APPENDIX 3D

MINE SITE DOCUMENTS

Process Description

2011-11-01	C	Approved for Use - Environmental Permit	D. Boffa	A. Lalonde	J. Casson	
2011-09-08	B	Client Review	M. Oliazadeh	A. Lalonde	J. Casson	
2011-08-31	A	Internal Review	M. Oliazadeh			
DATE	REV.	STATUS	PREPARED BY	CHECKED BY	APPROVED BY	APPROVED BY
			HATCH™			CLIENT

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Appendix

1. Introduction

The Mary River project is located on the northern half of Baffin Island, approximately 160 km south of Mittimatalik (Pond Inlet) and 1,000 km northwest of Iqaluit, the capital of the Nunavut Territory. About 145 km south of the Mary River site, a new ore dock facility (Steensby Inlet port) is being designed. The Mary River site will be connected to the Steensby port by a new rail line that will be dedicated to ore shipment from the Mary River site to the Steensby Inlet site. The Steensby port as well as the 145 km rail line is being designed specifically for this project.

The project is an open pit, iron ore mine to export lump and fines to Western Europe. The operation at the Mary River site consists of surface mining, sequential crushing by primary crusher and secondary crushers, stacking / re-claiming and railcar loading to transport the crushed iron ore to the port site by railway. At port site this ore is unloaded, screened and tertiary crushed in closed circuit with vibrating screens to produce two direct shipment ore (DSO) products: lumps (6.3 mm - 31.5 mm) and fines (<6.3 mm), which are stockpiled in separate piles for their subsequent re-claim and shipping by sea vessels. Lump iron ore is expected to be the main product and will account for 75% of the total production by weight. The subarctic location of the project necessitates integration of harsh cold weather in the project design.

The main elements of the project include:

- open-pit mining
- primary crushing
- secondary crushing
- ore storage and recovery stockpiles at Mary River
- railroad for shipment of ore to Steensby Inlet
- screening and tertiary crushing
- ore storage recovery systems and ship loading at Steensby Inlet port
- ore dock facilities at Steensby Inlet port.

The primary crushing, secondary crushing, bulk crushed ore stockpiles and car loading are located in the Mary River (mine site), while screening, tertiary crushing, product stockpiles and ore dock facilities are located in the Steensby Inlet island (port site).

Note: All rates mentioned in this process description are dry base and all volumetric capacities are live. Tonnages are in metric tonnes.

2. Ore and Product Characteristics

The average ore composition of Mary River Deposit No.1 is shown in Table 2-1.

Table 2-1 Mary River Average Ore Composition (Deposit No.1)

Ore Composition	Average(%)
Fe	65.88
P	0.033
S	0.22
FeO	14.84
Mn	0.16
SiO_2	3.1
Al_2O_3	1. 2
Ore moisture content - insitu	1

The product specifications from Deposit No.1 is shown in Table 2-2. These specifications are based on Baffinland Iron Mines Corporation's (BIM) trial cargo shipment contract specification (Appendix A). About 85 t of lump and 27 t of fine product was shipped to ThyssenKrupp Steel for chemical / physical investigation and blast furnace operational tests in 2008.

Table 2-2: Mary River Iron Ore Product Specifications

Characteristics	Product Specifications
Fe	>66.0%
P	<0.03%
S	<0.1%
Mn	<0.12%
SiO_2	<2.7%
Al_2O_3	<1.2%
Moisture content lump	<1%
Moisture content fines	<2%
Lump size	-31.5 mm - +6.3 mm
Fines size	-6.3 mm
Max fines produced in process	35%
Max lump in fines	10%
Max fines in lump	4%
Max -150 micron fines in fine product	8%

The run-of-mine (ROM) with a composition different from what specified in the Table 2-2 is considered as off-spec ore. A maximum 30% off-spec ore has been considered for design purposes. The off-spec ore must be blended with better quality ore from the Deposit No.1 or Deposit No.2 / 3 when these deposits become operative in later years, in order to produce an on-spec product.

The ROM is produced based on an ore quality control scheme to limit the off-spec material running into the process. ROM is delivered to primary crusher with a composition as close as possible to the desired product specification in Table 2-2. Variation from the desired product specification is controlled mainly by weekly / daily mining plans and blending in the mine site stockpile area before loading the product into the rail system. The mining plan will allow the Mary River stockpiles to make the product on-spec by providing appropriate proportions of on-spec / off-spec ore. According to the mining schedule from the 2008 Definitive Feasibility Study report, after mining year 5 the average percentages of deleterious ingredients such as S and Mn will increase in the Deposit No.1. Thus in order to sustain an on-spec product from Deposit No.1, blending the ore with high quality ore from Deposit No.2 / 3 will be unavoidable.

The maximum allowable fine produced in the whole process is 35%. A 400,000 ton ROM stockpile with a 5 days storage acting as surge capacity has been considered ahead of the primary crusher. The ROM stockpile is constructed by dumped material from the mine trucks. A FE loader feeds the primary crusher from the ROM stockpile when required.

Equipment downstream the unloading building in Steensby is designed for handling up to 35% fines in the screen bin feed. To avoid the downstream equipment from overloading, crushed iron ore with fine material above 25% (weight percent) after secondary crushing should be considered as off-spec. Crushed ore with fine material above 25% is blended with coarser iron ore in the ROM stockpile or mine site stockpile before shipment to Steensby.

3. Open Pit Mining

Eighteen million dry metric tons per year iron ore from the Mary River Deposit No.1 will be mined during 300 working days per year by open pit mining method. The Deposit No.1 reserves presently consist of 391 Mt high grade iron ore providing a mine life of 21 years. The reserve calculation was carried out by using a 59% Fe cut-off grade. The average ore grade is 65.88% iron and the average in-situ ore moisture content is 1%. Mine trucks of 290 t - 325 t capacity are used to haul ROM to the primary crushing station. Site infrastructure including shops, dump pocket, fuel docks, etc. is designed to accommodate 325 t truck class units. The trucks dump directly into the 650 t dump hopper, which is sized for two truck loads. Two months of operating delays have been included in the annual mine production plan.

4. Primary Crushing

Reference PFD: H337697-1210-05-030-0001.PDF

The ROM with top size of 1,500 mm (P_{80} = 1,080 mm) is fed into the 650 t primary crusher dump hopper. The primary crusher is a 60 x 89 gyratory crusher with an open side setting (OSS) of 200 mm. ROM is crushed down to P_{80} = 178 mm with a top size of 250 mm, at a design rate of 3,333 tph. Rock breaker 1210-RB-001 is located at the feed end of the gyratory crusher to crush oversize rocks in dump hopper 1210-BN-002. A VFD apron feeder re-claims the primary crushed ore through a 650 t surge hopper and feeds belt conveyor 1230-CV-001. The design moisture content of the ore is 2%. A dust sealing blower protects the primary crusher from dust exposure. An overhead crane and dust collecting system is foreseen for the primary crusher building (1000-BLD-1210.100).

Due to very cold winter in the area, a vacuum cleaning system is considered for cleaning the crusher building from spillage instead of a wet sump system which has a risk of freezing. A mini loader is used to remove spillage from the primary crusher discharge feeder area and from the sideway beside the underground part of belt conveyor 1230-CV-001.

After primary crushing, the material is conveyed to secondary crusher building by belt conveyor 1230-CV-001. Belt scale 1230-WE-013 is installed at the tail end of belt conveyor 1230-CV-001 to monitor the ROM.

