Bulk Density

Density data comprised of 387 metallurgical drill core samples from Deposit No. 1 was used to derive a grade-based regression formula for estimating dry bulk density. For material within the iron formation solids, dry bulk density was calculated as: 2.65 t/m3 + (0.0288 * Fe%). This formula applies only to Fe mineralized material, not waste.

For waste rock outside the iron formation wireframe solids, dry bulk density was assigned a value of 2.82 t/m3 based on the average bulk density of 72 measurements on samples collected in 2010.

Knight Piésold provided density data for three overburden samples in the vicinity of the Deposit No. 1 open-pit location. The average density was estimated at 2.24 t/m3. Knight

Piésold cautions that given the characterization of these samples, the results should be considered approximate. RPA used a rule of thumb overburden bulk density of 2.0 t/m3 for pit design in this report. RPA recommends that additional density measurement of overburden samples be carried out.

4.5 Resource Assay Database

Assays in the resource database were coded by zone through drill hole intersection of the solids in GEMS. Figure 4-1 show resource assay sample length statistics and Tables 4-5 to 4-10 present summary assay statistics by zone for Deposit No. 1.

Figure 4-1 Assay Sample Length Statistics

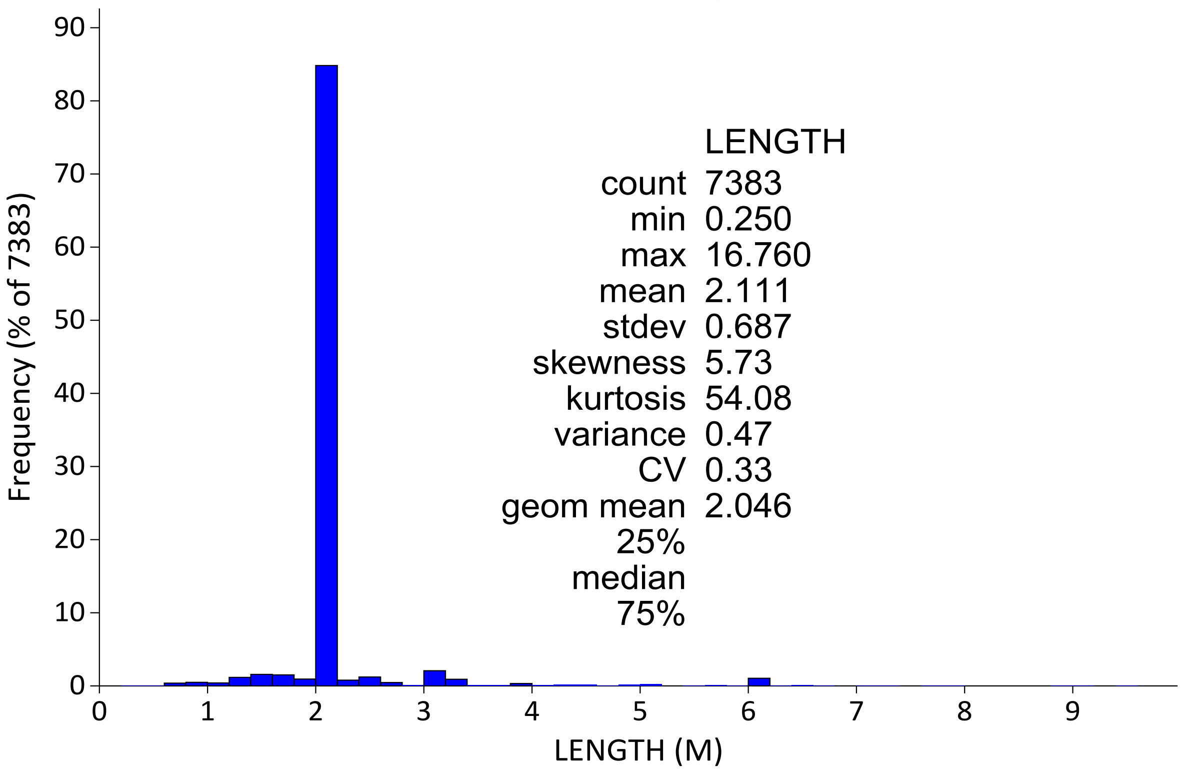


Table 4-5 Assay Statistics for Lower Zone (100) Deposit No. 1
Baffinland Iron Mines Corporation – Mary River Project

Variable	Count	Min	Max	Mean	Variance	StDev	CV
Assays							
Al_2O_3 %	5,577	0.00	25.10	1.31	8.49	2.91	2.22
CaO	5,577	0.00	14.70	0.17	0.28	0.53	3.17
Fe %	5,577	0.00	72.17	65.79	71.07	8.43	0.13
FeO %	5,577	0.00	n	12.96	131.10	11.45	0.88
H_2O %	5,577	0.00	14.00	0.00	0.66	1.00	1.69
K_2O %	5,577	0.00	3.92	0.03	0.02	0.15	5.87
LOI	5,577	-3.49	19.00	0.40	5.17	2.27	5.65
LUMP	5,577	0.00	1.00	1.00	0.07	0.00	0.35
MAG	5,577	0.00	112.79	41.77	1363.00	36.91	0.88
MgO	5,058	0.00	19.00	1.00	4.56	2.00	2.14
Mn %	5,577	0.00	5.72	0.21	0.15	0.38	1.79
Na_2O %	5,577	0.00	0.14	0.01	0.00	0.01	1.26
P %	5,577	0.00	2.33	0.03	0.01	0.08	3.06
S %	5,577	0.00	12.20	0.28	0.53	0.73	2.63
SiO_2 %	5,577	0.00	64.90	2.52	31.11	5.58	2.22
Metallurgical Testing Assays							
Apparent Density	244	3.96	5.05	4.63	0.05	0.22	0.05
Moisture%	244	0.01	6.63	0.77	0.89	0.94	1.23
RI	244	10.80	58.00	38.29	100.20	10.01	0.26
RUL	244	0.26	1.33	0.85	0.05	0.22	0.25
TA	244	0.00	40.60	12.98	53.07	7.29	0.56
TS	244	0.00	91.90	76.85	183.80	13.56	0.18

Table 4-6 Assay Statistics for Middle Zone (200) Deposit No. 1
Baffinland Iron Mines Corporation – Mary River Project

Variable	Count	Min	Max	Mean	Variance	StDev	CV
Assays							
Al_2O_3 %	1,161	0.00	17.40	1.21	3.46	1.86	1.54
CaO	1,161	0.00	7.28	0.29	0.44	0.66	2.30
Fe %	1,161	19.92	71.27	63.80	50.07	7.08	0.11
FeO %	1,161	0.00	30.70	12.84	101.70	10.08	0.79
H_2O %	1,161	0.00	7.00	1.00	0.81	1.00	1.11
K_2O %	1,161	0.00	0.42	0.01	0.00	0.02	1.76
LOI	1,161	-2.96	25.30	0.08	3.69	1.92	22.83
LUMP	1,161	0.00	1.00	1.00	0.02	0.00	0.20
MAG	1,161	0.00	98.94	41.39	1056.00	32.50	0.79
MgO	1,142	0.00	17.00	1.00	4.85	2.00	1.56
Mn %	1,161	0.00	1.16	0.11	0.02	0.13	1.21
Na_2O %	1,161	0.00	0.08	0.01	0.00	0.01	0.87
P %	1,161	0.00	1.47	0.06	0.01	0.10	1.81
S %	1,161	0.00	4.43	0.13	0.09	0.29	2.23
SiO_2 %	1,161	0.15	42.10	5.58	36.20	6.02	1.08

Metallurgical Testing Assays							
Apparent Density	62	3.64	4.80	4.26	0.06	0.25	0.06
Moisture%	62	0.05	4.36	1.21	1.04	1.02	0.84
RI	62	14.20	61.10	41.16	99.54	9.98	0.24
RUL	62	0.44	1.21	0.90	0.02	0.16	0.17
TA	62	0.00	47.40	20.82	106.20	10.31	0.50
TS	62	0.00	86.60	66.27	371.20	19.27	0.29

Table 4-7 Assay Statistics for Upper 1 Zone (300) Deposit No. 1
Baffinland Iron Mines Corporation – Mary River Project

Variable	Count	Min	Max	Mean	Variance	StDev	CV
Assays							
Al_2O_3 %	494	0.07	16.30	1.46	8.06	2.84	1.95
CaO	494	0.01	5.94	0.44	0.68	0.82	1.88
Fe %	494	13.30	71.24	61.89	121.20	11.01	0.18
FeO %	494	0.23	29.81	10.66	57.65	7.59	0.71
H_2O %	494	0.00	7.00	1.00	1.34	1.00	1.30
K_2O %	494	0.00	0.76	0.01	0.00	0.05	3.90
LOI	494	-2.98	10.60	0.76	5.66	2.38	3.12
LUMP	494	0.00	1.00	1.00	0.01	0.00	0.13
MAG	494	0.74	96.07	34.38	599.10	24.48	0.71
MgO	494	0.00	22.00	2.00	14.11	4.00	1.56
Mn %	494	0.00	0.99	0.09	0.02	0.13	1.55
Na_2O %	494	0.00	0.45	0.01	0.00	0.02	2.33
P %	494	0.00	1.28	0.08	0.01	0.09	1.21
S %	494	0.01	6.37	0.12	0.16	0.40	3.47
SiO_2 %	494	0.24	44.70	6.34	60.49	7.78	1.23
Metallurgical Testing Assays							
Apparent Density	21	3.82	4.51	4.07	0.04	0.20	0.05
Moisture %	21	0.15	4.73	1.60	2.19	1.48	0.93
RI	21	36.70	63.20	49.48	42.64	6.53	0.13
RUL	21	0.86	1.24	1.05	0.01	0.11	0.10
TA	21	0.00	55.50	27.54	198.30	14.08	0.51
TS	21	0.00	81.50	59.29	377.60	19.43	0.33

Table 4-8 Assay Statistics for Upper 2 Zone (400) Deposit No. 1
Baffinland Iron Mines Corporation – Mary River Project

Variable	Count	Min	Max	Mean	Variance	StDev	CV
Assays							
Al_2O_3 %	73	0.14	2.96	0.75	0.31	0.56	0.75
CaO	73	0.02	2.22	0.35	0.11	0.33	0.95
Fe %	73	51.31	69.44	63.26	20.53	4.53	0.07
FeO %	73	0.94	24.96	6.99	58.70	7.66	1.10
H_2O %	73	0.00	4.00	1.00	0.44	1.00	1.21
K_2O %	73	0.00	0.07	0.01	0.00	0.01	1.07
LOI	73	-1.99	4.69	0.65	1.24	1.12	1.73
LUMP	73	1.00	1.00	1.00	0.01	0.00	0.10
MAG	73	3.03	80.44	22.52	609.60	24.69	1.10

MgO	73	0.00	7.00	2.00	3.07	2.00	0.81
Mn %	73	0.00	0.31	0.04	0.00	0.05	1.09
Na_2O %	73	0.00	0.02	0.01	0.00	0.00	0.35
P %	73	0.00	0.28	0.08	0.00	0.06	0.72
S %	73	0.01	1.10	0.06	0.03	0.16	2.84
SiO_2 %	73	0.53	16.40	5.68	18.14	4.26	0.75
Metallurgical Testing Assays							
Apparent Density	5	3.81	4.05	3.95	0.01	0.10	0.03
Moisture %	5	0.23	2.59	1.46	0.70	0.84	0.57
RI	5	45.50	55.60	51.50	16.59	4.07	0.08
RUL	5	0.95	1.12	1.02	0.01	0.07	0.07
TA	5	24.10	47.30	37.22	72.58	8.52	0.23
TS	5	41.50	66.30	51.46	88.79	9.42	0.18

Table 4-9 Assay Statistics for NE Zone (600) Deposit No. 1
Baffinland Iron Mines Corporation – Mary River Project

