

## CAT 988 Loader and Concrete Sill within Roberts Bay Fuel Tank Farm

Wade, Lowell

**Sent:** Friday, August 12, 2011 8:41 AM  
**To:** jerryg@jdsmining.ca; Doug (dougf@jdsmining.ca); Kevin Mather' (kevinm@jdsmining.ca); calving@jdsmining.ca  
**Cc:** Rykaart, Maritz; Bay, Hope  
**Importance:** High  
**Attachments:** Daily\_Report #210\_Doris - ~1.pdf (5 MB) ; 0388\_001.pdf (2 MB)

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Good Morning Everyone,

Just to follow-up with the conversations I have had with Jerry, Calvin and Kevin, Photo 8 of SRK's daily report # 210 [first attachment] it appears the CAT 988 loader with a concrete sill for the bridge is traveling within the Roberts Bay Fuel Tank Farm. I am concerned the weight of this vehicle with load exceeds the bearing capacity of the 0.6 m thick overliner material and liner [Detail 4 on RBTF-09, Engineering Drawings for the Roberts Bay Fuel Tank Farm, Doris North Project, Nunavut Canada] which could result in the liner being punctured.

Ilozsef and I checked Layfield's Specification Template [second attachment] which mentions at least 0.9 m of overliner material should be used for vehicles with tire pressures of 500 kPa or higher. The CAT handbook lists the front tire pressures for a 988G as 510 kPa [36 Strength Index] / 585 kPa [42 Strength Index] and for a 988H as 600kPa [42 Strength Index].

It would be prudent to confirm the integrity of the liner, within the Roberts Bay Fuel Tank Farm, along the travel path of the 988 loader as you would not want to lose containment should a spill occur.

Sincerely,  
Lowell

**Lowell Wade** *M.Sc., P.Eng.*  
Senior Consultant



SRK Consulting (Canada) Inc.

22nd Floor, 1066 West Hastings Street, Vancouver, BC, V6E 3X2, Canada

**Tel:** +1-604-681-4196; **Fax:** +1-604-687-5532

**Mobile:** +1-604-828-4778; **Direct:** +1-604-601-8443

**Email:** [lwade@srk.com](mailto:lwade@srk.com); **Skype:** lowell\_wade

[www.srk.com](http://www.srk.com)

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## DAILY REPORT #210 – DORIS NORTH INFRASTRUCTURE

Prepared by:	Lawrence Borowski	Date:	2011.08.09
Reviewed by:		Project #:	1CH008.033
Role	Company	Personnel – Position	On Site
Client	Hope Bay Mining Limited (HBML)	David Vokey – ESR Coordinator Don Ethelston – HSLP Advisor Jill Turk – ESR Coordinator Katsky Venter – ESR Manager Stirling Kelly – HSLP Advisor	No Yes No No No
	JDS	Pat Dillon – Construction Coordinator Doug Fielding – Construction Manager Ishan Fechter – Construction Coordinator Jerry Graham – Construction Manager	Yes No No Yes
Engineering Design Consultants	SRK Consulting (Canada) Inc.	Iozsef Miskolczi– Site Engineer Lawrence Borowski – Site Engineer Murray McGregor - Site Engineer Kerry Ko– Site Engineer	No Yes No No
Earthworks Contractor	Nuna Logistics	Bradford Watkin – QC Manager Don Webber – Foreman Dave Sherlock – Superintendent (Drill/ Blast) Gary Sodhi – Field Engineer Jeff DePape – Project Engineer Jeff Roberts - Surveyor Jim Cardinal – Foreman Kevin Oakes – Project Engineer Kevin Kozdrowski – Foreman Margret Caley – Surveyor Mike MacMaster – Surveyor Mike Price – Field Engineer Nick Stoneberger – Area Superintendent Ron MacMaster – Surveyor Scott Gouldsborough – Civil Supervisor Simon Chipper – Civil Supervisor Rick Peter – Foreman	In No No No Yes Yes Yes No No Yes No Yes No No No Yes Yes
External Distribution List:	SRK: Seema Kang, Lowell Wade, Maritz Rykaart Nuna: Chris Petrovic JDS: Bob Prince-Wright HBML: Dave Power, Gerry Benson		
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**WEATHER (at Doris Airstrip; from www.wunderground.com, station ID: INUROBER2):**

Temperature/Wind Chill (°C)	6AM:N/A	12PM: N/A	6 PM : N/A	12 AM:N/A
Precipitation (mm)	<b>Rain:</b> None		<b>Snow:</b> None	
Conditions	<b>Day Shift:</b> Overcast all day.		<b>Night Shift:</b> Overcast	
Daily norms (°C)	24 hour high: N/A		24 hour low: N/A	

*Doris Weather Station Down all day. Estimate temperature ~10C*

**HEALTH, SAFETY AND ENVIRONMENT**

- The daily 7:15 EPMC meeting was attended.
- Site roads were watered to reduce dust.