5. Secondary Crushing

Reference PFD: H337697-1230-05-030-0001.PDF

The ore from belt conveyor 1230-CV-001 is further crushed in open circuit in two 7 ft (1,000 hp) cone crushers to produce a bulk crushed ore product with top size of 75 mm (P_{80} = 43 mm). The secondary crushers closed side setting (CSS) is set to 38 mm. In the head end of belt conveyor 1230-CV-001, digital metal detector 1230-MD-021, protects secondary crushers 1230-CR-011 / 012 from tramp metal pieces in the ore ahead of a 1,700 t secondary crushers feed bin which has two outlets. Upon tramp metal detection the diverter gate of two-way diverter 1230-CHD-003 under belt conveyor 1230-CV-001 is activated automatically by a hydraulic power pack, and part of the ore including the tramp metal piece is diverted through a chute to a small tramp metal pile outside the secondary crusher building. Each of the 7 ft secondary crushers are fed by a VFD apron feeder. Crushed ore from the secondary crushers is recovered at a design rate of 3,333 tph over an in house belt conveyor 1230-CV-014 in the secondary crusher building 1000-BLD-1230.100. An on-stream particle size analyser controls the secondary crushed material particle size in the head end of belt conveyor 1230-CV-014. The crushed ore is transferred to overland belt conveyor 5130-CV-001 in the secondary crusher building.

An overhead crane and dust collecting system is installed for the secondary crusher building. A vacuum cleaning system is also considered for cleaning the crusher building from spillage.

6. Ore Storage and Recovery Stockpiles

Reference PFD: H337697-5130-05-030-0001.PDF

Crushed ore from secondary crushers is conveyed by overland belt conveyor 5130-CV-001 about 1,200 m in length to transfer house BLD-5130.101. In head end of overland belt conveyor 5130-CV-001, belt scale 1230-WE-034 controls the product weight delivered to the storage area. A sampler (5130-SA-003) is considered in head end of the overland belt conveyor in transfer house BLD-5130.101. Secondary crushed ore can be diverted through a hydraulic diverter gate 5130-CHD-005 to be directly sent to railcar loading station by belt conveyor 5180-CV-001 or to stacker yard conveyor 5130-CV-011 in the transfer house. The stacker yard conveyor 5130-CV-011 transfers the ore via a mobile tripper equipped with a bypass facility (either bypass chute or collapsible tripper) that allows mobile stacker 5130-ST-012 to stack the ore on one of two 400,000 t linear on-spec stockpiles, or on a 150,000 t linear off-spec stockpile with a design rate of 5,733 tph. The design capacity incorporates the maximum blending circulating rate. Otherwise by bypassing the mobile stacker, the ore will be transferred to belt conveyor 5130-CV-017 and re-claim yard conveyor 5130-CV-022 in transfer house BLD-5130.104 and BLD-5130.103 respectively. These two transfer houses are equipped with dust collector. Re-claim yard conveyor 5130-CV-022 transfers ore via a mobile tripper which allows mobile stacker / re-claimer 5130-RC-023 to stack the ore with a rate of 4,000 tph, either on the three aforementioned stockpiles, or on two emergency linear on-spec and off-spec stockpiles parallel but on the opposite side of the three stockpiles when required. To homogenise the material as much as possible, blended ore is stacked in Windrow configuration into the stockpiles.

For re-claiming purpose, stacker / re-claimer 5130-RC-023 and re-claimer 5130-RC-024 can individually or simultaneously re-claim ore from any of the on-spec linear stockpiles by a rate of 3,000 tph each. Any of the re-claimers may recover individually from the off-spec stockpiles for blending it with on-spec ore coming from secondary crushers. For blending purpose one of the re-claimers recovers the off-spec ore with a nominal rate of 1,333 tph (2,400 tph design rate) onto re-claim yard conveyor 5130-CV-022. The re-claimed off-spec ore is diverted to blending belt conveyor 5130-CV-032 through an automatic diverter gate in transfer house BLD-5130.102. The blending belt conveyor transfers the off-spec ore to transfer house BLD-5130.101, where it is blended with coming on-spec ore from overland belt conveyor 5130-CV-001. The head end of belt conveyor 5130-CV-032 is equipped with belt scale 5130-WE-035 in transfer house BLD-5130.101. Off-spec ore is distributed over the on-spec ore on stacker yard conveyor 5130-CV-011 in the transfer house BLD-5130.101. The transfer houses BLD-5130.102 and BLD-5130.101 are equipped with dust collector system. For railcar loading purpose both of the re-claimers recover the on-spec ore with a rate of 3,000 tph each onto re-claim yard conveyor 5130-CV-022. The re-claimed on-spec ore is diverted through an automatic diverter gate (5130-CHD-026) onto belt conveyor 5180-CV-001 in transfer house BLD-5130.104 with a design rate of 8,000 tph. Belt conveyor 5180-CV-001 is equipped with belt scale 5180-WE-014 in transfer house BLD-5130.102.

An important point to take into consideration is that blending off-spec material can only take place at times that trains are not being loaded (loading trains is approximately 12 hours to 14 hours per day) and even then blending will only be done at a rate of around 1,333 tph to 2,400 tph.

7. Railroad for Shipment of Ore to Steensby Inlet

Reference PFD: H337697-5180-05-030-0001.PDF and H337697-5210-05-030-0001.PDF

The ore from the stockpile area is transported by conveyor 5180-CV-001 to an 1,800 t rail load out bin in the railcar load-out station building 5000-BLD-5180.100. A volumetric rail load out system feeds the ore into railcars with a design rate of 8,000 tph. The railcar loading building is equipped with dust collector, vacuum cleaning system, and inbound and outbound rail scales to weigh tare and gross weight of railcars. There are three train sets for the 145 km railway between Mary River and Steensby Inlet and each train is comprised of 110 wagons. Each train set is equipped with 2 locomotives. Each wagon has a nominal holding capacity of 94 t. Total holding capacity per train is 10,340 t, and typical train set cycle is 11 hours.

Railcars from the mine site are unloaded by a rotary twin railcar dumper into two 190 t unloading bins in the railcar unloading station building 5000-BLD-5210.100 in Steensby. Material is withdrawn from the bins, at a rate of 6,000 tph, by two VFD apron feeders. The whole rail system utilisation for handling 18 Mtpa, 300 days a year is 56%. Dust collector and vacuum cleaning system is foreseen for the rail unloading area.

8. Screening and Tertiary Crushing

Reference PFD: H337697-1260-05-030-0001.PDF and H337697-1270-05-030-0001.PDF

The material is conveyed from the rail unloading area to transfer house BLD-5210.101 by belt conveyor 5210-CV-013, and then it is further conveyed to the screening building 1000-BLD-1260.100 via a bridge over the sea to Steensby Island by belt conveyor 1260-CV-001. Transfer house BLD-5210.101 is equipped with dust collector.

Screening building 1000-BLD-1260.100 is equipped with overhead crane, dust collector and vacuum cleaning system for cleaning the screening building from spillage. The ore is distributed by a hydraulic two way diverter gate 1260-CHD-005 over the screening building shuttle conveyor 1260-CV-006 on top of the 14,400 t screen feed bin. The material is withdrawn from seven outlets of this bin by seven VFD belt feeders 1260-FE-017 / 023. Each feeder feeds a double-deck 12 feet x 27 feet vibrating screen 1260-SC-031 / 037. The top deck is set at 32 mm, and the bottom deck at 6 mm opening. Lump product from screens with a total design rate of 5,100 tph and a size range of +6.3 mm to -31.5 mm is diverted on belt conveyor 5350-CV-001 by 7 chutes. Fine product from screens with a size of -6.3 mm is diverted on belt conveyor 5350-CV-014 by 7 respective fine material chutes with a design rate of 2,100 tph.