Variable	Count	Min	Max	Mean	Variance	StDev	CV
Assays							
Al_2O_3 %	78	0.05	2.67	0.46	0.28	0.53	1.14
CaO	78	0.01	10.80	1.10	3.65	1.91	1.73
Fe %	78	30.42	69.94	63.23	72.36	8.51	0.13
FeO %	78	2.92	30.10	21.78	60.32	7.77	0.36
H_2O %	78	0.00	2.00	0.00	0.17	0.00	1.27
K_2O %	78	0.00	0.12	0.01	0.00	0.02	1.73
LOI	78	-2.31	13.30	0.78	8.41	2.90	3.73
LUMP	78	1.00	1.00	1.00	0.01	0.00	0.09
MAG	78	9.41	97.00	70.19	626.50	25.03	0.36
MgO	78	0.00	11.00	2.00	5.21	2.00	1.17
Mn %	78	0.01	1.44	0.27	0.05	0.22	0.80
Na_2O %	78	0.00	0.01	0.01	0.00	0.00	0.52
P %	78	0.00	0.15	0.02	0.00	0.03	1.64
S %	78	0.01	1.55	0.28	0.11	0.33	1.20
SiO_2 %	78	0.17	45.30	5.04	66.92	8.18	1.62
Metallurgical Testing Assays							
Apparent Density	3	4.42	4.48	4.46	0.00	0.03	0.01
Moisture %	3	0.13	0.43	0.32	0.03	0.17	0.52
RI	3	33.80	39.10	37.17	8.56	2.93	0.08
RUL	3	0.79	0.88	0.84	0.00	0.05	0.05
TA	3	17.80	53.30	32.63	340.60	18.46	0.57
TS	3	36.60	76.70	59.37	424.10	20.60	0.35

Table 4-10 Assay Statistics for 1300 and 1400 Zones Deposit No. 1
Baffinland Iron Mines Corporation – Mary River Project

Domain	Variable	Count	Min	Max	Mean	Variance	StDev	CV
1300	Mn %	167	0.00	3.66	1.28	0.56	0.75	0.58
	S %	167	0.01	12.20	1.13	1.90	1.38	1.22
1400	Mn %	155	0.05	2.80	0.82	0.33	0.58	0.70
	S %	155	0.02	7.23	1.38	1.57	1.25	0.91

4.6 Compositing

For Deposit No. 1, the sample lengths in the resource raw assay database for drill holes ranged from a minimum sample length of 0.25 m to a maximum of 16.76 m with an average of 2.15 m. A majority of the sample lengths exceeding the average originated with the WGM sampling and drilling programs. Samples were composited to five metre lengths for statistics and grade interpolation. Remaining composite intervals with a minimum length of at least 1.25 m were also included from the composite files. Initial compositing was done at two metre lengths down hole, however, these composites proved to be difficult for variogram interpretation and were thus abandoned in favour of using five meter composites with their inherent smoothing. Where assays are lacking for some attributes in the composites, a value of -999 was assigned which value is ignored during interpolation. A separate composite database was set up for the WGM "S" series holes that were mostly only assayed for Fe, S and SiO2 and interpolations for these attributes run using this simplified data.

Where the few implicit gaps in assaying occur within the resource solids, a background value was used for compositing to avoid zeros and generating waste blocks. The background levels are taken as the assays median values and were applied for the whole rock and lump attributes but not for Fe for which the background was taken as zero.

A significant portion of the LOI raw assay values in the database are negative indicating a gain on ignition likely caused by testing in a non-oxygen-free furnace. Compositing negative values produces erroneous results using the GEMS compositing algorithm consequently RPA transformed the LOI values to all positive by adding 100 to the assay value. The transformed values were interpolated.

For Deposit Nos. 2 and No. 3, samples were composited down hole to two metre lengths for statistics and grade interpolation. The short composites occur at the footwall and in many cases they are fractions of an assay split at the drill hole-solid intersection and are thus spurious. Statistical checks were performed to confirm no bias was created by rejecting the short fractions at the footwalls.

Blast holes were composited down-hole at 2.5 m lengths. Composites less than 0.63 m in length were excluded from the composite dataset.

4.7 Composite Summary Statistics

Summary statistics of the five metre composites were generated for each of the zone solids and for each of the attributes to be interpolated (Tables 4-11 to 4-19).

Table 4-11 Composite Statistics for 100 Zone Deposit No. 1
Baffinland Iron Mines Corporation – Mary River Project

Variable	Count	Min	Max	Mean	Variance	StDev	CV
Composites							
Al_2O_3%	2,103	0.01	21.86	1.39	5.43	2.33	1.68
CaO%	2,063	0.01	9.09	0.18	0.23	0.48	2.64
Fe%	2,317	6.14	71.66	66.03	48.03	6.93	0.10
FeO%	2,063	0.01	33.11	14.11	118.20	10.87	0.77
H_2O%	2,063	0.00	9.00	1.00	0.50	1.00	1.35
K_2O%	2,063	0.00	2.56	0.03	0.02	0.13	4.70
LOI	2,063	96.64	111.27	100.45	3.99	2.00	0.02
LUMP	2,063	0.18	0.99	0.86	0.01	0.10	0.11
MAG%	2,062	0.10	106.78	45.52	1228.00	35.04	0.77
MgO%	2,063	0.00	17.00	1.00	2.89	2.00	1.75
Mn%	2,103	0.00	3.24	0.23	0.13	0.36	1.55
Na_2O%	2,063	0.00	0.09	0.01	0.00	0.01	0.90
P%	2,451	0.00	1.14	0.03	0.00	0.07	2.65
S%	2,317	0.01	4.96	0.20	0.21	0.45	2.30
SiO_2%	2,317	0.04	45.69	2.29	18.81	4.34	1.90
Metallurgical Testing Composites							
Apparent Density	1,752	1.26	5.05	4.59	0.10	0.32	0.07
Moisture %	1,752	0.01	6.63	0.70	0.72	0.85	1.21
RI	1,752	8.92	58.00	38.52	94.74	9.73	0.25
RUL	1,752	0.19	1.33	0.86	0.04	0.21	0.24
TA	1,736	2.18	40.60	13.21	47.10	6.86	0.52
TS	1,736	16.80	91.90	77.52	96.91	9.84	0.13

Table 4-12 Composite Statistics for 200 Zone Deposit No. 1
Baffinland Iron Mines Corporation – Mary River Project

Variable	Count	Min	Max	Mean	Variance	StDev	CV
Composites							
Al_2O_3%	466	0.14	8.19	1.21	1.46	1.21	1.00
CaO%	466	0.01	5.49	0.30	0.32	0.57	1.92
Fe%	479	24.05	70.56	63.51	37.87	6.15	0.10
FeO%	466	0.36	30.70	13.24	98.79	9.94	0.75
H_2O%	466	0.00	6.00	1.00	0.66	1.00	0.99
K_2O%	466	0.00	0.19	0.01	0.00	0.01	1.20
LOI	466	97.24	110.97	100.06	2.33	1.53	0.02
LUMP	466	0.16	0.97	0.80	0.01	0.11	0.14
MAG%	466	1.15	98.93	42.67	1026.00	32.03	0.75
MgO%	466	0.00	12.00	1.00	2.70	2.00	1.18
Mn%	466	0.00	0.99	0.11	0.01	0.12	1.08
Na_2O%	466	0.00	0.04	0.01	0.00	0.01	0.67

P%	479	0.00	0.77	0.06	0.01	0.08	1.39
S%	479	0.00	2.42	0.13	0.06	0.25	1.84
SiO_2%	479	0.21	30.14	5.45	24.77	4.98	0.91
Metallurgical Testing Composites							
Apparent Density	414	1.23	4.80	4.19	0.21	0.46	0.11
Moisture %	414	0.05	5.26	1.06	0.96	0.98	0.93
RI	414	11.90	61.10	40.91	110.50	10.51	0.26
RUL	414	0.25	1.21	0.88	0.03	0.17	0.20
TA	403	1.40	47.40	21.26	83.82	9.16	0.43
TS	403	22.98	88.40	68.20	168.10	12.97	0.19

Table 4-13 Composite Statistics for 300 Zone Deposit No. 1
Baffinland Iron Mines Corporation – Mary River Project

Variable	Count	Min	Max	Mean	Variance	StDev	CV
Composites							
Al_2O_3%	190	0.08	14.38	1.37	5.04	2.25	1.64
CaO%	190	0.01	5.06	0.44	0.58	0.76	1.74
Fe%	190	15.47	70.86	61.35	115.10	10.73	0.17
FeO%	190	0.84	29.47	10.98	55.12	7.43	0.68
H_2O%	190	0.00	5.00	1.00	1.10	1.00	1.19
K_2O%	190	0.00	0.34	0.01	0.00	0.03	2.43
LOI	190	97.07	110.07	100.67	4.16	2.04	0.02
LUMP	190	0.45	0.98	0.78	0.01	2.03	0.13
MAG%	190	2.70	94.98	35.38	572.80	23.93	0.68
MgO%	190	0.00	20.00	2.00	10.24	3.00	1.37
Mn%	190	0.00	0.86	0.09	0.02	0.13	1.42
Na_2O%	190	0.00	0.24	0.01	0.00	0.02	1.86
P%	190	0.00	0.32	0.08	0.00	0.07	0.88
S%	190	0.01	3.59	0.12	0.11	0.33	2.78
SiO_2%	190	0.39	39.25	6.31	49.42	7.03	1.11
Metallurgical Testing Composites							
Apparent Density	124	2.38	4.51	4.05	0.12	0.34	0.08
Moisture %	124	0.13	5.49	1.42	2.28	1.51	1.06
RI	124	22.02	63.20	48.44	47.98	6.93	0.14
RUL	124	0.52	1.24	1.03	0.02	0.13	0.12
TA	121	7.74	55.50	25.92	139.00	11.79	0.45
TS	121	26.13	81.70	64.14	193.20	13.90	0.22

Table 4-14 Composite Statistics for 400 Zone Deposit No. 1
Baffinland Iron Mines Corporation – Mary River Project

Variable	Count	Min	Max	Mean	Variance	StDev	CV
Composites							
Al_2O_3%	30	0.22	2.20	0.77	0.20	0.45	0.59
CaO%	30	0.03	0.99	0.35	0.06	0.24	0.68
Fe%	30	53.35	68.95	63.13	17.47	4.18	0.07
FeO%	30	1.01	24.46	7.19	61.47	7.84	1.09
H_2O%	30	0.00	2.00	1.00	0.18	0.00	0.77

K_2O%	30	0.00	0.02	0.01	0.00	0.01	0.57
LOI	30	98.26	102.99	100.65	1.04	1.02	0.01
LUMP	30	0.72	0.98	0.82	0.01	0.08	0.10
MAG%	30	3.27	78.82	23.18	638.40	25.27	1.09
MgO%	30	0.00	6.00	2.00	2.55	2.00	0.72
Mn%	30	0.01	0.21	0.04	0.00	0.04	0.97
Na_2O%	30	0.00	0.01	0.01	0.00	0.00	0.30
P%	30	0.01	0.19	0.08	0.00	0.05	0.63
S%	30	0.01	0.50	0.06	0.02	0.13	2.23
SiO_2%	30	0.97	15.26	5.77	17.11	4.14	0.72
Metallurgical Testing Composites							
Apparent Density	24	3.81	4.05	3.94	0.01	0.09	0.02
Moisture %	24	0.23	2.59	1.45	0.60	0.78	0.54
RI	24	45.50	55.60	51.75	11.49	3.39	0.07
RUL	24	0.95	1.12	1.03	0.00	0.07	0.06
TA	24	24.10	47.30	37.12	62.07	7.88	0.21
TS	24	40.02	66.30	51.43	78.90	8.88	0.17

Table 4-15 Composite Statistics for 600 Zone Deposit No. 1
Baffinland Iron Mines Corporation – Mary River Project

Variable	Count	Min	Max	Mean	Variance	StDev	CV
Composites							
Al_2O_3%	33	0.08	1.55	0.45	0.18	0.43	0.95
CaO%	33	0.01	4.98	1.07	1.56	1.25	1.16
Fe%	33	41.26	69.48	63.30	57.07	7.55	0.12
FeO%	33	3.80	29.08	21.98	56.07	7.49	0.34
H_2O%	33	0.00	2.00	0.00	0.14	0.00	1.17
K_2O%	33	0.00	0.12	0.01	0.00	0.02	1.69
LOI	33	98.12	105.78	100.76	3.89	1.97	0.02
LUMP	33	0.74	0.98	0.84	0.00	0.07	0.08
MAG%	33	12.24	93.71	70.85	582.30	24.13	0.34
MgO%	33	0.00	8.00	2.00	4.24	2.00	1.07
Mn%	33	0.02	0.73	0.27	0.03	0.17	0.63
Na_2O%	33	0.00	0.01	0.01	0.00	0.00	0.46
P%	33	0.00	0.11	0.02	0.00	0.03	1.48
S%	33	0.01	0.96	0.29	0.08	0.29	1.01
SiO_2%	33	0.24	32.23	5.01	53.18	7.29	1.46
Metallurgical Testing Composites							
Apparent density	22	4.09	4.48	4.35	0.03	0.16	0.04
Moisture %	22	0.05	0.84	0.41	0.04	0.21	0.52
RI	22	29.00	45.30	38.60	18.72	4.33	0.11
RUL	22	0.75	1.05	0.89	0.01	0.10	0.11
TA	22	15.90	53.30	32.26	197.80	14.06	0.44
TS	22	36.60	77.30	57.71	231.90	15.23	0.26