**COMMENTS, CORRESPONDENCE AND ACTIVITIES****DAILY MEETING WITH NUNA AND HBML TEAM:**

The daily EPCM meeting was held at 7:15 with the participation of Lawrence Borowski (SRK), Dave Sherlock (Nuna), Jerry Graham (JDS), Jeff DePape (Nuna), Simon Chipper (Nuna), Pat Dillon (JDS), Bradford Watkin (Nuna), Mike Price (Nuna), Angela Holzapfel (ESR), Don Ethelston (HBML), Corey Kinsey (HBML) and Laurie Fischer (JDS) . The topics discussed during the meeting are summarized in the table below:

	Topic	Status
Health and Safety and Environment		<ul style="list-style-type: none"> <li>• Safety: <ul style="list-style-type: none"> <li>- Need to set up meeting to inspect frozen core plant.</li> <li>- Crusher needs to be inspected before starting up.</li> </ul> </li> </ul>
General		<ul style="list-style-type: none"> <li>• Formal response to RFI #NL-RFI-057 expected today.</li> <li>• Need to close the walking trail when material is being hauled to the Windy bridges. Hours of operation are 6 to 10 am and 7 to 10 pm.</li> <li>• Laydown 5 was capped last night.</li> <li>• Need to know mooring point and pipe crossing point in support of off loading fuel .</li> <li>• Drilling at Quarry 2 today.</li> </ul>
Construction	Land Farm	<ul style="list-style-type: none"> <li>•</li> </ul>
	Primary Vent Raise Pad	<ul style="list-style-type: none"> <li>• Blast last night</li> <li>• Cleared blast mats.</li> <li>• Constructed access for drill rig.</li> <li>• Drilled with one drill during the night shift.</li> </ul>
	Fuel Transfer Access Road	<ul style="list-style-type: none"> <li>• Continue hauling ROQ.</li> </ul>
	Bridges on AWR	<ul style="list-style-type: none"> <li>• Draft work plan for bridges required today.</li> <li>• Need ESR sign off on work plan.</li> <li>• Need to construct turn arounds for construction equipment.</li> </ul>

**SURVEY:**

<b>Required</b>	<ul style="list-style-type: none"> <li>• RBTF final containment berm ROQ, bedding layer, liner, and cover</li> <li>• Laydown 5 ROQ surface</li> <li>• Land farm overliner cover surface</li> <li>•</li> </ul>
<b>Data Received</b>	<ul style="list-style-type: none"> <li>•</li> </ul>
<b>Outstanding</b>	

**Upcoming**

- Roberts Bay Tank Farm – survey of remaining construction components.
- Primary Vent Raise Pad – ROQ and crush

**GENERAL**

- Pumping at Tail Lake continued throughout the day. No leaks were reported or were evident.
- Lighting cables are now buried. Some cleanup work undertaken.
- Crusher started up. Crushing 5/8" clear material to produce frozen core fines material. Samples are being taken at regular intervals and will be shipped out for analysis Thursday or Friday.
- Response received to Newmont RFI NL-RFI-057. Substitution of ¾"/5/8" crush in lieu of 1 ½" or 6" was approved. Reducing the thickness of cover on the outside berms from .6m to .3m was not approved.

**ROBERTS BAY TANK FARM**

- Final walk through tanks 3 and 4 proceeded as scheduled.
- Final touch ups and x-rays on doors outstanding.
- No work on the civil component.
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**LAND FARM**

- In the afternoon excavator was used to trim slopes in the snow pond.
- Trimming was followed up with watering and vibratory compaction.

**QUARRY #2**

- One drill working on day shift.
- Loader loading ROQ from Saturday's blast. ROQ hauled to the Fuel Transfer Access Road. Three 730 trucks were used.

**PRIMARY VENT RAISE PAD**

- No activity during day shift.

**FUEL TRANSFER ACCESS ROAD**

- Continued hauling ROQ with three Cat 730 trucks.
- By the end of the day shift placing had reached the mid point of the turn around area.

**NIGHT SHIFT**

The following were reported to be done in the previous night shift:

- Additional grubbing at the vent raise.
- Cleaning up at the land farm.
- Started placing spec ¾" cover on the back slopes.
- Continued hauling ROQ to the Fuel Transfer Access Road.
- Hauled and spread ROQ at the AWR bridge 1 abutment.