The over screen material is conveyed by belt conveyor 1270-CV-001 to a two-way diverter gate (1270-CHD-003) over the tertiary crushing building 1000-BLD-1270.100 with a design rate of 3,600 tph. Tertiary crushers 1270-CR-013 / 014 are in closed circuit with the vibrating screens and the design circulating load is 60%. Digital metal detector 1270-MD-021 over the head end of the belt conveyor 1270-CV-001 protects tertiary crushers from tramp metal pieces in the ore ahead of an 1,800 t tertiary crusher-feed-bin. The tertiary crushers' 1,800 t feed bin has two outlets. Upon tramp metal detection the flap gate of the hydraulic two-way diverter gate (1270-CHD-003) under the belt conveyor 1270-CV-001 is automatically activated, and part of the ore including the tramp metal piece is diverted through a chute to a small tramp metal pile

outside the tertiary crusher building. Each of the 7 ft (1,250 hp) tertiary crushers are fed by a VFD apron feeder. Tertiary crushed product is fed back to the 14,400 t screen feed bin by belt conveyor 1260-CV-068. Belt scale 1270-WE-023 on belt conveyor 1260-CV-068 controls the over screen material crushed by the tertiary crushers. Overhead crane, dust collector and also vacuum cleaning system for cleaning the crusher building from spillage is foreseen for the tertiary crusher building. Dust particles trapped in the dust collector are discharged on fine material conveyor 5350-CV-014 in the screening building.

9. Ore Storage Recovery Systems and Ship Loading

Reference PFD: H337697-5350-05-030-0001.PDF

The fine product from belt conveyor 5350-CV-014 is transferred to stacker yard conveyor 5350-CV-024 in transfer house BLD-5350.101. Lump product from belt conveyor 5350-CV-001 is transferred to re-claim yard conveyor 5350-CV-011 in transfer house BLD-5350.102. To determine the tonnage of fines and lumps products, yard conveyors 5350-CV-024 and 5350-CV-011 are equipped with belt scales 5350-WE-0022 and 5350-WE-0023 in transfer houses BLD-5350.101 and BLD-5350.102 respectively. Both of the transfer houses have dust collectors. To control the screening operation performance, fine and lump products from belt conveyors 5350-CV-014 and 5350-CV-001 are sampled by samplers 5350-SA-019 / 006 before being transferred to belt conveyors 5350-CV-024 and 5350-CV-011 respectively.

Fine product from stacker yard conveyor 5350-CV-024 is stacked on a 1,300,000 t linear fine product stockpile via mobile stacker 5350-ST-025 with a stacking rate of 2,100 tph. Mobile stacker / re-claimer 5350-RC-012 with a bypass facility (either bypass chute or collapsible tripper) stacks lump product at a stacking rate of 5,100 tph on two linear stockpiles. Total capacity of lump stockpiles is 3,200,000 t.

The availability of both stackers 5350-ST-025 and 5350-RC-012 are critical for the port site unit operation. In case of failure to the fine product stacker 5350-ST-025, the port site plant operation except than reclaiming and ship loading activities would have to stop. In case of failure to the lump stacker 5350-RC-012, if a ship is available by the wharf, the lump product may bypass the lump stacker and loaded in the ship. This avoids a plant stoppage until completion of ship loading and repair work on the failed stacker.

For re-claiming purpose, stacker / re-claimer 5350-RC-012 and / or re-claimer 5350-RC-013 individually or simultaneously re-claim the product from stockpiles – each product (lump / fines) at a time. Nominal re-claim rate of each re-claimer is 6,000 tph. The re-claimed product is transferred to re-claim yard conveyor 5350-CV-011 and fed into a 1,500 t ship loading surge bin in transfer house BLD-5370.100. The bin has two outlets and two belt feeders 5370-FE-003 / 006 on its discharge end to feed the product to belt conveyor 5370-CV-011. Transfer house BLD-5370.100 is equipped with dust collector. From this point the product is further conveyed by belt conveyor 5370-CV-011 to transfer house BLD-5370.101 at the ore dock facilities.

A large portion of each ship (up to 60,000 t) will be loaded with lump product coming directly from the dumper, screens and tertiary crushing, bypassing the stacker and going to the ship. Thus the focus of operation is to have as much blending done as possible before loading it onto trains in Mary River.

10. Ore Dock Facilities

Reference PFD: H337697-5370-05-030-0001.PDF

In transfer house BLD-5370.101 at the ore dock facilities the product from conveyor 5370-CV-011 is sampled by sampler 5370-SA-013 before being transferred to ship-loader wharf conveyor 5370-CV-018. Conveyor 5370-CV-011 is equipped with a VFD motor to enable immediate rate changes to the ship-loaders. Feed control to the ship loader wharf conveyor 5370-CV-018 is done with belt scale 5370-WE-001 in its tail end. Transfer house BLD-5370.101 is equipped with dust collector. The product is conveyed by wharf belt conveyor 5370-CV-018 at a design rate of 16,000 tph. Wharf belt conveyor 5370-CV-018 has two travelling trippers. A two-way hydraulic proportional diverter gate at the end of the first travelling tripper splits the product from belt conveyor 5370-CV-018 onto the ship loader 5370-SL-019 and belt conveyor 5370-CV-018. The product on belt conveyor 5370-CV-018 is further conveyed to the second travelling tripper and transferred to second ship loader 5370-SL-020. Ship-loaders 5370-SL-019 / 020 are equipped with belt scales 5370-WE-024 / 025 to control maximum feed to the ship-loaders.

Steensby Inlet wharf is designed to load cape size ships 360 days a year and commercial size ships during frost free summer months.

Appendix A:

Baffinland Iron Mines Corporation's Trial Cargo Shipment Contract Specification

Baffinland Iron Mines Corporation's Trial Cargo Shipment Contract Specification

Iron Ore Contract Specifications.xls

Conditions common to all contracts (actual shipment specifications may vary)

Ore types	Country	Product	Fe	S	P	SiO2	Al2O3	Others	Moisture	Size	Notes
CVRD-Tubarao A	Brazil - SSystem	lump	66/64	0.03	0.08	3.5	1.5	0.15	6	-12.5mm 45% maximum	Mn not in guarantee, but in product spec sheets as 0.3% Mn
CVRD-SFJ	Brazil - SSystem	fines	66.5/65.0	0.03	0.035	3.8	0.8	0.15	6	+6.3mm 13% maximum; -150micron 42% maximum	In product spec sheets as 0.2% Mn
CVRD-Carajas	Brazil - NSystem	lump	66.5	0.02	0.065	1.0	1.5	0.15	5	-6.3mm 14% max	0.5% Mn max
CVRD-Carajas	Brazil - NSystem	fines	66.0	0.02	0.065	1.7	1.7	0.15	9	+6.3mm 10% maximum; -150micron 20% maximum	0.8% Mn Max
Hamersley Iron	Pilbara-MM-B Blend	lump	64/62	0.05	0.06	5.0	2.0	0.15	3	-6.3mm 10.5% max	Blending Marra Mamba & Brockman ores (Mn between 0.20-0.40%)
Hamersley Iron	Pilbara-MM-B Blend	fines	64/61	0.05	0.07	7.0	2.5	0.15	6	-150micron 28% maximum	Blending Marra Mamba & Brockman ores (Mn between 0.20-0.40%)
BHP Billiton	Mt Newman	lump	64/62	0.04	0.06	5.0	2.0	0.15	3	-6.3mm 13% max	Blending Marra Mamba & Brockman ores (Mn between 0.20-0.40%)
BHP Billiton	Mt Newman	fines	60/59	0.06	0.07	7.0	3.0	0.15	6	-150micron 28% maximum	Blending Marra Mamba & Brockman ores (Mn between 0.20-0.40%)
Penalties				*$0.10/0.01%*	*$0.30/0.01%*	*$0.10/1%*	*$0.50/1%*			*~$0.50-1.5 for each 1% in excess of contract amount based upon variance of shipped product specifications*	