Table 4-16 Composite Statistics for 1300 and 1400 Zones Deposit No.1
Baffinland Iron Mines Corporation – Mary River Project

Domain	Variable	Count	Min	Max	Mean	Variance	StDev	CV
1300	Mn %	67	0.00	2.69	1.30	0.38	0.62	0.47
	S %	67	0.07	5.86	1.12	0.85	0.92	0.82
1400	Mn %	67	0.09	1.93	0.80	0.23	0.48	0.59
	S %	67	0.08	3.40	1.31	0.54	0.74	0.56

Table 4-17 Composite Statistics for Blast Holes Lower Zone, Deposit No. 1
Baffinland Iron Mines Corporation – Mary River Project

Attribute	Count	Sum (m)	Min	Median	Max	Mean	StDev	CV	
Al_2O_3%	32,616	77,489.71	0.05	0.60	23.90	2.13	3.64	1.71	
CaO%	21,071	50,443.44	0.010	0.020	4.580	0.058	0.163	2.840	
Fe%	32,616	77,489.71	5.70	68.10	72.40	63.43	11.85	0.19	
FeO%	26,126	62,639.10	0.20	4.31	72.43	8.20	8.39	1.02	
K_2O%	26,977	63,866.34	0.010	0.010	6.300	0.063	0.209	3.291	
LOI%	28,222	67,367.01	-55.90	-0.31	3.17	-0.62	2.71	-4.37	
MAG%	28,199	67,358.81	0.66	12.87	98.57	25.10	25.83	1.03	
Mn%	32,610	77,474.85	0.010	0.120	3.260	0.189	0.240	1.267	
Na_2O%	30,085	71,595.69	0.030	0.050	0.770	0.046	0.029	0.631	
P%	24,848	58,880.83	0.010	0.020	1.590	0.036	0.061	1.673	
S%	27,946	66,516.60	0.010	0.020	11.500	0.063	0.257	4.065	
SiO_2%	32,616	77,489.71	0.01	0.90	73.50	4.71	93.90	9.69	2.06

Table 4-18 Composite Statistics for Deposit No.2
Baffinland Iron Mines Corporation – Mary River Project

Attribute	Count	Sum (m)	Min	Median	Max	Mean	StDev	CV	98%ile
Al_2O_3%	343	671.69	0.050	0.270	15.869	0.704	1.642	2.334	4.990
CaO%	276	546.51	0.005	0.030	0.470	0.056	0.073	1.313	0.335
Fe%	343	671.69	34.691	67.194	70.250	64.597	6.116	0.095	69.900
FeO%	276	546.51	0.120	0.995	23.400	2.307	4.377	1.897	20.350
H_2O%	276	546.51	0.001	0.065	3.540	0.242	0.485	2.004	1.536
K_2O%	276	546.51	0.002	0.006	1.321	0.051	0.163	3.189	0.598
LOI%	246	486.51	100.000	100.170	106.062	100.389	0.747	0.007	103.568
Lump	276	546.51	0.270	0.850	0.990	0.835	0.112	0.134	0.970
MAG%	246	486.51	0.390	3.349	75.410	7.960	14.846	1.865	71.701
MgO%	276	546.51	0.005	0.055	6.705	0.387	0.933	2.410	3.612
Mn%	343	671.69	0.001	0.013	0.170	0.021	0.031	1.433	0.139
Na_2O%	276	546.51	0.001	0.004	0.528	0.011	0.035	3.215	0.078
P%	343	671.69	0.001	0.010	0.157	0.017	0.020	1.179	0.079
S%	343	671.69	0.002	0.005	1.980	0.020	0.115	5.890	0.121
SiO_2%	343	671.69	0.111	2.850	40.899	6.263	7.206	1.151	23.347

Table 4-19 Composite Statistics for Deposit No. 3
Baffinland Iron Mines Corporation – Mary River Project

Attribute	Count	Sum (m)	Min	Median	Max	Mean	StDev	CV	98%ile
Al_2O_3%	437	861.67	0.010	0.490	23.630	1.449	2.878	1.985	10.149
CaO%	387	767.20	0.005	0.237	3.880	0.494	0.668	1.354	2.855
Fe%	437	861.67	18.380	67.070	70.840	65.010	6.602	0.102	69.743
FeO%	387	767.20	0.030	2.310	29.300	5.836	7.344	1.258	27.456
H_2O%	387	767.20	0.030	0.060	0.790	0.092	0.103	1.125	0.427
K_2O%	387	767.20	0.002	0.011	2.652	0.095	0.299	3.166	0.957
LOI%	273	540.40	100.000	100.650	107.500	101.222	1.395	0.014	105.497
Lump	387	767.20	0.580	0.856	0.990	0.838	0.091	0.109	0.980
MAG%	365	723.30	0.101	7.380	94.400	18.621	23.864	1.282	88.748
MgO%	387	767.20	0.040	1.090	11.799	1.473	1.483	1.007	6.556
Mn%	437	861.67	0.001	0.040	2.900	0.123	0.360	2.925	1.644
Na_2O%	387	767.20	0.001	0.008	0.840	0.036	0.101	2.842	0.361
P%	437	861.67	0.001	0.030	0.294	0.044	0.044	1.000	0.173
S%	437	861.67	0.003	0.005	2.730	0.054	0.235	4.367	0.706
SiO_2%	437	861.67	0.060	1.066	39.100	2.891	4.937	1.707	20.599

Some grade differences were noted within the various zones. The lower zone of Deposit No. 1 showed the highest mean Fe grade at 66.03 Fe (Zone 100, Table 4-10), while the middle zone average grade was 63.51% Fe (Zone 200, Table 4-12) and the upper zones 61.35% (Zone 300, Table 4-13) and 63.13% Fe. The difference in grade is a result of the middle zone containing a higher proportion of intervals which graded into banded iron formation along strike and therefore higher corresponding SiO2 grades. Mean P grades were also increasingly elevated from Lower Zone to the Upper Zones (Lower Zone 100 0.03% P (Table 4-11), Middle Zone 200 – 0.06% P (Table 4-12), and Upper 1 Zones 300 and 400 at 0.08% P (Table 4-13)).

The two deleterious zones show elevated S and Mn grades along the footwall of the Lower Zone. Zone 1300 along the Lower Zone (100) North Limb footwall has a mean S grade of 1.12% while Mn is 1.30%. The 1400 Zone located on the South Limb (100) footwall has a mean S grade of 1.31% and mean Mn grade of 0.80%.

Statistics for Deposit Nos. 2 and 3 analyses (Tables 4-18 and 4-19, respectively) show that Mn, P, and S mean and maximum grades are reasonably low. Mean Fe grades are 64.60% Fe for Deposit No. 2 and 65.00% Fe for Deposit No. 3.

Deposit No. 2 differs from Deposit No. 1 in that the magnetite content is significantly lower (Table 4-18) and specular hematite predominates. This may be a result of having a proportionally larger amount of near-surface drilling Deposit No. 2 and therefore, a greater proportion of near-surface martitization.

4.8 Block Model Limits and Attributes

A block model was constructed to cover the entire extent of the Mary River Deposit No. 1 potential pit limits. Block model size, origin, and extents for the Deposit No. 1 block models are listed in Table 4-20. A second block model was constructed to cover the entire lateral and vertical extent of the potential pit limits for Deposits No. 2 and No. 3 combined. The block model size, origin, and extents for the Deposit No. 2 and No. 3 block models are listed in Table 4-21.

Table 4-20 Block Model Description Deposit No. 1
Baffinland Iron Mines Corporation – Mary River Project

Type	Northing	Easting	Elevation
Minimum Coordinates	7913300	562190	-240
Maximum Coordinates	7916315	564455	750
Block Size	5	5	10
Rotation	0	0	0

Table 4-21 Block Model Description Deposits Nos. 2 and 3
Baffinland Iron Mines Corporation – Mary River Project

Type	Northing	Easting	Elevation
Minimum Coordinates	7912000	565000	-500
Maximum Coordinates	7916000	570500	700
Block Size	5	5	10
Rotation	0	0	0

In accordance with the anticipated mining equipment size and smallest selective mining unit (SMU), BIM requested a 5 m x 5 m x 10 m bench block size. This size is appropriate for operations but given the drill hole spacings at ≥75 m, it is smaller than the customary resource block size of ¼ to ½ the drill hole spacing that provides the appropriate interpolation resolution for the hole spacing. In practise, this means there is only small variation expected in the estimated block values at a scale of less than approximately 20 m.

Per BIM request, the block grade attributes for interpolation consisted of Fe%, SiO2%, Al2O3%, FeO%, Mag%, MgO%, S%, P%, Mn%, Na2O%, K2O%, CaO%, H2O%, LOI and Lump%. For Deposit No. 1, additional information is included in the block model for metallurgical blast furnace test attributes including: Moisture (SGA); LOI (%); Tumble Test Strength (% >6.3 mm) ISO 3271; Tumble Test Abrasion (% <0.5 mm) ISO 3271; Apparent Density (g/cc); Reduction Under Load (R40%/min) ISO 7992; and Reduction Index Test (%) ISO 7215.

Additional block attributes included resource rock code, classification, bulk density, distance to nearest sample, number of holes used for the block estimate, kriging variance for OK models and interpolation pass.

Block model rock codes for Deposit No. 1 are listed in Table 4-22. Codes for Deposit Nos. 2 and 3 are listed in Table 4-23. Resource classifications in the block model are coded as "1" for Measured resources, "2" for Indicated resources, and "3" as Inferred resources.

Table 4-22 Deposit No. 1 Block Model Rock Codes
Baffinland Iron Mines Corporation – Mary River Project

Rock Type Attribute Values in Deposit No. 1 Block Model	Rock Type Code
Lower Iron Ore Zone	100
Middle Iron Ore Zone	200
Upper 1 Iron Ore Zone	300
Upper 2 Iron Ore Zone	400
Northeast Iron Ore Zone	600
North Internal Waste Zone 1	1000
North Internal Waste Zone 2	1100
South Internal Waste Zone	1200
North Footwall Deleterious Fe Zone	1300
South Footwall Deleterious Fe Zone	1400
Overburden	5
Air	0

Table 4-23 Deposits Nos. 2 and 3 Block Model Rock Codes
Baffinland Iron Mines Corporation – Mary River Project

Rock Type Attribute Values in Block Model	Rock Type Code
Deposit No. 2 Lower Iron Ore Zone	2000
Deposit No. 2 Upper Iron Ore Zone	2010
Deposit No. 3 Main Zone	3000

For Deposit No. 1, the block model was divided into the following model folders:

- partial model folder for the Lower Zone (100), Upper zone (300) 1 and NE zone (600)
- partial model folder for the Middle Zone (200) and Upper 2 Zone (400)
- Deleterious zones (1300 and 1400) folder
- Blast hole folder

- Standard folder
- Diluted Ore-Waste folder

The partial model folders are necessary to preserve volumetric integrity for percent models in GEMS whole block space since Deposit No. 1 zones merge or have boundaries within one block size distance. The partial models, deleterious zones and blast hole models were interpolated separately. S and Mn in the partial models were estimated using composites outside the deleterious wireframes whereas the deleterious zones models were interpolated by composites within the zones' solids. The partial models, deleterious zones models and blast hole model were then merged into the Standard folder and rock codes consolidated (5000) for resource reporting. The Standard folder was transferred to the Ore-Waste folder and resource-waste edge blocks diluted. The basis for dilution is:

- Block with percent within the zone solid less than 85% is rejected as waste with zero grade and a bulk density of 2.82 t/m^3
- Grade for a block with percent within the zone solid ≥ 85% is diluted by weighting the resource percent, grade and bulk density by the percent dilution at 2.82 t/m^3 and average dilution grade. The latter determined as the weighted average values from 4,532 assays from the internal waste solids and waste outside the resource solids contacts.
- Metallurgical attributes were not diluted since samples were taken entirely within the resource solids and there is no data on dilution.

The Ore-Waste folder was exported to Whittle software for open pit design.

Waste rock in the Ore-Waste folder was assigned a bulk density of 2.82 t/m^3, based on 72 determinations as discussed above. Overburden was assigned a density of 2.0 t/m^3, as discussed above. For the iron ore zones, bulk density (BD) was estimated for each block based on an iron grade-based formula wherein BD = 2.65 t/m^3 + (0.0288 * block Fe%).