**Quantities:**

August 7, 2011

Material Type	From	To	Daily Total
¾ " crush	Crusher	Laydown 5	370
¾" crush	Crusher	Land farm	30

¾" crush	Crusher	AWR Bridge Crossing #1	110
5/8" clear	Crusher	Airstrip	490
ROQ	Airstrip	Airstrip	10
ROQ	Laydown 5	Fuel Tank Access Road	10
ROQ	Quarry 2	Fuel Tank Access Road	230

**PHOTOS:****Photo 1:** Robert's Bay tanks...near completion.**Photo 2:** North dam, showing pipeline and some of the raised multi bead cables.





**Photo 3:** Loading at Quarry 2. Drill working in the background.



**Photo 4:** Stockpile of frozen core fines crushed from 5/8" clear.





**Photo 5:** Laydown 5 with a thin cover.





Photo 6: Placing ROQ on the Fuel Transfer Access Road at start of turn around.



**Photo 7:** Vent raise after blast. Mats Have been removed and a road for the drill constructed.



**Photo 8:** Weighing bridge sill with the crane. Weight is 28,900 lbs.



Placement of backfill is usually dependant on the equipment used to place the fill rather than the liner material. HDPE is a special case and requires a minimum of 450 mm (18") of backfill due to the height of its slack wrinkles which can reach 150 to 200 mm (6 to 8") high. Each type of equipment has a specific ground pressure and weight that requires a different minimum thickness of backfill for liner protection. The initial lift thickness must be of a minimum to protect the liner from the equipment used. If backfill compaction is required, smaller equipment may be required to place the initial lift. Larger equipment can then be used for the second, and subsequent lifts. The usual method for placing thin backfill is to build a road through the pond of at least 600 mm (24") thickness (depending on the type of backfill material and equipment used, a road up to 1200mm (48"), may be required). Loaded trucks may use this road to deliver the backfill to the correct area. A wide pad Cat (bulldozer), or other small piece of equipment, then operates perpendicular to this road and pushes the backfill off the road to create a thin lift throughout the pond. The Cat operator needs to exercise caution at all times and must ensure that the fill rolls off the bottom of the blade and does not introduce a shearing force along the surface of the liner.

Minimum Lift Thickness	
Backfill Thickness	Placement Equipment
No Backfill	Foot Traffic or a 4 Track ATV vehicle only
150 mm (6") or less	Hand Placement
200-300 mm (8"-12")	D3-D4 LGP Cat
300 mm (12")	Bobcat (Skid-Steer)
300 mm (12")	D4-D6 Style Cat
600 mm (24")	D7-D9 Style Cat
900 mm (36")	Loaded Scrapers, Motor Graders
900-1200 mm (36"-48")<	Loaded Tandem Axle Trucks

Care should be taken during all aspects of backfill placement. A spotter should be in position beside the Cat to monitor the placement and thickness of the backfill on the liner. This spotter can usually identify any problems during placement that the Cat operator may not see. During backfill operations there are a few things to look out for. First, skid-steer equipment, such as a Bobcat, must not make any sharp skid turns on top of the liner or on top of a thin lift of backfill. Sharp turns with one tread (set of wheels) locked can damage the liner. Skid-steer equipment must make long sweeping turns at all times.

Care must be taken to maintain the appropriate thickness of fill beneath a vehicle. Vehicles should not travel on the unprotected liner at any time (4-track ATV's may be excepted). The ground pressure or tire pressure of the vehicle can be used as a guide to minimum backfill thickness. Wheeled vehicles with tire pressures around 200 kPa (30 psi, such as Bobcats and pickup trucks) can operate on a minimum thickness of about 300mm (12"), however all trucks with tire pressures of 500 kPa (80 psi) or higher should have at least 900 mm (36") of fill beneath their wheels.



Tires

Standard Cold Inflation Pressures  
Bias and Bias Belted

- Wheel Loaders
- Skid Steer Loaders
- Log Loaders
- Integrated Toolcarriers

WHEEL LOADERS — Bias and Bias Belted

Model	Tire Size	Ply Rating or Strength Index	Pressure			
			Front		Rear	
			kPa	psi	kPa	psi
902	12.5-18	10	241	35	172	25
906	12.5-20	10	241	35	172	25
908	14.5-20	10	276	40	241	35
914G	15.5-25	12	276	40	172	25
	15.5-25	12	241	35	172	25
924G	17.5-25	12	310	45	207	30
	20.5-25	12	241	35	172	25
928G	17.5-25	12	345	50	241	35
	20.5-25	12	241	35	172	25
938G	20.5-25	12	345	50	241	35
950G	23.5-25	16	414	60	241	35
962G	23.5-25	16	414	60	241	35
966G	26.5-25	20	448	65	241	35
972G	26.5-25	20	448	65	241	35
980G	29.5-25	22	414	60	241	35
988G	35/65-33	36	510	75	410	60
		42	585	85	480	70
990 Series II	41.25/70-39	42	510	75	410	60
992G	45/65-45	46	510	75	410	60
		50	585	85	450	65
		58	650	95	480	70
994D	49.5/85-57	84	689	100	585	85
	52/80-57	68	689	100	585	85
	53.5/85-57	76	689	100	585	85