Source: Tex Report Iron Ore Manual 2000, 2004, 2006

Shipped Products (Specification sheets)

Ore types	Country	Product	Fe	S	P	SiO2	Al2O3	Others	Moisture	Size	Notes
CVRD-Tubarao A	**Brazil - SSystem**	**lump**	**65.0**	**0.006**	**0.065**	**2.5**	**2.0**	**0.15**	**4.5**	**+12.5mm 82% maximum**	**Mn 0.3% Mn**
CVRD-SFJ	**Brazil - SSystem**	**fines**	**66.0**	**0.005**	**0.027**	**3.6**	**0.7**	**0.15**	**4.8**	**+6.3mm 9% maximum; -150micron 27% maximum**	**In product spec sheets as 0.2% Mn**
CVRD-Carajas	**Brazil - NSystem**	**lump**	**64.4**	**0.006**	**0.05**	**1.8**	**2.3**	**0.15**	**5**	**-6.3mm 17% max**	**0.75% Mn**
CVRD-Carajas	**Brazil - NSystem**	**fines**	**67.0**	**0.006**	**0.033**	**0.9**	**1.0**	**0.15**	**8**	**+6.3mm 10% maximum; -150micron 16%**	**0.5% Mn**
Hamersley Iron	Pilbara-MM-B Blend	lump	64/62	0.05	0.06	5.0	2.0	0.15	3	-6.3mm 10.5% max	Blending Marra Mamba & Brockman ores (Mn between 0.20-0.40%)
Hamersley Iron	Pilbara-MM-B Blend	fines	64/61	0.05	0.07	7.0	2.5	0.15	6	-150micron 28% maximum	Blending Marra Mamba & Brockman ores (Mn between 0.20-0.40%)
BHP Billiton	Mt Newman	lump	64/62	0.04	0.06	5.0	2.0	0.15	3	-6.3mm 13% max	Blending Marra Mamba & Brockman ores (Mn between 0.20-0.40%)
BHP Billiton	Mt Newman	fines	60/59	0.06	0.07	7.0	3.0	0.15	6	-150micron 28% maximum	Blending Marra Mamba & Brockman ores (Mn between 0.20-0.40%)

Source: Company Publications

Contract conditions

Ore types	Country	Product	Fe	S	P	SiO2	Al2O3	Others	Moisture	Size	Notes
Baffinland	Canada-Mary River	lump	66	0.13	0.04	3.2	1.3	0.15	2	-6.3mm 8% max	Mn Maximum 0.20%
Baffinland	Canada-Mary River	fines	66	0.13	0.04	3.2	1.3	0.15	4	+6.3mm 10% maximum; -150micron 12% maximum	Mn Maximum 0.20%

Sale Products (first 10 years)

Ore types	Country	Product	Fe	S	P	SiO2	Al2O3	Others	Moisture	Size	Notes
Baffinland	Canada-Mary River	lump	66	0.1	0.03	2.7	1.2	0.15	1	-6.3mm 4% max	Mn Maximum 0.12%
Baffinland	Canada-Mary River	fines	66	0.1	0.03	2.7	1.2	0.15	2	+6.3mm 10% maximum; -150micron 8% maximum	Mn Maximum 0.12%

Note: current data insufficient to separate lump-fine chemical specifications

Appendix B:

Overview Of Dust Collection System – Inlet Dust Characteristics

B.1 General

An overview is provided below that gives an estimate of the range of inlet dust loading and aerodynamic size distribution that is characteristic of each of the eighteen (18) dust control systems located in areas 1,000 (mine and mineral processing) and 5,000 (Material Handling). The dust control systems are installed on all material processing and handling operations that could potentially generate dust emissions into the workplace environment and eventually to atmosphere. Local exhaust hoods will be provided for truck dumping, all crushing stages, screening, material transfers to conveyors and bins, train loading and unloading, and to the greatest extent possible on ship loading.

Each of the 18 dust control systems will be exhausted to a fabric filter baghouse equipped with the latest pleated filter technology. A conservative filter velocity will be specified in order to maintain consistent filter pressure drop and collection efficiency and to maximize filter element life. A guarantee of less than 10 mg/dry Nm^3 will be required from the baghouse equipment supplier.

B.2 Inlet Dust Loading

Dust generated from mining and mineral processing operations varies widely with the type of ore mined, the processing steps and the size distribution of the final product.

The US Environmental Protection Agency published emission factors (AP-42) for metallic minerals processing operations as a whole cites a total emission factor of 2.26 kg/Mg or 4.52 lb/ton of material processed. This includes the following activities: primary crushing, secondary crushing, tertiary crushing and materials handling and transfer. The crushing operations are described as likely including dump hoppers, screens and various material transfers. Using the EPA emission factors and a maximum production rate of 4,000 Mg/h, the resultant baghouse dust inlet loading concentration is estimated at 8 g/Am^3 (grams per actual cubic metre) or 3.5 gr/acf (grains per actual cubic foot).

Two products from the mining operation will be high grade lump ore and high grade fines. Preliminary screen analyses were carried out for both products by Metso and presented in a pilot plant test report. Generally, material less than 75 microns -100 microns can potentially become airborne during material processing and handling operations and, therefore, can be picked up at local dust control exhaust points, depending on variables such as moisture content, specific gravity of the particles and face velocity of the exhaust hood. The pilot testing screen analyses showed that the average % less than 100 microns were 0.8 for lump ore and 6.4 % for fines. It is expected that the production rate for lump ore is 70% and fines 30%. Therefore an average of approximately 2.5% of the material processed will be less than 100 microns. Based on this, a maximum production rate of 4,000 Mg/h and a 50% chance of becoming airborne in an exhaust hood, the potential peak baghouse inlet dust loading is estimated at around 44 g/Am^3 (19 gr/acf).

Outside of the USEPA's field measurements to determine their overall emission rates, very little data is available for specific baghouse inlet loading rates. Moreover, each measurement would be unique for its own dust control system, depending on material characteristics and processing steps.

Hatch conducted some tests at the Barrick Goldstrike Mines dust collection system on primary crushing systems in 2006, to determine dust loading and particle size distribution in order to

specify a scrubber for particulate control. The tests showed that the potential scrubber inlet dust loading was in the range of 8.7 to 18.5 gr/dscf (22 to 48 g/dry Nm^3).

Based on this information, the range of dust emission rate to the baghouses is expected to be 20 g/dry –50 g/dry Nm3 or 8 gr/dscf -19 gr/dscf.

B.3 Particle Size Distribution

The size distribution tests by Metso were aimed at the ore products and the smallest screen size used was 200 Mesh (74 microns). Therefore, no particle size distribution data is available for the dust portion of the samples.

Particle size distribution measurements at the Barrick Goldstrike Mines Primary Crushing Operation scrubber inlet showed the following:

50% < 10 microns

28% <5 microns

6% <1 micron

This is the only Hatch in-house information available taken from actual measurements and is considered to be typical of dust control systems for materials handling operations involving crushing, screening and material transfer.

It is expected that the particle size distribution for operations involving the lump ore product will be similar to the above data, while the size distribution for operations involving the fine ore product will be skewed towards a finer size range.

Appendix C:

Pilot Test Report, prepared by Metso

Mineral Research and Test Center
Milwaukee, WI, USA

PILOT TEST REPORT

Prepared for:

Baffinland Iron Mines Corp.

Material: Iron Ore

February 2, 2009

Prepared by: Lucas Steiner, Test Center Manager
Mineral Research & Test Center

Objective:

The objective of this testing was to find material characteristics and properties of the material supplied by Baffinland Irons Mines Corp. The two samples received were high grade fine iron ore and high grade lump iron ore.

Testing:

Tests that were performed on the two materials received where three Angle of Repose Tests on each material and five full Screen Analysis's with bulk density.