For Deposit Nos. 2 and 3 the Standard folder alone was used for interpolations, resource reporting and preliminary Whittle pit design work.

4.9 Variography

Variography study was carried out for Deposit No. 1 assay composites in the drill hole and blast hole databases. Linear down-hole and 3D semi-variograms in GEMS and Supervisor software were prepared to assess nugget and grade variance with distance along multiple directions and to evaluate vectors of the best grade continuity. No attempt was made to model the non-metallurgical attributes owing to the spatial distribution and inconsistent lengths of the parent data.

The Deposit No. 1 down-hole variograms were reasonable for all attributes showing low nugget from 5% to <25% (Figure 4-2). The 3D variograms in general were not robust, showed a lack of stationarity likely due to incorporated waste and internal data trends, cyclical structures, or short-range spikes and required variance normalization with some needed transposition to normal scores to allow for their interpretation. Variograms were successfully interpreted for primary attributes Fe, SiO2, Al2O3, P, S, and MgO, however reliable variograms could not be developed for Lump. Variography was not performed in detail for CaO, FeO, H2O, K2O, LOI, Na2O, MAG, and Mn which were interpolated by the inverse distance squared (ID2) method.

Variography results for the Deposit No.1 primary attributes are summarized as follows:

For the South limb:

- Fe, Al_2O_3, MgO and SiO_2 variograms all collinear, all modelled separately in normal-scores space, with primary continuity approximately paralleling the fold hinge (-65→095)
- S was modelled with a slightly different primary axis (57→286), also approximately paralleling the fold axis. Modelled in untransformed space
- P with a radically different primary axis (19→135), approximately orthogonal to the other variograms (i.e. approximately parallel to the strike of the south limb)

For the North limb:

- Fe, Al_2O_3 variograms collinear, primary continuity somewhat oblique to the fold axis, 61→006; both modelled separately in normal-scores space
- Strong trends (non-stationarity) in this domain precluded modelling of variograms for MgO, S, SiO2 on the north limb; each respective variogram was copied from the south limb, and assigned the same orientations as Fe & Al_2O_3 on the north limb
- As on the S limb, P returned a radically different, roughly orthogonal primary axis (19→135); it was modelled in normal-scores space

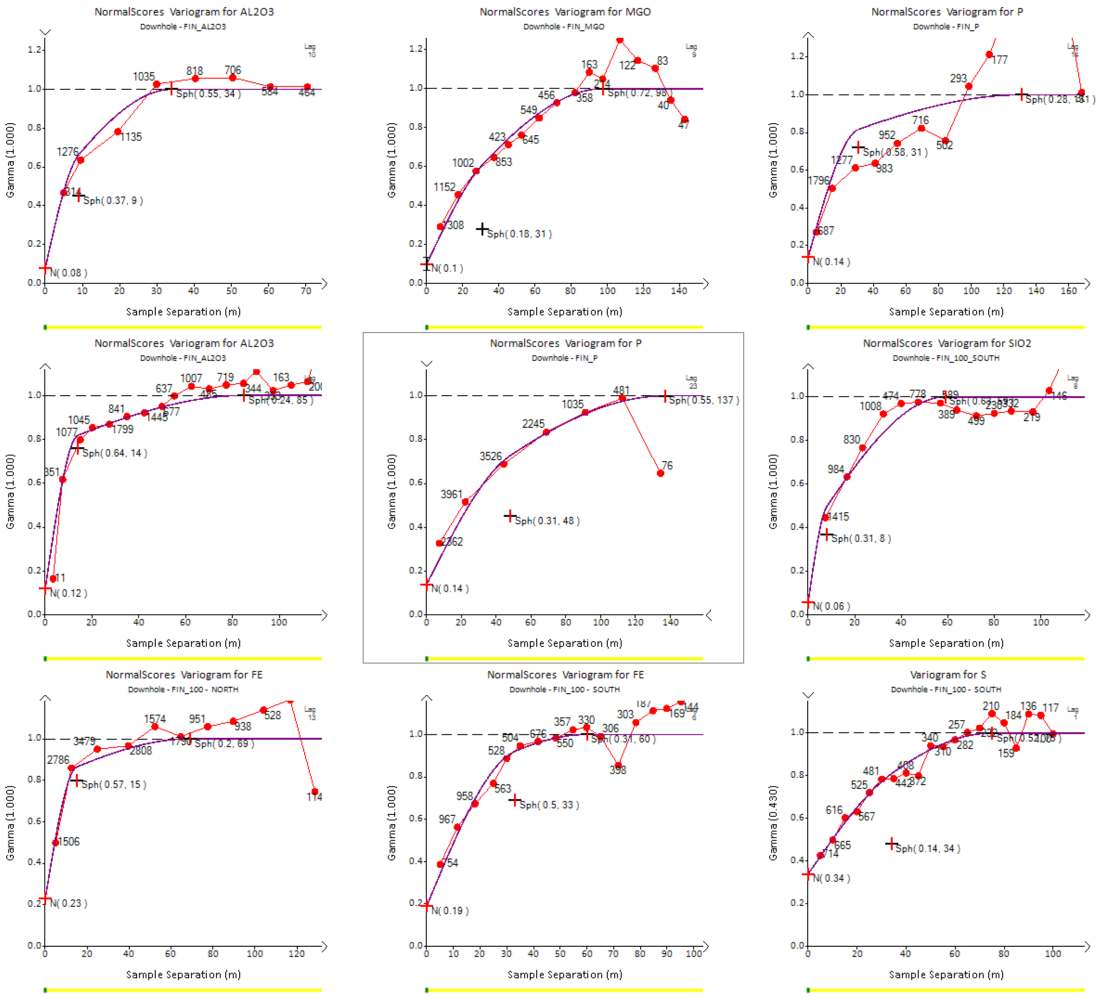
- LUMP and H2O could not be reliably modelled for either limb, so variograms were not produced for these attributes
- Variograms for P were generally poor in quality and at unusual angles with long ranges

For the transposed and normalized variograms it was noted that many of the experimental models failed to flatten out at the sill (instead flattening out above or below); in these instances, an attempt was made to emulate the shape of the experimental curve while maintaining an overall sill of 1.

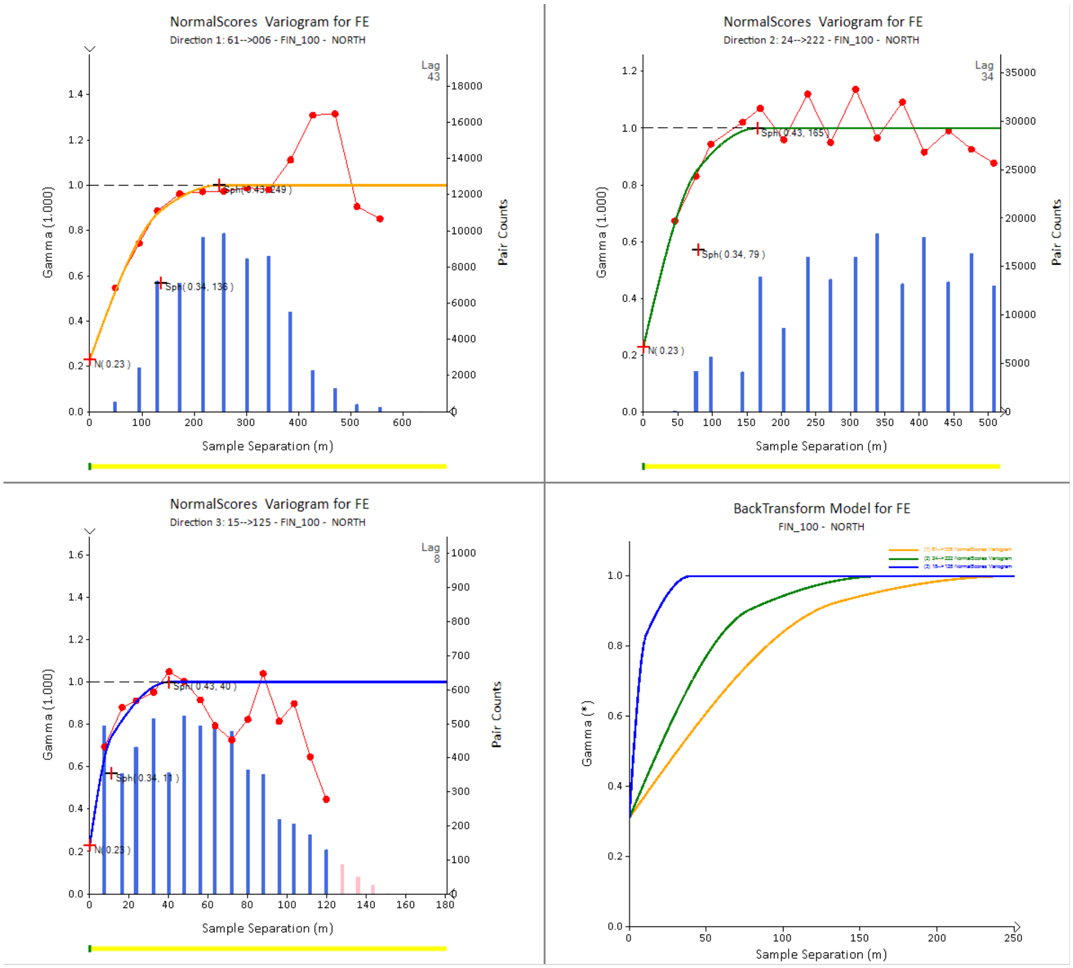
The linear down-hole and 3D variograms for the resource blast holes were very well behaved for Fe on strike and across width and resulted in reliable nested spherical models with ranges of 70 m and 50 respectively (Figure 4-3). There is insufficient mining depth to model blast hole grades down dip at the present time, however, ranges of continuity for Fe are expected to equal the on-strike distances.

In Deposit Nos. 2 and 3, wide drill hole spacing and limited drilling precluded the generation of reasonably informed variograms, however, preliminary omni directional semi-variograms showed ranges of up to 100 to 150 m for Deposit No. 2.