SKID STEER LOADERS

Model	Tire Size	Pressure			
		Goodyear		Galaxy	
		kPa	psi	kPa	psi
216	7.00-15	379	55	—	—
	10-16.5	241	35	345	50
	31x15.50-15	172	25	—	—
226	10-16.5	241	35	345	50
	31x15.50-15	172	25	—	—
228	10-16.5	241	35	345	50
	31x15.50-15	172	25	—	—
236	8.25-15	345	50	—	—
	12-16.5	241	35	310	45
	31x15.50-15	172	25	—	—
246	12-16.5	241	35	310	45
	31x15.50-15	172	25	—	—
248	12-16.5	241	35	310	45
	31x15.50-15	172	25	—	—

LOG LOADERS — Bias and Bias Belted

Model	Tire Size	Ply Rating	Inflation Pressure			
			Front		Rear	
IT14G	15.5-25	12	kPa	psi	kPa	psi
	17.5-25	12	310	45	207	30
924G Versalink	17.5-25	12	276	40	172	25
	20.5-25	12	310	45	241	35
IT28G	20.5-25	12	276	40	207	30
938G	20.5-25	12	448	65	241	35
950G	23.5-25	16	414	60	241	35
966G	26.5-25	20	448	65	241	35
	23.5-25	24	586	85	241	35
980G	29.5-25	28	552	80	241	35
988G	35/65-33	36	552	80	276	40
	35/65-33	42	552	80	276	40

INTEGRATED TOOLCARRIERS —  
Bias and Bias Belted

Model	Tire Size	Ply Rating	Inflation Pressure			
			Front		Rear	
IT14G	15.5-25	12	kPa	psi	kPa	psi
	17.5-25	12	310	45	207	30
924G Versalink	17.5-25	12	241	35	172	25
	20.5-25	12	310	45	207	30
IT28G	17.5-25	12	345	50	241	35
	20.5-25	12	241	35	172	25
IT38G	20.5-25	12	345	50	241	35
	20.5-25	16	483	70	241	35

Standard Cold Inflation Pressures  
● Wheel Loaders — Bias and Bias Belted

Tires

Optimal pressures may vary depending on specific applications and working conditions. Always consult your local tire supplier for operating pressures.

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WHEEL LOADERS — Bias and Bias Belted

Model	Tire Size	Strength Index	Inflation Pressure							
			Goodyear				Bridgestone/Firestone			
			Front		Rear		Front		Rear	
			kPa	psi	kPa	psi	kPa	psi	kPa	psi
904B	12.5-18	10	241	35	172	25	241	35	172	25
906	12.5-20	10	241	35	172	25	241	35	172	25
908	14.5-20	10	276	40	241	35	276	40	241	35
914G	15.5-25	12	276	40	172	25	276	40	172	25
	17.5-25	12	241	35	172	25	241	35	172	25
924G	17.5-25	12	310	45	228	33	310	45	241	35
	20.5-25	12	241	35	172	25	241	35	172	25
928G	17.5-25	12	345	50	241	35	345	50	241	35
	20.5-25	12	241	35	172	25	241	35	172	25
930G	17.5-25	12	345	50	241	35	345	50	241	35
	20.5-25	12	241	35	172	25	241	35	172	25
938H	20.5-25	16, 20	350	51	250	36	310	45	207	30
950H	23.5-25	16, 20	400	58	275	40	345	50	207	30
962H	26.5-25	16, 20	425	62	275	40	379	55	241	35
966H	26.5-25	20, 26	375	54	250	36	414	60	276	40
972H	26.5-25	20, 26	400	58	275	40	448	65	276	40
980H	29.5-25	22, 28	450	65	275	40	586	85	379	55
988H	35/65-33	42	600	87	400	58	655	95	414	60
990H	41.25/70-39	42	575	83	375	54	586	85	414	60
992K	45/65-45	58	700	102	500	73	724	105	483	70
993K	50/65-51	62					724	105	483	70
994F	49.5/85-57	76					689	100	483	70
	50/80-57	68					689	100	483	70
	52/80-57	68								
	53.5/85-57	76	600	87	400	58	689	100	483	70
	58/85-57	84					689	100	483	70

NOTE: Bridgestone/Firestone inflation pressures for Giant Loader Tires (992K and above) are in reference to applications without chains. For use with chains please consult your Bridgestone/Firestone representative.