Results:

Results from the testing can be seen in the following pages. A summary of the angle of repose testing can be seen in Figure 1. A summary of the Bulk Densities from each screen analysis can be seen in Figure 2.

Angle of Repose θ Summary

	High Grade Fine Ore		High Grade Lump Ore	
Test	**Radians**	**Degrees**	**Radians**	**Degrees**
1	0.659	37.78	0.658	37.70
2	0.603	34.54	0.679	38.88
3	0.611	35.03	0.676	38.73

Figure 1- Angle of Repose Summary

Bulk Density Summary

Test	Lump lb/ft^3	Fine lb/ft^3	Lump g/cm^3	Fine g/cm^3
1	155.29	152.70	2.49	2.45
2	146.83	160.28	2.35	2.57
3	156.25	157.20	2.50	2.52
4	157.34	160.66	2.52	2.57
5	152.05	155.67	2.44	2.49
		Range	2.35 - 2.52	2.45 - 2.57

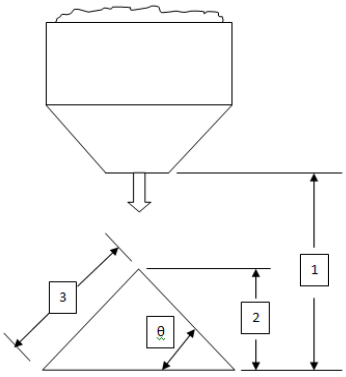
Figure 2- Bulk Density Summary

High Grade Lump Results

Mineral Research & Test Center

Date:	**01/30/09**	Time:	**11:00 AM**
Customer:	**Baffinland Iron Corp**	Material:	**Iron Ore lump**
Test Code:	**0900-01**	Prepared by:	**AWF, CJW, L. Steiner**
Remarks:			

Angle of Repose Results



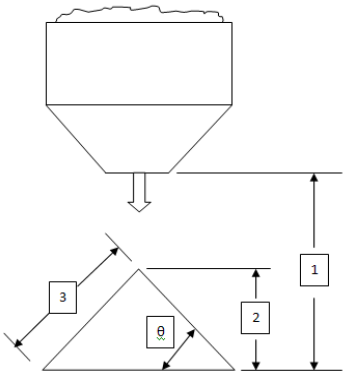
Dimensions (in.)	
1	**51**
2	**22.625**
3	41
	35
	35
	37
3 (AVG.)	**37**

Angle of Repose θ	
Rad.	Deg.
0.658	**37.70**

Mineral Research & Test Center

Date:	**01/30/09**	Time:	**11:00 AM**
Customer:	**Baffinland Iron Corp**	Material:	**Iron Ore lump**
Test Code:	**0900-01**	Prepared by:	**AWF, CJW, L. Steiner**
Remarks:			

Angle of Repose Results



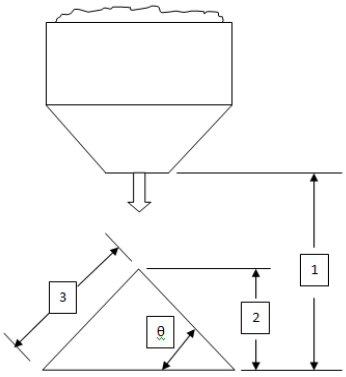
Dimensions (in.)	
1	**51**
2	**22.125**
3	36
	34
	35
	36
3 (AVG.)	**35.25**

Angle of Repose θ	
Rad.	Deg.
0.679	**38.88**

Mineral Research & Test Center

Date:	**01/30/09**	Time:	**11:00 AM**
Customer:	**Baffinland Iron Corp**	Material:	**Iron Ore lump**
Test Code:	**0900-01**	Prepared by:	**AWF, CJW, L. Steiner**
Remarks:			

Angle of Repose Results



Dimensions (in.)	
1	**51**
2	**22.25**
3	36.5
	34
	34.25
	37.5
3 (AVG.)	**35.5625**

Angle of Repose θ	
Rad.	Deg.
0.676	**38.73**

Metso Minerals
Mineral Research & Test Center

Preliminary Screen Analysis
* * Subject to Review * *

Test Date: **02/02/09** Time: **10:00 AM**

Customer: **Baffinland Iron mine** Material: **Iron Ore**
Test Code: **0900-01** Percent Moisture: **#DIV/0!**
Sample: **High Grade Lump** Density (lb/ft3): **155.3**

Remarks: **Test 1**

Screen Opening	Tyler mesh	US mesh	Sample Weight	Weight Percent	Percent Retained	Percent Passing
12.00						
8.00						
6.00						
4.00						
3.00						
2.00						
1.50						100.0
1.05			1330.0	8.3	8.3	91.7
0.742			3855.0	24.0	32.3	67.7
0.525			4955.0	30.8	63.1	36.9
0.371			2805.0	17.5	80.5	19.5
0.263	3		2090.0	13.0	93.5	6.5
0.185	4	4	340.0	2.1	95.7	4.3
0.131	6	6	150.0	0.9	96.6	3.4
0.093	8	8	68.0	0.4	97.0	3.0
0.065	10	12	36.0	0.2	97.2	2.8
0.046	14	16	23.0	0.1	97.4	2.6
0.0328	20	20	19.0	0.1	97.5	2.5
0.0232	28	30	21.0	0.1	97.6	2.4
0.0164	35	40	24.0	0.1	97.8	2.2
0.0116	48	50	29.0	0.2	98.0	2.0
0.0082	65	70	34.0	0.2	98.2	1.8
0.0058	100	100	46.0	0.3	98.5	1.5
0.0041	150	140	61.0	0.4	98.8	1.2
0.0029	200	200	70.0	0.4	99.3	0.7
		PAN	117.0	0.7	100.0	
		TOTAL	16073.0	100.0		

80% Passing Point : 0.8994 inches
22845 microns

Nordberg 8/99 TSC04.123

Metso Minerals
Mineral Research & Test Center

Preliminary Screen Analysis
* * Subject to Review * *

Test Date: **02/02/09** Time: **10:00 AM**

Customer: **Baffinland Iron mine** Material: **Iron Ore**
Test Code: **0900-01** Percent Moisture: **#DIV/0!**
Sample: **High Grade Lump** Density (lb/ft3): **146.8**

Remarks: **Test 2**

Screen Opening	Tyler mesh	US mesh	Sample Weight	Weight Percent	Percent Retained	Percent Passing
12.00						
8.00						
6.00						
4.00						
3.00						
2.00						
1.50						100.0
1.05			2015.0	13.3	13.3	86.7
0.742			3795.0	25.1	38.4	61.6
0.525			4740.0	31.3	69.8	30.2
0.371			2245.0	14.8	84.6	15.4
0.263	3		1550.0	10.2	94.8	5.2
0.185	4	4	250.0	1.7	96.5	3.5
0.131	6	6	95.0	0.6	97.1	2.9
0.093	8	8	45.0	0.3	97.4	2.6
0.065	10	12	25.0	0.2	97.6	2.4
0.046	14	16	16.0	0.1	97.7	2.3
0.0328	20	20	14.0	0.1	97.8	2.2
0.0232	28	30	15.0	0.1	97.9	2.1
0.0164	35	40	18.0	0.1	98.0	2.0
0.0116	48	50	24.0	0.2	98.2	1.8
0.0082	65	70	27.0	0.2	98.3	1.7
0.0058	100	100	42.0	0.3	98.6	1.4
0.0041	150	140	47.0	0.3	98.9	1.1
0.0029	200	200	50.0	0.3	99.3	0.7
		PAN	111.0	0.7	100.0	
		TOTAL	15124.0	100.0		