Figure 4-2 Downhole Variograms for Modelled Deposit No. 1 Zones



Fe North Limb



Fe South Limb

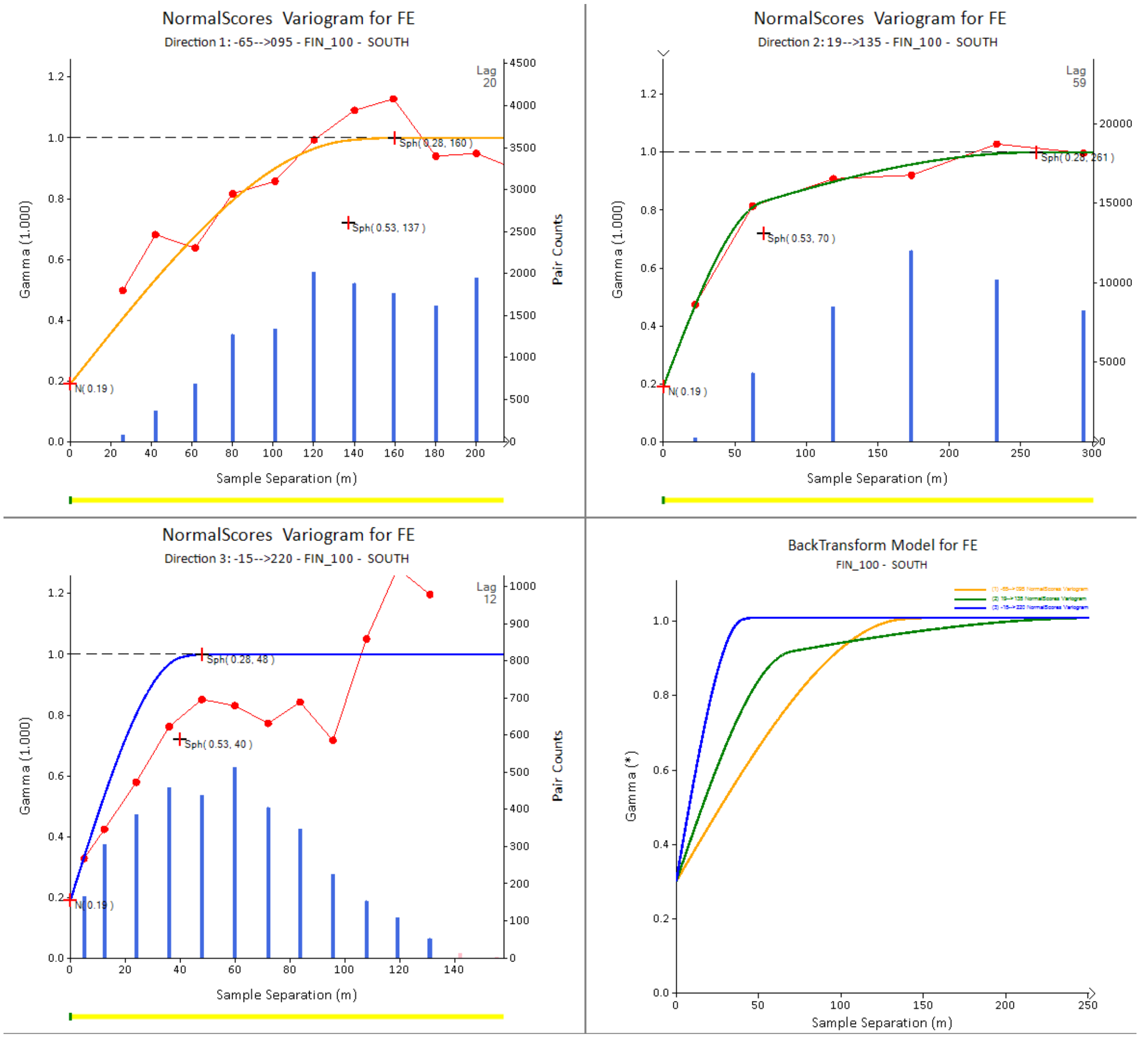
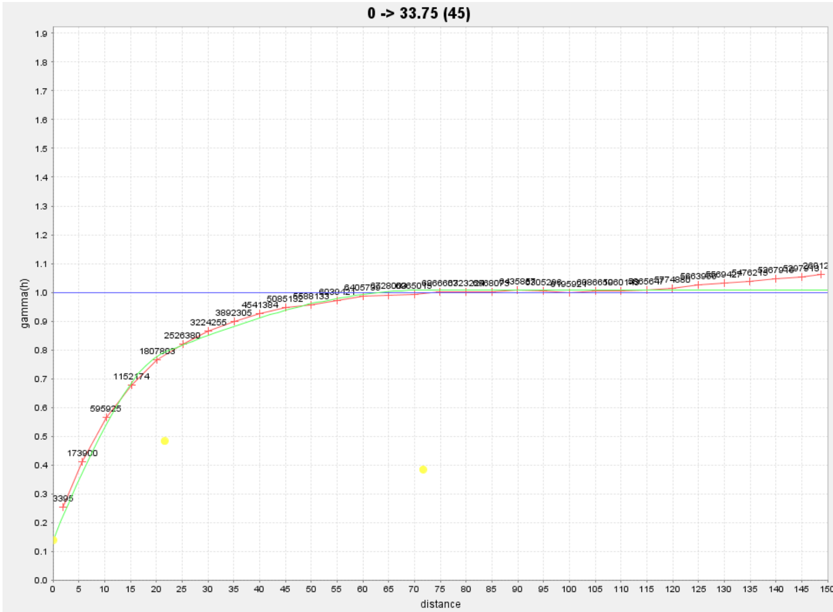
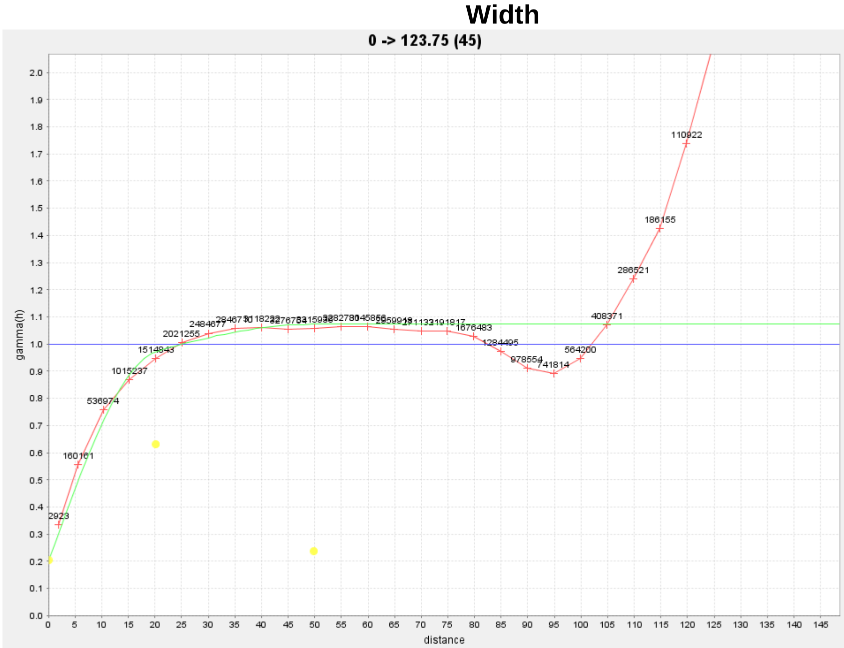


Figure 4-3 Variograms for Fe in Blast holes

Strike



Width



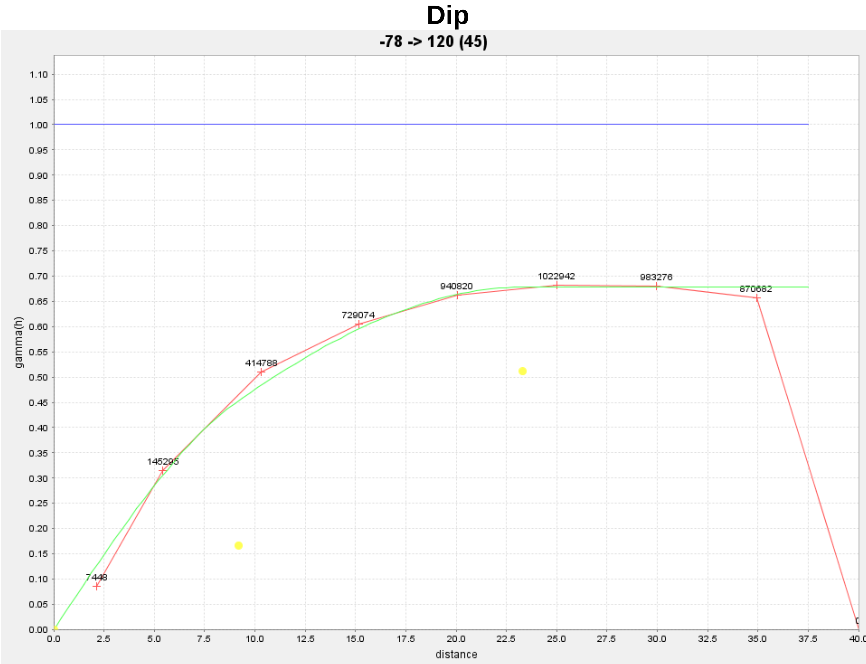

Dip
-78 -> 120 (45)
gamma(h)
distance
7448
145295
414788
729074
940820
1022942
983276
870682

Table 4-24 Deposit No. 1 Variogram Results for North Limb
Baffinland Iron Mines Corporation – Mary River Project

Parameter		Fe%	Al_2O_3%	MgO%	P%	S%	SiO_2%
	Z*	-125	-125	-125	-125	-125	-125
Rotation°	X*	-75	-75	-75	-75	-75	-75
	Z*	-115	-115	-115	155	-115	-115
Nugget	C_0	0.31	0.18	0.16	0.23	0.34	0.10
	Direction°	61-->006	61-->006	61-->006	-24-->042	61-->006	61-->006
	C_1	0.41	0.54	0.38	0.56	0.24	0.51
Vector 1	R_1 (m)	136	63	55	118	72	24
	C_2	0.28	0.28	0.47	0.21	0.42	0.38
	R_2 (m)	249	78	206	424	182	158
	Direction°	24-->222	24-->222	24-->222	61-->006	24-->222	24-->222
	C_1	0.41	0.54	0.38	0.56	0.24	0.51
Vector 2	R_1 (m)	79	40	54	106	81	19
	C_2	0.28	0.28	0.47	0.21	0.42	0.38
	R_2 (m)	165	41	139	176	137	106
	Direction°	15-->125	15-->125	15-->125	15-->125	15-->125	15-->125
	C_1	0.41	0.54	0.38	0.56	0.24	0.51
Vector 3	R_1 (m)	11	13	33	45	38	21
	C_2	0.28	0.28	0.47	0.21	0.42	0.38
	R_2 (m)	40	33	99	50	69	39

*Gems rotation about axes with respect to block model

Table 4-25 Deposit No. 1 Variogram Results For South Limb
Baffinland Iron Mines Corporation – Mary River Project

Parameter		Fe%	Al_2O_3%	MgO%	P%	S%	SiO_2%
Rotation°	Z*	140	140	140	140	140	140
	X*	75	75	75	75	75	75
	Z*	-110	-110	-110	160	60	-110
Nugget	C_0	0.30	0.15	0.16	0.29	0.34	0.10
Vector 1	Direction°	-65-->095	-65-->095	-65-->095	19-->135	57-->286	-65-->095
	C_1	0.56	0.62	0.38	0.59	0.24	0.51
	R_1 (m)	137	59	55	82	72	24
	C_2	0.15	0.22	0.47	0.12	0.42	0.38
	R_2 (m)	160	82	206	354	182	158
Vector 2	Direction°	19-->135	19-->135	19-->135	65-->275	-29-->318	19-->135
	C_1	0.56	0.62	0.38	0.59	0.24	0.51
	R_1 (m)	70	55	54	79	81	19
	C_2	0.15	0.22	0.47	0.12	0.42	0.38
	R_2 (m)	261	67	139	133	137	106
Vector 3	Direction°	-15-->220	-15-->220	-15-->220	-15-->220	-15-->220	-15-->220
	C_1	0.56	0.62	0.38	0.59	0.24	0.51
	R_1 (m)	40	13	33	34	38	21
	C_2	0.15	0.22	0.47	0.12	0.42	0.38
	R_2 (m)	48	35	99	61	69	39

*GEMS rotation about axes with respect to block model.

4.10 Estimation Methodology

The folding and variable dips dictated the partitioning of the block model into segments of similar strike and dip to permit reasonable capture of composite samples by search ellipses and to simulate stratigraphic/Fe depositional controls on the distribution of grades. For Deposit No. 1, the main north limb interpolation was constrained to the area north of Y=7914100N and within the rock code (domain) 100 solid. The northern 260 m extension of the Lower Zone strikes NS and was also partitioned and interpolated with parallel oriented ellipses.

The south limb grade interpolation was constrained to the area south of Y=7914100N and within the rock code 100 solid.

Interpolation of each rock code was restricted to using only composites contained within each corresponding domain.

Ordinary kriging (OK) was used to estimate block grades for Al2O3, Fe, MgO, P, S, SiO2 in the Deposit No. 1 Lower Zone (100) block model. Lump, FeO, Na2O, CaO, K2O, Mn, MAG, LOI, H2O and the six metallurgical test attributes and were interpolated by ID2. ID2 was also used to interpolate the Middle, Upper 1 and 2 and NE zones (domains 200, 300, 400 and 600) owing to the lower level of sampling, lack of robust variography and differences in geologic aspects (rock chemistry etc.) between these zones and the Lower Zone. All domain boundaries between the zones, i.e. 100, 200, 300, 400, and 600, were treated as hard during the interpolation. Boundaries between block model partitions were treated as soft. Interpolations were carried out in two passes for the Lower Zone domain 100 with the first pass requiring four composites minimum and a maximum of three composites per hole to ensure adequate smoothing and a minimum of one composite and maximum of 12 composites in the second pass to fill the wireframe. Domains 200 to 600 were interpolated in two passes requiring a minimum of three composites and maximum of 12 composites for the first pass and a minimum of 1 and maximum of 12 composites in the second pass to fill the wireframe. The ellipses for OK interpolation used the variogram orientations, and the Fe ellipses were also used for Lump and Al2O3, the latter because of the short ranges indicated from variography and built into the kriging profile. Ellipses for the ID2 interpolations were designed for adequate sample capture and paralleled the zones' strikes and dips.

In order for the search ellipses to follow the strike and dip changes caused by folding, the block model was partitioned into three areas for the Lower Zone (domain 100) North Limb, two areas for the South Limb; four areas for the Middle Zone (domain 200); and two areas for the Upper 1 zone (domain 300). Uniform orientations for the Upper 2 and NE zones (domains 400 and 600) required no model partitioning.

Search ellipse parameters used for Deposit No. 1 grade interpolation in are listed in Tables 4-26 and 4-27. Search ellipse parameters and model partitions for Middle, Upper and NE zones (domains 200 to 600) are listed in Table 4-28. The ellipse orientations have been converted from GEMS ZXZ and ZYZ rotation formats.

Table 4-26 Deposit No. 1 OK Search Ellipse Parameters and Model Partitions for Lower Zone
Baffinland Iron Mines Corporation – Mary River Project

					Ellipse Axis (m)			Partition Northing (m)	
Ellipse	Pass	Az°	Dip°	Rake°	Major	Semi Major	Minor	From	To
100NFEN	1	350	75	65 SE	249	165	40	7916315	7915085
100NFENL	2	350	75	65 SE	550	380	100	7916315	7915085
100NFE	1	35	75	65 SW	249	165	40	7915085	7914100
100NFEL	2	35	75	65 SW	500	330	80	7915085	7914100
100SFEL	1	310	75	70 SE	160	261	48	7914100	7913300
100SFEL	2	310	75	70 SE	420	622	96	7914100	7913300
100NMGON	1	350	75	65 SE	206	139	99	7916315	7915085
100NMGNL	2	350	75	65 SE	600	420	200	7916315	7915085
100NMGO	1	35	75	65 SW	206	139	99	7915085	7914100
100NMGL	2	35	75	65 SW	412	280	200	7915085	7914100
100SMGO	1	310	75	70 SE	206	139	99	7914100	7913300
100SMGL	2	310	75	70 SE	412	280	200	7914100	7913300
100NPN	1	350	75	25 NW	424	176	50	7916315	7915085
100NPNL	2	350	75	25 NW	550	350	100	7916315	7915085
100NP	1	35	75	25 NE	424	176	50	7915085	7914100
100NPL	2	35	75	25 NE	550	350	100	7915085	7914100
100SP	1	310	75	60 SE	354	130	61	7914100	7913300
100SPL	2	310	75	60 SE	700	270	120	7914100	7913300
100NSN	1	350	75	65 SE	182	137	69	7916315	7915085
100NSNL	2	350	75	65 SE	550	400	150	7916315	7915085
100NS	1	35	75	65 SW	182	137	69	7915085	7914100
100NSL	2	35	75	65 SW	400	300	140	7915085	7914100
100SS	1	310	75	60 SE	182	137	69	7914100	7913300
100SSL	2	310	75	60 SE	450	350	140	7914100	7913300
100NSiN	1	350	75	65 SE	158	108	39	7916315	7915085
100NSiNL	2	350	75	65 SE	500	400	150	7916315	7915085
100NSIO2	1	35	75	65 SW	158	108	39	7915085	7914100
100NSIOL	2	35	75	65 SW	450	350	100	7915085	7914100
100SSIO2	1	310	75	70 SE	158	108	39	7914100	7913300
100SSIOL	2	310	75	70 SE	550	450	150	7914100	7913300

Table 4-27 Deposit No. 1 ID2 Search Ellipse Parameters and Model Partitions for Lower Zone
Baffinland Iron Mines Corporation – Mary River Project

Ellipse	Pass	Az°	Dip °	Strike (m)	Dip (m)	Width (m)	Partition Northing (m) From	To
100NIDN	1	304	63	160	261	48	7916315	7915085
100NIDNL	2	304	63	450	650	150	7916315	7915085
100NID	1	31	78	165	249	40	7915085	7914100
100NIDL	2	31	78	400	600	100	7915085	7914100
100SID	1	322	63	160	261	48	7914100	7913300
100SIDL	2	322	63	450	650	150	7914100	7913300

Table 4-28 Deposit No. 1 Search Ellipse Parameters and Model Partitions for Domains 200 to 600
Baffinland Iron Mines Corporation – Mary River Project

Ellipse	Pass	Az°	Dip°	Strike (m)	Dip (m)	Width (m)	Partition Easting (m) From	Partition Easting (m) To	Partition Northing (m) From	Partition Northing (m) To
200N	1	31	78	115	125	40	-	-	7916315	7914300
	2	31	78	250	275	80			7916315	7914300
200MID	1	0	78	115	125	40	-	-	7914300	7914045
	2	0	78	250	275	80	-	-	7914300	7914045
200S	1	322	63	115	125	40	562190	563505	7914045	7913300
	2	322	63	250	275	80	562190	563505	7914045	7913300
200E	1	285	40	115	125	40	563505	564455	7916315	7913300
	2	285	40	250	275	80	563505	564455	7916315	7913300
300N	1	0	78	115	125	40	-	-	7916315	7914045
	2	0	78	250	275	80			7916315	7914045
300S	1	322	63	115	125	40	-	-	7914045	7913300
	2	322	63	250	275	80			7914045	7913300
400	1	342	65	115	125	40	-	-	-	-
	2	342	65	250	275	80	-	-	-	-
600	1	60	82	115	125	40	-	-	-	-
	2	60	82	250	275	80	-	-	-	-

Table 4-29 Deposit No. 1 Search Ellipse Parameters for Blast Holes
Baffinland Iron Mines Corporation – Mary River Project

Ellipse	Pass	Az°	Dip°	Strike (m)	Dip (m)	Width (m)
BLASTHLE	1	35	78	72	72	50
BLASTHL	2	35	78	144	144	100

Table 4-30 Deposit No. 1 Search Ellipse Parameters for ID2 Interpolation of Deleterious Zones S and Mn
Baffinland Iron Mines Corporation – Mary River Project

Ellipse	Pass	Az°	Dip°	Strike (m)	Dip (m)	Width (m)
RT1300	1	50	73	125	150	15
RT1300L	2	omni		500	500	500
RT1400	1	317	56	125	150	20
RT1400L	2	omni		500	500	500

Search ellipse parameters used for grade interpolation in Deposit Nos. 2 and 3 are listed in Table 4-31. Due to the limited population of pairs of points at various distances apart available for variography, the search distances used for Deposit Nos. 2 and 3 were based on data capture to ensure adequate smoothing between holes. ID2 was used to interpolate grades.

Interpolations for Deposit Nos. 2 and 3 were carried out in two passes with Pass 1 requiring a minimum of four composites, a maximum of three per hole and up to 12 composites. Pass 2 required a minimum of one composite, maximum of 12 and used a larger ellipse to ensure the solid was completely populated by grades. For Deposit No. 3 the block model was partitioned into three areas each with common azimuth and dip of the iron formation. Search ellipse parameters and model partitions are listed in Table 4-31. Ellipse orientations in GEMS were set in GEMS ZYZ format with respect to the block model and have been converted to azimuth and dip for reporting. Table 4-31 indicates that the dip of Deposit No. 3 at its western extent is sub-vertical while the eastern extent develops a significantly flatter dip.

Table 4-31 Deposit Nos. 2 and 3 Search Ellipse Parameters
Baffinland Iron Mines Corporation – Mary River Project

Ellipse	Pass	Az°	Dip°	Strike (m)	Dip (m)	Width (m)	Partition Easting (m) From	To
D2-1	1	76	79	150	200	30	-	-
D2-2	2	76	81	300	425	50	-	-
D3West	1	93	90	500	600	50	565,000	567380
D3WestL	2	93	90	900	1000	200	565000	567380
D3West1	1	81	80	500	600	50	567380	567905
D3West2	2	81	80	900	1000	200	567380	567905
D3-E1	1	63	77	500	600	50	567905	570505
D3-E2	2	63	77	600	700	100	567905	570505

4.11 Mineral Resource Classification

Definitions for resource categories used in this report are consistent with those defined by CIM (2014) and adopted by NI 43-101. In the CIM classification, a Mineral Resource is defined as “a concentration or occurrence of solid material of economic interest in or on the Earth’s crust in such form, grade or quality and quantity that there are reasonable prospects for eventual economic extraction”. Mineral Resources are classified into Measured, Indicated, and Inferred categories.

Mineral resources for both block models were classified by RPA according to the following criteria:

Deposit No. 1:

- Measured Mineral Resources: block informed by a minimum of three samples, within an interpreted mineralized solid, and within 45 m of the nearest informing sample.

- Indicated Mineral Resources: block informed by a minimum of three samples, within an interpreted mineralized solid and greater than 45 m and less than 120 m of the nearest informing sample.

- Inferred Mineral Resources: block informed by a minimum of one sample and constrained within the interpreted mineralized solid and greater than 120 m of the nearest informing sample.

Resource classification is based on the confidence in the estimation for iron only. Assaying for iron is complete whereas assay data is lacking to varying degrees for the other attributes and high coefficients of variation for assays for some of the attributes indicates that more detailed geologic interpretation and sub-domaining may be necessary to improve confidence in their estimation.

Application of the above classification criteria is derived from variography and results in localized “bullseyes” and irregular spatial distribution of resource classes owing to variability of the drill hole spacing. RPA modified this classification by smoothing the outlines of the Measured and Indicated blocks into more continuous and coherent shapes and reclassifying isolated blocks within areas dominated by other resource categories. This was done by developing solids to define volumes designated as Measured and Indicated Mineral Resources, with the remaining blocks designated as Inferred Mineral Resources. The results were not materially different from previous classifications by RPA (2013) and Wahl and Gharapetian (2011).

Deposit Nos. 2 and 3:

- Indicated Mineral Resources: block informed by a minimum of three samples, within an interpreted mineralized solid and equal to or less than 120 m from the nearest informing sample.

- Inferred Mineral Resources: block informed by a minimum of one sample within an interpreted mineralized solid and greater than 120 m from the nearest informing sample.

Deposit No. 2 is classified into Indicated and Inferred Mineral Resources. Deposit No. 3 resources are all classified as Inferred Mineral Resource.

4.12 Validation of Block Models

The block models were validated by on-screen review of block grades and drill hole composites, volumetric comparison of resource solids and resource reports, comparison of results of estimates by solid models and percent models and comparison of block grades to composites average grades on a global basis (Table 4-32). The global results for the different interpolation methods OK/ID2 versus nearest neighbour for Fe were also reviewed and served to validate the estimate of Fe grades in the block models.

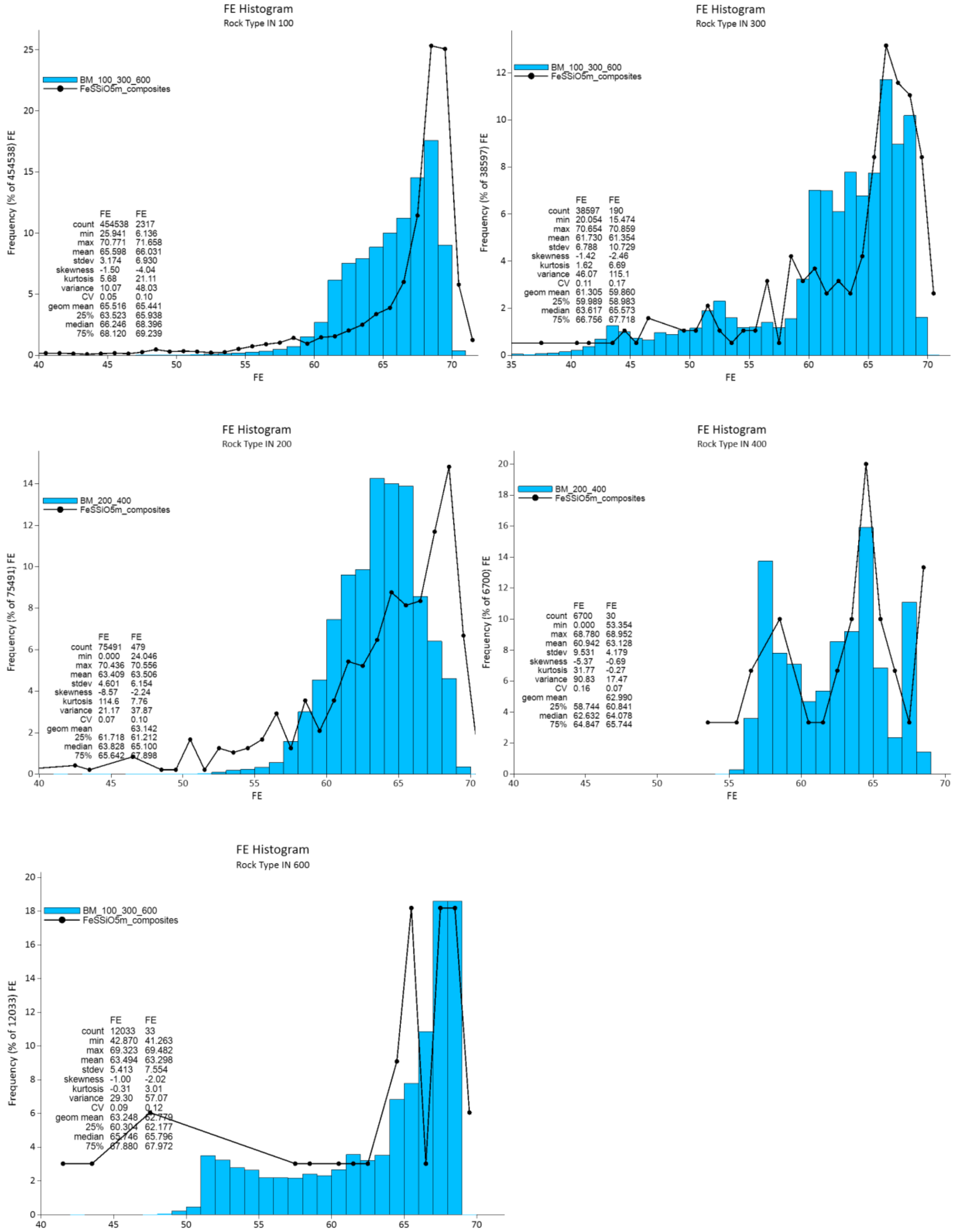
For Deposit No. 1, the local block grade estimates were validated graphically by comparing block grades by grade distribution (Figures 4-5 to 4-10).