80% Passing Point : 0.9680 inches
24588 microns

Nordberg 8/99 TSC04.123

Metso Minerals
Mineral Research & Test Center

Preliminary Screen Analysis
* * Subject to Review * *

Test Date: **02/02/09** Time: **10:00 AM**

Customer: **Baffinland Iron mine** Material: **Iron Ore**
Test Code: **0900-01** Percent Moisture: **#DIV/0!**
Sample: **High Grade Lump** Density (lb/ft3): **156.3**

Remarks: **Test 3**

Screen Opening	Tyler mesh	US mesh	Sample Weight	Weight Percent	Percent Retained	Percent Passing
12.00						
8.00						
6.00						
4.00						
3.00						
2.00						
1.50						100.0
1.05			1895.0	11.7	11.7	88.3
0.742			4960.0	30.5	42.2	57.8
0.525			4420.0	27.2	69.4	30.6
0.371			2674.0	16.5	85.9	14.1
0.263	3		1440.0	8.9	94.7	5.3
0.185	4	4	240.0	1.5	96.2	3.8
0.131	6	6	104.0	0.6	96.9	3.1
0.093	8	8	55.0	0.3	97.2	2.8
0.065	10	12	30.0	0.2	97.4	2.6
0.046	14	16	20.0	0.1	97.5	2.5
0.0328	20	20	17.0	0.1	97.6	2.4
0.0232	28	30	18.0	0.1	97.7	2.3
0.0164	35	40	21.0	0.1	97.9	2.1
0.0116	48	50	25.0	0.2	98.0	2.0
0.0082	65	70	29.0	0.2	98.2	1.8
0.0058	100	100	44.0	0.3	98.5	1.5
0.0041	150	140	52.0	0.3	98.8	1.2
0.0029	200	200	68.0	0.4	99.2	0.8
		PAN	130.0	0.8	100.0	
		TOTAL	16242.0	100.0		

80% Passing Point : 0.9660 inches
24535 microns

Nordberg 8/99 TSC04.123

Metso Minerals
Mineral Research & Test Center

Preliminary Screen Analysis
* * Subject to Review * *

Test Date: **02/02/09** Time: **10:00 AM**

Customer: **Baffinland Iron mine** Material: **Iron Ore**
Test Code: **0900-01** Percent Moisture: **#DIV/0!**
Sample: **High Grade Lump** Density (lb/ft3): **157.3**

Remarks: **Test 4**

Screen Opening	Tyler mesh	US mesh	Sample Weight	Weight Percent	Percent Retained	Percent Passing
12.00						
8.00						
6.00						
4.00						
3.00						
2.00						
1.50						100.0
1.05			2015.0	15.2	15.2	84.8
0.742			5005.0	37.8	53.1	46.9
0.525			3930.0	29.7	82.8	17.2
0.371			1515.0	11.5	94.2	5.8
0.263	3		110.0	0.8	95.1	4.9
0.185	4	4	200.0	1.5	96.6	3.4
0.131	6	6	82.0	0.6	97.2	2.8
0.093	8	8	37.0	0.3	97.5	2.5
0.065	10	12	20.0	0.2	97.6	2.4
0.046	14	16	12.0	0.1	97.7	2.3
0.0328	20	20	10.0	0.1	97.8	2.2
0.0232	28	30	11.0	0.1	97.9	2.1
0.0164	35	40	13.0	0.1	98.0	2.0
0.0116	48	50	18.0	0.1	98.1	1.9
0.0082	65	70	21.0	0.2	98.3	1.7
0.0058	100	100	34.0	0.3	98.5	1.5
0.0041	150	140	39.0	0.3	98.8	1.2
0.0029	200	200	42.0	0.3	99.2	0.8
		PAN	112.0	0.8	100.0	
		TOTAL	13226.0	100.0		

80% Passing Point : 1.0112 inches
25685 microns

Nordberg 8/99 TSC04.123

Metso Minerals
Mineral Research & Test Center

Preliminary Screen Analysis

* * Subject to Review * *

Test Date: **02/02/09** Time: **10:00 AM**

Customer: **Baffinland Iron mine** Material: **Iron Ore**
Test Code: **0900-01** Percent Moisture: **0.56%**
Sample: **High Grade Lump** Density (lb/ft3): **152.1**

Remarks: **Test 5**

Screen Opening	Tyler mesh	US mesh	Sample Weight	Weight Percent	Percent Retained	Percent Passing
12.00						
8.00						
6.00						
4.00						
3.00						
2.00						
1.50						100.0
1.05			2180.0	12.1	12.1	87.9
0.742			4790.0	26.7	38.8	61.2
0.525			5155.0	28.7	67.5	32.5
0.371			2720.0	15.1	82.6	17.4
0.263	3		2090.0	11.6	94.3	5.7
0.185	4	4	320.0	1.8	96.1	3.9
0.131	6	6	123.0	0.7	96.7	3.3
0.093	8	8	44.0	0.2	97.0	3.0
0.065	10	12	23.0	0.1	97.1	2.9
0.046	14	16	15.0	0.1	97.2	2.8
0.0328	20	20	14.0	0.1	97.3	2.7
0.0232	28	30	18.0	0.1	97.4	2.6
0.0164	35	40	23.0	0.1	97.5	2.5
0.0116	48	50	29.0	0.2	97.7	2.3
0.0082	65	70	37.0	0.2	97.9	2.1
0.0058	100	100	56.0	0.3	98.2	1.8
0.0041	150	140	78.0	0.4	98.6	1.4
0.0029	200	200	86.0	0.5	99.1	0.9
		PAN	162.0	0.9	100.0	
		TOTAL	17963.0	100.0		

80% Passing Point : 0.9592 inches
24363 microns

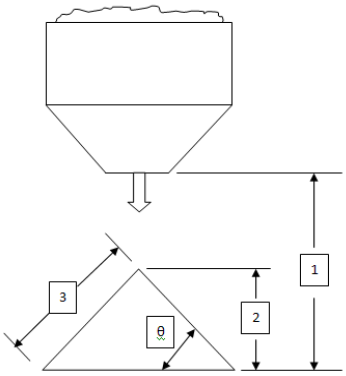
Nordberg 8/99 TSC04.123

High Grade Fine Results

Mineral Research & Test Center

Date:	**01/30/09**	Time:	**11:00 AM**
Customer:	**Baffinland Iron Corp**	Material:	**Iron Ore Fine**
Test Code:	**0900-01**	Prepared by:	**AWF, CJW, L. Steiner**
Remarks:			

Angle of Repose Results



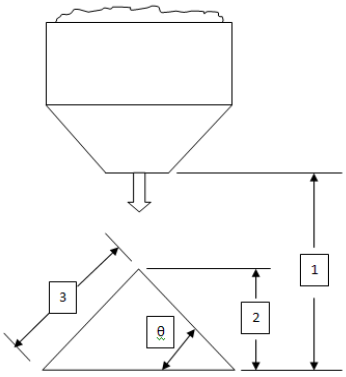
Dimensions (in.)	
1	**51.5**
2	**25.5**
3	42
	41
	41.5
	42
3 (AVG.)	**41.625**

Angle of Repose θ	
Rad.	Deg.
0.659	**37.78**

Mineral Research & Test Center

Date:	**01/30/09**	Time:	**11:00 AM**
Customer:	**Baffinland Iron Corp**	Material:	**Iron Ore Fines**
Test Code:	**0900-01**	Prepared by:	**AWF, CJW, L. Steiner**
Remarks:			

Angle of Repose Results



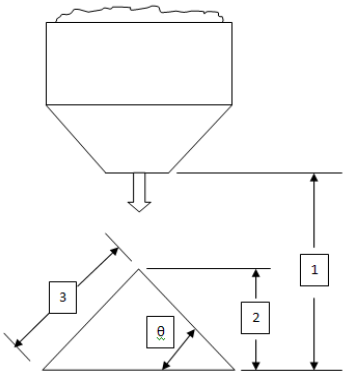
Dimensions (in.)	
1	**51.325**
2	**23.5625**
3	41.5
	41.25
	42.5
	41
3 (AVG.)	**41.5625**