Table 4-32 Comparison of Means Blocks vs Composites
Baffinland Iron Mines Corporation – Mary River Project

	100		200		300		400		600	
Attribute	**Model**	**Comps**	**Model**	**Comps**	**Model**	**Comps**	**Model**	**Comps**	**Model**	**Comps**
Al_2O_3%	1.237	1.390	1.098	1.210	1.251	1.370	0.796	0.770	0.390	0.450
CaO%	0.341	0.181	0.374	0.300	0.477	0.440	0.357	0.350	1.120	1.070
Fe%	65.598	66.030	63.409	63.510	61.730	61.350	62.233	63.130	63.494	63.300
FeO%	17.022	14.110	17.905	13.240	13.592	10.980	9.734	7.190	23.339	21.980
H_2O%	0.451	0.525	0.658	0.823	0.748	0.878	0.556	0.550	0.267	0.315
K_2O%	0.023	0.030	0.010	0.010	0.012	0.010	0.009	0.008	0.013	0.010
LOI Transformed	100.318	100.450	99.606	100.060	100.329	100.670	100.388	100.650	100.592	100.760
LOI	0.318	0.450	-0.394	0.060	0.329	0.670	0.388	0.650	0.592	0.760
LUMP	0.853	0.857	0.786	0.800	0.791	0.780	0.833	0.820	0.837	0.840
MAG%	54.868	45.520	57.710	42.670	43.814	35.380	31.369	23.180	75.214	70.850
MgO%	1.040	1.000	1.693	1.000	2.346	2.000	2.502	2.000	1.938	2.000
Mn%	0.260	0.175	0.117	0.110	0.082	0.090	0.035	0.040	0.305	0.270
Na_2O%	0.008	0.010	0.007	0.010	0.009	0.010	0.006	0.010	0.006	0.010
P%	0.033	0.030	0.049	0.060	0.080	0.080	0.085	0.080	0.014	0.020
S%	0.383	0.197	0.186	0.133	0.134	0.120	0.094	0.060	0.333	0.290
SiO_2%	2.443	2.290	5.632	5.450	6.338	6.310	6.930	5.770	4.811	5.010
Apparent density	4.602	4.590	4.247	4.190	3.999	4.050	3.937	3.940	4.386	4.350
Moisture %	0.810	0.700	0.881	1.060	1.347	1.420	1.283	1.450	0.372	0.410
Reduction Index	35.741	38.520	38.361	40.910	48.159	48.440	43.763	51.750	37.843	38.600
Reduction Under Load	0.800	0.860	0.844	0.880	1.049	1.030	1.013	1.030	0.865	0.890
Tumble Abrasive	14.106	13.210	23.508	21.260	29.028	25.920	39.150	37.120	31.773	32.260
Tumble Strength	76.666	77.520	65.306	68.200	61.539	64.140	49.383	51.430	58.953	57.710
Fe%NN	64.860	66.030	64.132	63.510	61.908	61.350	61.779	63.130	64.137	63.300

	Deposit 2 & 3 Domain				Deposit No.1 Domain			
	2000		3000		1300		1400	
Attribute	**Model**	**Comps**	**Model**	**Comps**	**Model**	**Comps**	**Model**	**Comps**
Al_2O_3%	0.849	0.704	1.288	1.449				
CaO%	0.073	0.056	0.466	0.494				
Fe%	63.682	64.597	65.978	65.01				
FeO%	3.084	2.307	4.556	5.836				
H_2O%	0.158	0.242	0.077	0.092				
K_2O%	0.047	0.051	0.081	0.095				
LOI	100.370	100.389	101.139	101.22				
LUMP	0.849	0.835	0.844	0.838				
MAG%	9.963	7.96	14.454	18.621				
MgO%	0.472	0.387	1.233	1.473				
Mn%	0.019	0.021	0.102	0.123	1.24	1.409	0.74	0.804
Na_2O%	0.009	0.011	0.034	0.036				
P%	0.025	0.017	0.038	0.044				
S%	0.024	0.02	0.029	0.054	1.14	1.119	1.19	1.311
SiO_2%	7.567	6.263	2.210	2.891				
Fe%NN	63.986	64.597	67.335	65.01				

Figure 4-4 Grade Distribution in Blocks and Composites Deposit No. 1



Swath plots were generated for Fe grades in composites and OK or ID2 and Fe nearest neighbour (NN) interpolations. Swath plots for Fe in the Deposit No. 1 Lower (100) and Middle Zones (200) by easting (X), northing (Y) and elevation (Z) and are depicted in Figures 4-5 to 4-10.

Figure 4-5 Deposit No. 1 Lower Zone Swath Plot Fe% for X

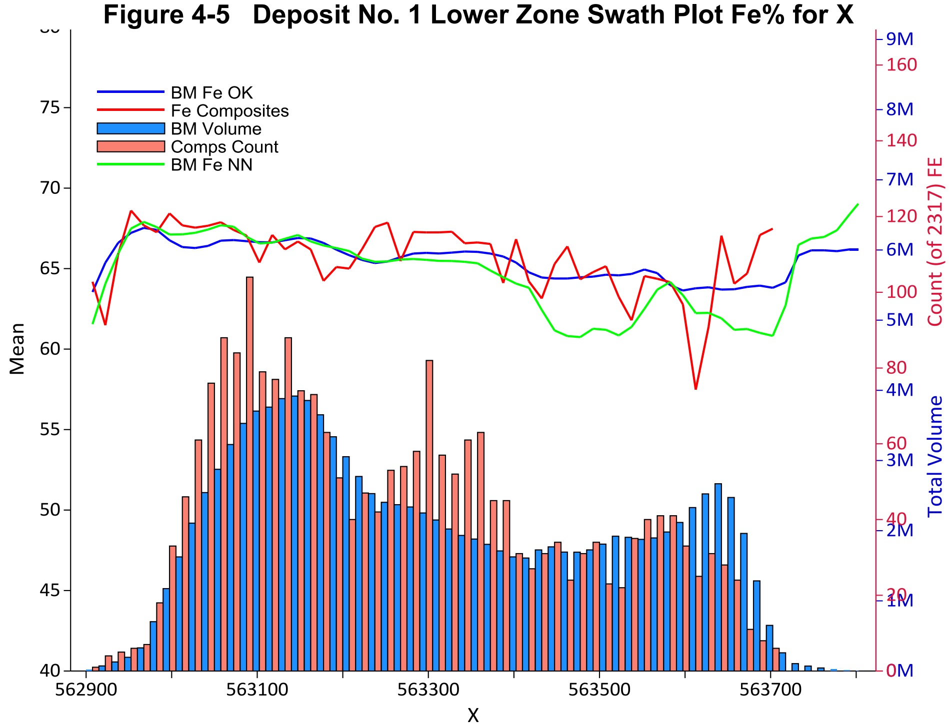


Figure 4-6 Deposit No. 1 Lower Zone Swath Plot Fe% for Y

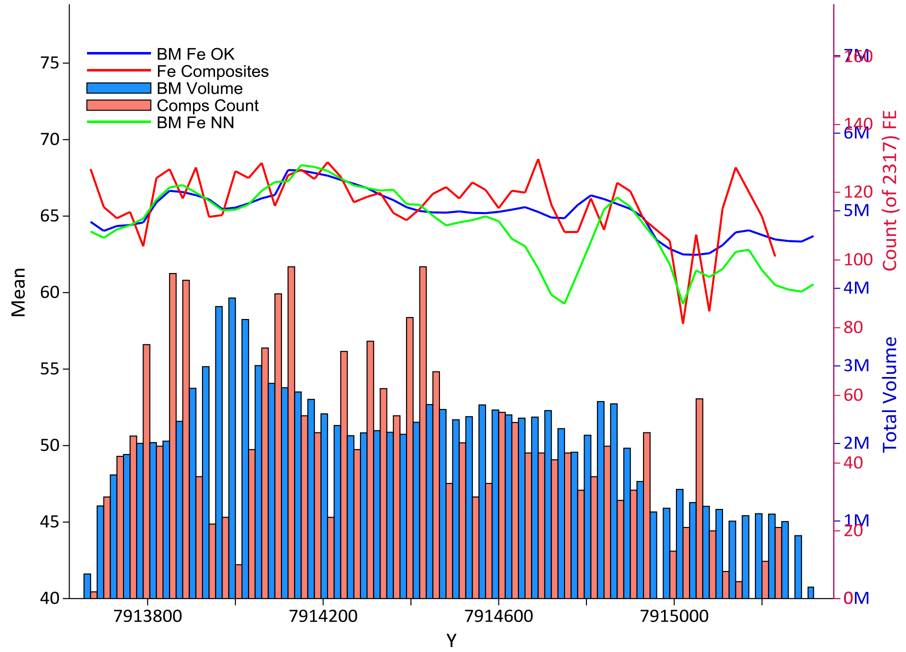


Figure 4-7 Deposit No. 1 Lower Zone Swath Plot Fe% for Z

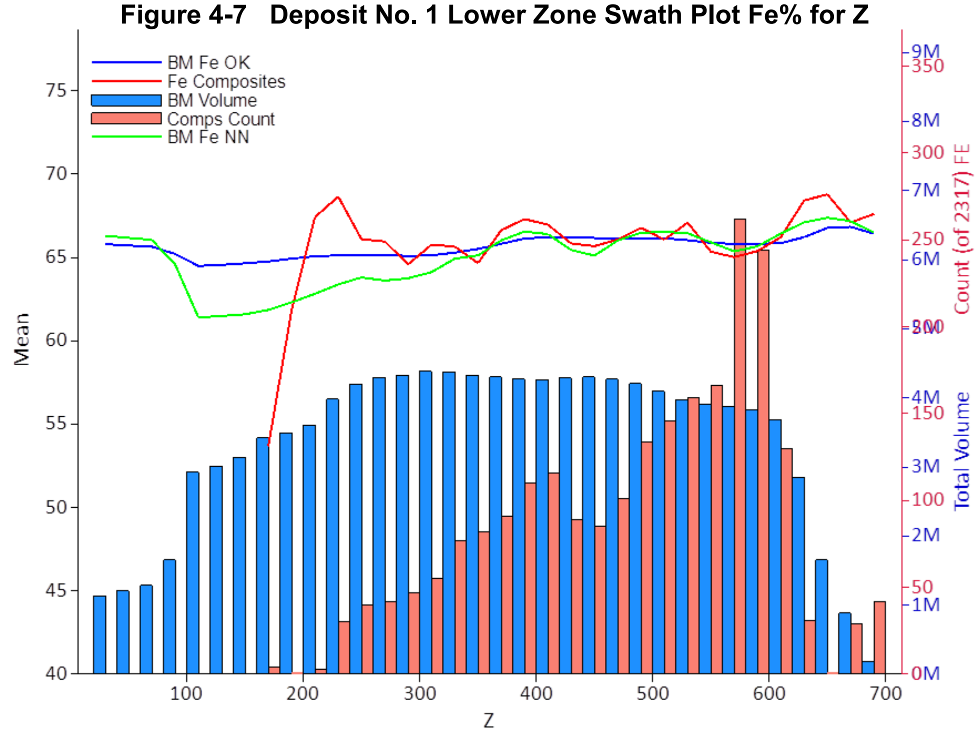


Figure 4-8 Deposit No. 1 Middle Zone Swath Plot Fe% for X

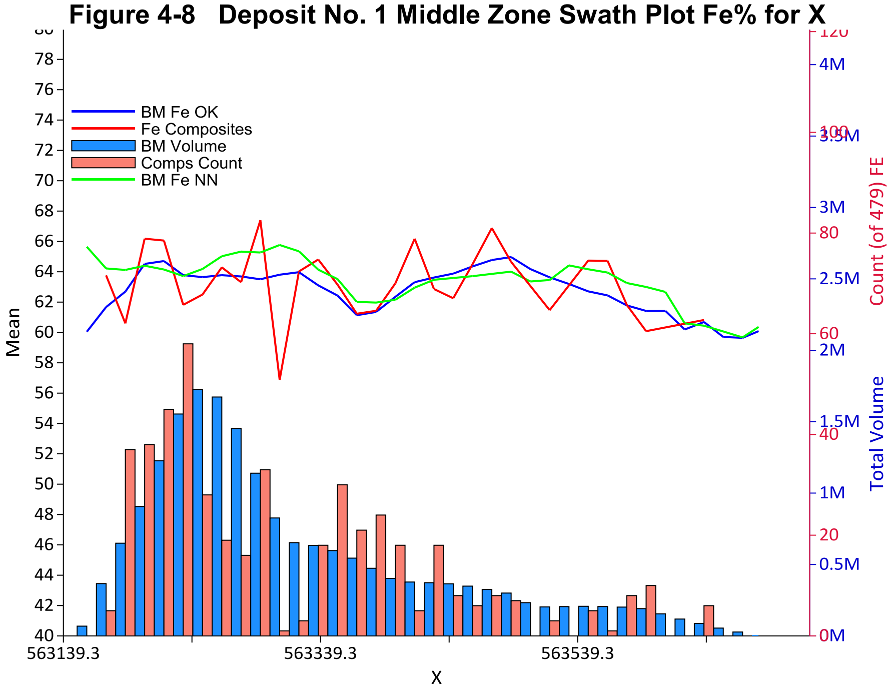


Figure 4-9 Deposit No. 1 Middle Zone Swath Plot Fe% for Y

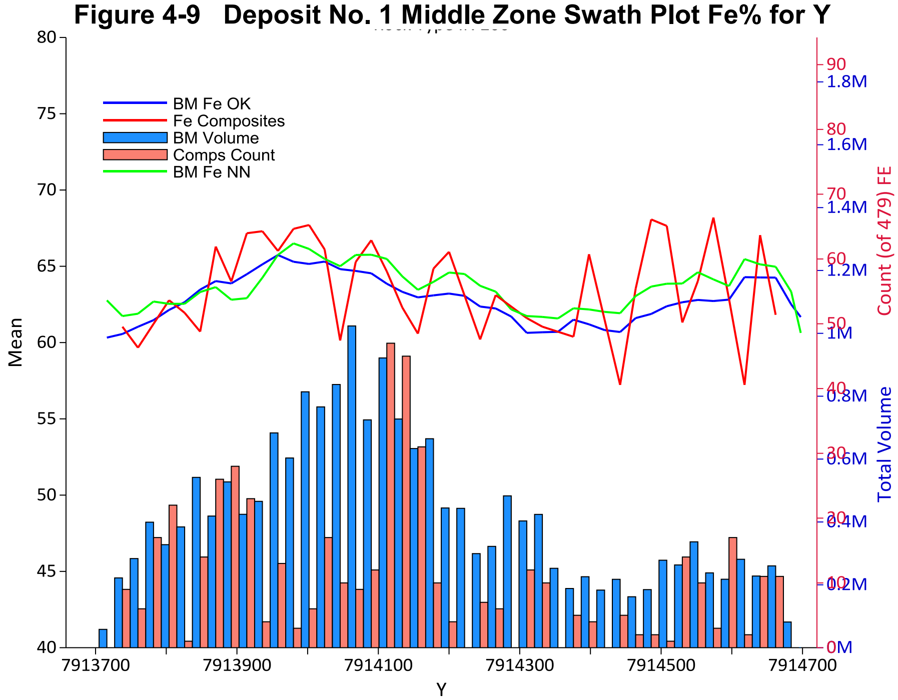
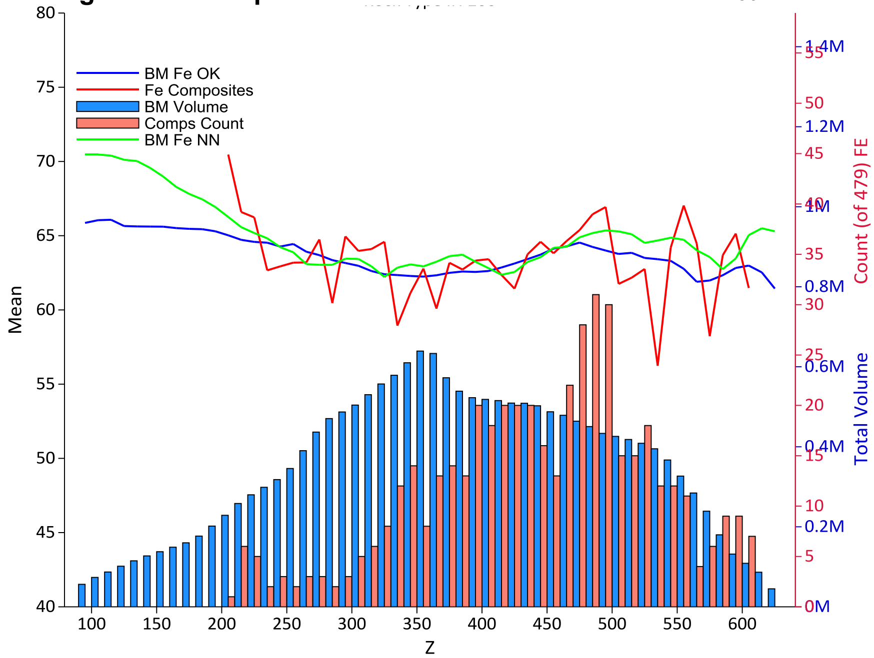


Figure 4-10 Deposit No. 1 Middle Zone Swath Plot Fe% for Z



4.13 Mineral Resource Reporting

In order to fulfill the Mineral Resource requirement for reasonable prospects for economic extraction, RPA has developed preliminary Whittle open pit optimizations for Deposit Nos. 1, 2, and 3 using all categories of Mineral Resource. This preliminary pit exercise is only to determine which blocks in the block models can be reasonably classified as Mineral Resources, and does not define Mineral Reserves, which is the subject of Section 15 Mineral Reserve Estimate. Parameters used for the preliminary Whittle pit optimization were applied using diluted block grades and a whole block approach for the 5 m by 5 m by 10 m block size (Table 4-33). For this estimate, costs were assumed for anoperation at 12 Mtpa.

Metal prices used for reserves are based on consensus with BIM, long term forecasts from banks, financial institutions, and other sources. For resources, the metal prices that RPA uses may be slightly higher than those for reserves, however, wherein a portion of the resources have been converted to reserves that are actively being mined, the prices for resources and reserves are the same.

Table 4-33 Pit Optimization Inputs - Resources

Baffinland Iron Mines – Mary River Project

Parameter	Units	Value	Source
Resource Classification	Categorical	1,2,3 (M+I+Inf)	Assigned in block model
Base Iron Price	US$/dmt	70	Based on forecasts for 62% North China fines
Whittle Price Input	US¢/dmtu	106	Based on 2013 price calculation (see Appendix 1)
Exchange Rate	C$/US$	1.28	Hatch Dec 2016 Study
Mining Extraction	%	100%	No modifying factors for resources
Process Recovery	%	99%	Allowance for ore loss during transport to port
Production Rate	Mtpa	12	Hatch Dec 2016 Study
Operating Costs			
Mining (Ore)	C$/t	5.01	Hatch Dec 2016 Study
Mining (Waste)	C$/t	5.01	Hatch Dec 2016 Study
Processing	C$/t	26.82	Hatch Dec 2016 Study
Cut-Off Grade	% Fe	55	Elevated, consistent with previous resource estimates
Pit Slopes (Azimuth)			
40 – 82	Degrees	37	Hatch Dec 2016 Study
82 – 177	Degrees	45	Hatch Dec 2016 Study
177 – 224	Degrees	42	Hatch Dec 2016 Study
224 – 260	Degrees	37	Hatch Dec 2016 Study
260 – 343	Degrees	42	Hatch Dec 2016 Study
343 – 40	Degrees	45	Hatch Dec 2016 Study

The reported in-pit resources are reported from the resource percent block model (Standard Folder) using the above described Whittle pit design and the merged Deposit No. 1 EOY2016 pit floor and topographic/overburden contact surface. The effective date of the Mineral Resource estimate for Deposit Nos. 1, 2, and 3 is EOY2016, December 21, 2016 (Table 4-34).

RPA is not aware of any environmental, permitting, legal, title, taxation, socio-economic, marketing, political, or other relevant factors that could materially affect the Mineral Resource estimate.

Table 4-34 Summary of Mineral Resources – December 31, 2016

Baffinland Iron Mines Corporation – Mary River Project

Category	Tonnes (Mdmt)	Tonnes (Mwmt)	Fe %	P %	S %	Mn %	SiO_2 %	Al_2O_3 %
Deposit No. 1								
Measured	309	311	65.9	0.028	0.25	0.21	2.6	1.2
Indicated	117	118	65.3	0.038	0.36	0.22	3.1	1.0
M+I	426	429	65.7	0.031	0.28	0.21	2.8	1.2
Inferred	73	74	65.5	0.036	0.50	0.28	2.5	0.9
Deposit No. 2								
Indicated	23	23	67.1	0.014	0.01	0.02	3.3	0.5
Inferred	14	15	65.3	0.027	0.01	0.02	4.7	1.1
Deposit No. 3								
Inferred	252	254	66.2	0.035	0.02	0.09	1.9	1.1
Totals Deposit Nos. 1, 2, and 3								
Measured	309	311	65.9	0.028	0.25	0.21	2.6	1.2
Indicated	140	141	65.6	0.034	0.30	0.19	3.1	0.9
M+I	449	452	65.8	0.030	0.27	0.20	2.8	1.1
Inferred	339	342	66.0	0.035	0.12	0.13	2.2	1.1

Notes:

1. CIM Definition Standards are followed for Mineral Resources.
2. Mineral Resources are estimated at a cut-off grade of 55% Fe for Deposits No. 1 and 2, and 62% Fe for Deposit No. 2.
3. Mineral Resources are estimated using a long-term iron ore price of $70/t Fe, and a US$/C$ exchange rate of 1.28 C$/US$.
4. Bulk density is based on a formula relating bulk density to iron content.
5. Mineral Resources are reported in dry and wet tonnes, and dry grades. In situ moisture is estimated to be 0.7%.
6. Mineral Resources are inclusive of Mineral Reserves.
7. Numbers may not add due to rounding.

The block model contains 22 attributes. Some are more reliable than others largely dependent on the support data. Table 4-35 provides comments on the reliability of each attribute.

Table 4-35 Comments on the Reliability of Support Data for Block Model Attributes
Baffinland Iron Mines – Mary River Project

Attribute	Note 1	Note 2
CLASS	Assigned by RPA based on dh spacing & interpolation pass; modified for shape irregularities	Resource table
Density	Assigned based on Fe grade; waste density at 2.82 t/m3; overburden at 2.0 t/m3	Resource table
Al2O3	Based on regular 'assay' data; ~7383 records for D1 Data incomplete for S series DH	Resource table
FE	Based on regular 'assay' data; ~7383 records for D1; Data incomplete for D2&3	Resource table
LUMP	Based on regular 'assay' data; ~7383 records for D1 Data incomplete for S series DH and D2&3	
MGO		
P		Resource table
S	Based on regular 'assay' data; ~7383 records for D1	Resource table
SIO2		Resource table
Moisture	Based on met. Tests. Limited data. ~355 records for D1	Test core sample lengths range from 7.6 m to 191.2 m which are difficult to spatially regularize for interpolation. Results are approximations only, reliability will decrease with distance from nearest drill hole. Limited data for D1 Middle and Upper zones: no data for D2 & 3
Apparent Density		
Reduction Index		
Reduction under load		
Tumble Abrasion		
Tumble Strength		
FEO		

H2O	Based on regular 'assay' data; ~7383 records for D1 Data incomplete for S series DH and D2&3	
K2O		
LOI		
MAG		
MN		Resource table
NA2O		
Reduction Disintegration	Not estimated	
Size Fraction (%>10mm)	Not estimated	
Size Fraction (%>6.3mm)	Not estimated	

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