Angle of Repose θ	
Rad.	Deg.
0.603	**34.54**

Mineral Research & Test Center

Date:	**01/30/09**	Time:	**11:00 AM**
Customer:	**Baffinland Iron Corp**	Material:	**Iron Ore Fine**
Test Code:	**0900-01**	Prepared by:	**AWF, CJW, L. Steiner**
Remarks:			

Angle of Repose Results



Dimensions (in.)	
1	**52.25**
2	**24**
3	42
	42.75
	39.5
	43
3 (AVG.)	**41.8125**

Angle of Repose θ	
Rad.	Deg.
0.611	**35.03**

Metso Minerals
Mineral Research & Test Center

Preliminary Screen Analysis

* * Subject to Review * *

Test Date: **02/02/09** Time: **10:00 AM**

Customer: **Baffinland Iron mine** Material: **Iron Ore**
Test Code: **0900-01** Percent Moisture: **0.62%**
Sample: **High Grade Fine** Density (lb/ft3): **152.7**

Remarks: **Test 1**

Screen Opening	Tyler mesh	US mesh	Sample Weight	Weight Percent	Percent Retained	Percent Passing
12.00						
8.00						
6.00						
4.00						
3.00						
2.00						
1.50						100.0
1.05			50.0	0.3	0.3	99.7
0.742			95.0	0.5	0.7	99.3
0.525			60.0	0.3	1.0	99.0
0.371			335.0	1.7	2.7	97.3
0.263	3		3255.0	16.5	19.3	80.7
0.185	4	4	3135.0	15.9	35.2	64.8
0.131	6	6	2403.4	12.2	47.4	52.6
0.093	8	8	2034.9	10.3	57.7	42.3
0.065	10	12	1666.4	8.5	66.2	33.8
0.046	14	16	1249.8	6.3	72.5	27.5
0.0328	20	20	969.4	4.9	77.5	22.5
0.0232	28	30	793.1	4.0	81.5	18.5
0.0164	35	40	689.0	3.5	85.0	15.0
0.0116	48	50	568.8	2.9	87.9	12.1
0.0082	65	70	408.6	2.1	90.0	10.0
0.0058	100	100	416.6	2.1	92.1	7.9
0.0041	150	140	352.5	1.8	93.9	6.1
0.0029	200	200	336.5	1.7	95.6	4.4
		PAN	873.2	4.4	100.0	
		TOTAL	19692.0	100.0		

80% Passing Point : 0.2594 inches
6590 microns

Nordberg 8/99 TSC04.123

Metso Minerals
Mineral Research & Test Center

Preliminary Screen Analysis

* * Subject to Review * *

Test Date: **02/02/09** Time: **10:00 AM**

Customer: **Baffinland Iron mine** Material: **Iron Ore**
Test Code: **0900-01** Percent Moisture: **4.92%**
Sample: **High Grade Fine** Density (lb/ft3): **160.3**

Remarks: **Test 2**

Screen Opening	Tyler mesh	US mesh	Sample Weight	Weight Percent	Percent Retained	Percent Passing
12.00						
8.00						
6.00						
4.00						
3.00						
2.00						
1.50						
1.05						100.0
0.742			50.0	0.3	0.3	99.7
0.525			100.0	0.5	0.8	99.2
0.371			360.0	1.9	2.6	97.4
0.263	3		3150.0	16.3	18.9	81.1
0.185	4	4	3240.0	16.7	35.6	64.4
0.131	6	6	2098.8	10.8	46.5	53.5
0.093	8	8	2074.5	10.7	57.2	42.8
0.065	10	12	1620.7	8.4	65.6	34.4
0.046	14	16	1239.8	6.4	72.0	28.0
0.0328	20	20	964.3	5.0	77.0	23.0
0.0232	28	30	802.2	4.1	81.1	18.9
0.0164	35	40	688.8	3.6	84.7	15.3
0.0116	48	50	567.2	2.9	87.6	12.4
0.0082	65	70	397.1	2.1	89.7	10.3
0.0058	100	100	413.3	2.1	91.8	8.2
0.0041	150	140	340.3	1.8	93.6	6.4
0.0029	200	200	397.1	2.1	95.6	4.4
		PAN	850.9	4.4	100.0	
		TOTAL	19355.0	100.0		

80% Passing Point : 0.2579 inches
6551 microns

Nordberg 8/99 TSC04.123

Metso Minerals
Mineral Research & Test Center

Preliminary Screen Analysis

* * Subject to Review * *

Test Date: **02/02/09** Time: **10:00 AM**

Customer: **Baffinland Iron mine** Material: **Iron Ore**
Test Code: **0900-01** Percent Moisture: **2.84%**
Sample: **High Grade Fine** Density (lb/ft3): **157.2**

Remarks: **Test 3**

Screen Opening	Tyler mesh	US mesh	Sample Weight	Weight Percent	Percent Retained	Percent Passing
12.00						
8.00						
6.00						
4.00						
3.00						
2.00						
1.50						
1.05						
0.742						100.0
0.525			110.0	0.5	0.5	99.5
0.371			425.0	1.9	2.3	97.7
0.263	3		3550.0	15.6	17.9	82.1
0.185	4	4	3660.0	16.1	34.0	66.0
0.131	6	6	2596.9	11.4	45.4	54.6
0.093	8	8	2508.2	11.0	56.4	43.6
0.065	10	12	2030.9	8.9	65.3	34.7
0.046	14	16	1575.9	6.9	72.2	27.8
0.0328	20	20	1198.6	5.3	77.5	22.5
0.0232	28	30	943.3	4.1	81.6	18.4
0.0164	35	40	799.1	3.5	85.1	14.9
0.0116	48	50	643.7	2.8	87.9	12.1
0.0082	65	70	466.1	2.0	90.0	10.0
0.0058	100	100	488.3	2.1	92.1	7.9
0.0041	150	140	410.6	1.8	93.9	6.1
0.0029	200	200	443.9	1.9	95.9	4.1
		PAN	943.3	4.1	100.0	
		TOTAL	22793.9	100.0		

80% Passing Point : 0.2529 inches
6424 microns

Nordberg 8/99 TSC04.123

Metso Minerals
Mineral Research & Test Center

Preliminary Screen Analysis

* * Subject to Review * *

Test Date: **02/02/09** Time: **10:00 AM**

Customer: **Baffinland Iron mine** Material: **Iron Ore**
Test Code: **0900-01** Percent Moisture: **2.92%**
Sample: **High Grade Fine** Density (lb/ft3): **160.7**

Remarks: **Test 4**

Screen Opening	Tyler mesh	US mesh	Sample Weight	Weight Percent	Percent Retained	Percent Passing
12.00						
8.00						
6.00						
4.00						
3.00						
2.00						
1.50						
1.05						100.0
0.742			55.0	0.3	0.3	99.7
0.525			105.0	0.5	0.7	99.3
0.371			360.0	1.7	2.4	97.6
0.263	3		3310.0	15.3	17.7	82.3
0.185	4	4	3275.0	15.1	32.8	67.2
0.131	6	6	2644.9	12.2	45.0	55.0
0.093	8	8	2488.7	11.5	56.5	43.5
0.065	10	12	1863.9	8.6	65.1	34.9
0.046	14	16	1416.1	6.5	71.6	28.4
0.0328	20	20	1103.8	5.1	76.7	23.3
0.0232	28	30	968.4	4.5	81.2	18.8
0.0164	35	40	760.1	3.5	84.7	15.3
0.0116	48	50	593.5	2.7	87.5	12.5
0.0082	65	70	479.0	2.2	89.7	10.3
0.0058	100	100	447.8	2.1	91.7	8.3
0.0041	150	140	395.7	1.8	93.6	6.4
0.0029	200	200	479.0	2.2	95.8	4.2
		PAN	916.3	4.2	100.0	
		TOTAL	21662.1	100.0		

80% Passing Point : 0.2510 inches
6376 microns

Nordberg 8/99 TSC04.123

Metso Minerals
Mineral Research & Test Center

Preliminary Screen Analysis

* * Subject to Review * *

Test Date: **02/02/09** Time: **10:00 AM**

Customer: **Baffinland Iron mine** Material: **Iron Ore**
Test Code: **0900-01** Percent Moisture: **2.79%**
Sample: **High Grade Fine** Density (lb/ft3): **155.7**

Remarks: **Test 5**

Screen Opening	Tyler mesh	US mesh	Sample Weight	Weight Percent	Percent Retained	Percent Passing
12.00						
8.00						
6.00						
4.00						
3.00						
2.00						
1.50						
1.05						100.0
0.742			25.0	0.1	0.1	99.9
0.525			115.0	0.5	0.6	99.4
0.371			440.0	1.8	2.3	97.7
0.263	3		4295.0	17.2	19.5	80.5
0.185	4	4	4065.0	16.3	35.8	64.2
0.131	6	6	3084.1	12.4	48.2	51.8
0.093	8	8	2527.2	10.1	58.3	41.7
0.065	10	12	2131.0	8.5	66.8	33.2
0.046	14	16	1520.6	6.1	72.9	27.1
0.0328	20	20	1177.9	4.7	77.6	22.4
0.0232	28	30	963.8	3.9	81.5	18.5
0.0164	35	40	856.7	3.4	84.9	15.1
0.0116	48	50	706.8	2.8	87.8	12.2
0.0082	65	70	514.0	2.1	89.8	10.2
0.0058	100	100	535.4	2.1	92.0	8.0
0.0041	150	140	449.8	1.8	93.8	6.2
0.0029	200	200	460.5	1.8	95.6	4.4
		PAN	1092.3	4.4	100.0	
		TOTAL	24960.0	100.0		

80% Passing Point : 0.2608 inches
6623 microns

Nordberg 8/99 TSC04.123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Appendix D:

Baghouse RFQ

D.1 Purpose

Eighteen (18) Dust Collectors are required to collect dust emissions generated from various material processing and handling equipment including crushers, apron feeders, screens, and belt conveyors transfer points. The supply shall include all accessories as required for the proper operation of the equipment.

The feed is crushed iron ore from the Baffinland Iron Mine site, located in Nunavut, Canada.

D.2 Process Description

Dust emissions generated from various material processing and handling operations will be removed using a baghouse. The dust will be captured at various pick-up points by a designated fan and sent to the baghouse, as described herein. The cleaned off-gas is exhausted to a nearby stack.

D.3 General Requirements

The Vendor's scope of work includes the design, fabrication and supply of eighteen (18) dust collector systems complete with, but not limited to, the following:

- complete negative pressure pulse jet cleaned fabric filter baghouse unit
- standard pleated filter elements made of spun-bonded polyester or PTFE membrane
- flanged and drilled inlet and outlet connections to the Owner's supplied ductwork (sized for 20 m/s inlet and outlet gas velocity)
- walk-in type clean air plenum for filter replacement
- pyramidal dust hoppers with quick-opening and airtight access door, filter catcher screen, and inlet baffle (made of abrasion resistant steel), or as recommended by Vendor
- hopper discharge rotary valves complete with independent drives, gear reducers, drive guards, couplings and under-speed switches
- baghouse structural steel support legs and bracing (allow 3 ft height for access to dust handling equipment)
- baghouse access ladders, platforms and hand railings as required
- complete pulse-jet cleaning system, including compressed air headers, quick connect couplings, laterals, diaphragm valves, solenoids, automatic drains, isolating valves, and local air receivers for each baghouse unit
- small local compact air compressor and dryer units (desiccant type) for each baghouse
- all necessary inspection and clean-out doors required for proper equipment maintenance access
- thermal insulation and cladding, as required
- all hardware, gaskets, lifting lugs and eye bolts required for assembly and installation of the equipment

- prime and finishing painting of the equipment, excluding site touch-ups
- equipment packaging and crating suitable for land or sea shipment, as applicable
- shop assembly, inspection, testing and quality management
- drawings and other required technical documentation
- operation and maintenance manuals
- delivery of equipment to the plant site (optional)

D.4 Exclusions

The following work is not included in the scope:

- connecting ductwork and discharge stacks (by others)
- timer board and PLC for control of the filter element cleaning cycle
- site preparation, concrete foundations, grouting and anchor bolts
- installation of equipment
- receiving, unloading and storage of the equipment at plant site
- power supply, external electrical and wiring external to the equipment
- field performance testing

D.5 Additional Mechanical Requirements

- baghouse housing shall allow for top filter replacement
- the material of construction shall be carbon steel with a minimum thickness of 4 mm
- plate and structural steel shall be CSA G40.12M Type 230G (ASTM A-36) or equivalent
- the tubesheet shall be the Vendor's standard design and arrangement
- the tubesheet shall have a minimum plate thickness of 3 mm and suitably reinforced
- clearance between adjacent filter elements and housing wall shall be a minimum of 50 mm
- airtight joints and housing to withstand a maximum negative pressure of 6 kPa(g)
- the baghouse shall be structurally designed for hopper filled with dust up to the gas inlet

D.6 Instrumentation and Electrical Requirements

- all baghouse units shall be connected and controlled by the Owner's PLC
- the Vendor shall supply their standard pulse cleaning system (with low volume of air at high pressure)
- differential pressure gauges required for each baghouse unit
- hopper high-level switches required for each baghouse unit

- zero speed switches required for each rotary valve

D.7 Information Required with Bid

- budgetary quotation (±15%) with delivery time from receipt of order
- vendor's standard/catalogue information sheets
- sketch with key dimensions suitable for completion of layouts
- preliminary equipment weight for structural calculations
- see Section D.8 for equipment data

D.8 Specification Details

D.8.1 Process Gas Conditions

System Number	Dust Collector Tag #	Flowrate (acf/m)
1	1210-DC-008	78,500
2	1230-DC-017	35,500
3	1260-DC-059	71,000
4	1260-DC-066	165,000
5	1260-DC-064	13,000
6	1260-DC-062	13,000
7	1270-DC-017	33,500
8	5130-DC-014	7,500
9	5130-DC-019	7,500
10	5130-DC-008	24,000
11	5130-DC-029	12,000
12	5180-DC-006	12,000
13	5210-DC-010	52,500
14	5210-DC-014	7,500
15	5350-DC-016	6,000
16	5350-DC-003	9,000
17	5370-DC-008	102,000
18	5370-DC-015	10,000

Notes:

1 typical inlet gas composition will be ambient air with entrained iron ore dust

2 dust is moderately abrasive

D.8.2 Common Dust Collector Requirements

- ambient temperature range: -58ºF to +70ºF
- design pressure: 24″ w.g.
- typical inlet dust loading (estimated): 10 grains/ft^3
- maximum design air to cloth ratio: 3.5 fpm
- maximum design upward gas can velocity: 300 fpm
- maximum tube sheet pressure drop: 4.0 in. w.g.
- maximum flange to flange pressure drop: 6.0 in. w.g.
- maximum outlet dust concentration: 0.005 grains/ft^3
- maximum outlet opacity: 5%
- filter type: Pleated filter type
- pleated filter elements life guarantee: two years (minimum)