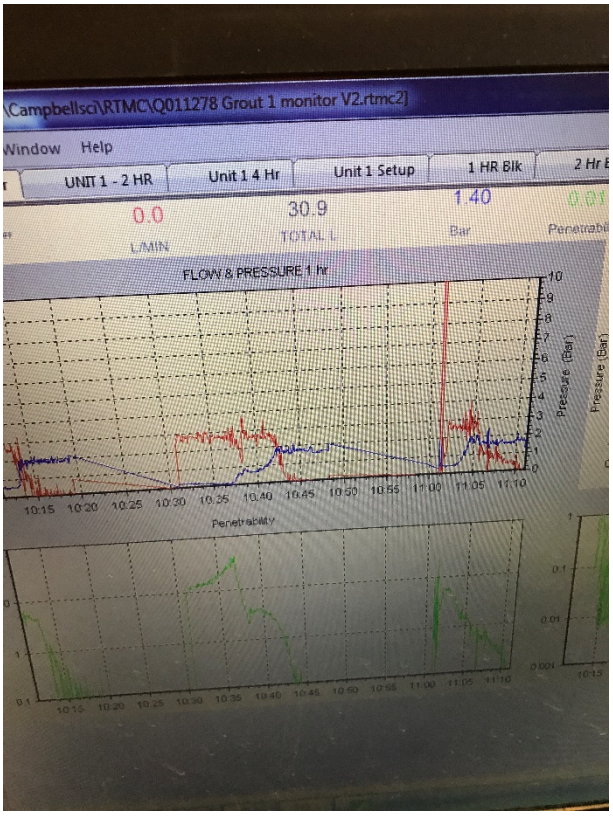
Acquisition system set up inside the injection unit

Packer installed at T-749.5



Monitor screen showing Flow and pressure graph vs time

Taking specific gravity reading using mud ballance

SNC·LAVALIN

DAILY FIELD REPORT
(Detailed)

20191120
Document number

Date	Time (Start/End)	Project No.	Prepared by
20-11-2019	6:30 am 6:30 pm	669034	Muhammad Saleem

Project	Client
Whale Tail Dike Remedial Drilling and Grouting Works	Agnico Eagle

Consultant	Contractor
SNC-Lavalin	TCG

Weather : ☐Sunny ☒Cloudy ☐Rain ☐Storm ☐Snow ☐Glaze

Wind : ☐None ☐Light ☒Moderate ☐Strong, gusts

Temperature : -16 to -26 °C

Comments :

Appendix : ☐Yes ☐No Pictures ☒Yes ☐No Inspection report or other :

Picture in the folder :

ACTIVITIES PERFORMED BY SNC-LAVALIN (indicate if test forms were used)

- Attended daily meeting at Contractor trailer.
- 10 casings installed and one casing in progress (this casing has been installed since yesterday during day and night shift) between T-215.5 to P-176.5. All casings reached bedrock but some of them not socketed into bedrock as they already passed maximum casing length before reaching bedrock. P-185.5 shows 1 m socket possible typo will check with KGC.
- KGC was advised by email and verbal conversation that if drill hit bedrock, regardless the length of the casing, casing should be socketed 0.3 m into bedrock
- KGC informed that a total of 140 casings has been installed.
- KGC was reminded during the construction meeting to install whip guards on grout pressure pipe but no action taken yet.
- KGC reminded to check depth of the hole with tape after casing installation completed.
- KGC submitted as buit excel sheet but there was many mistakes and strange values, KGS was requested to correct the values.

Casing Plug

10 casings plugged today using Mix C based on the trial test and inline with grouting committee recommendations. Packer placed at about 2 m above the bottom of the casing and 15 liters grout injected prior to inflate packer.

Grout Test 1 Marsh Value = 61 sec. Specific gravity = 1.77 Bleed = <2% Temperature = 22.2 C
Grout Test 2 Marsh Value = 68 sec. Specific gravity = 1.8 Bleed = <2% Temperature = 25.6 C
Filtration test (coefficient of filtration) for mix C = 0.0638 $min^{-1/2}$

P704.5 injected 168.5 liters grout @ 0.92 bar (reached maximum volume)
T701.5 injected 44.6 liters grout @ 1.54 bar
S698.5 injected 169 liters grout @ 0.83 bar (reached maximum volume)
T695.5 injected 65.4 liters grout @ 1.8 bar
P692.5 injected 9.6 liters grout @ 3 bar
T689.5 injected 21.6 liters grout @ 1.76 bar
S686.5 injected 18.5 liters grout @ 3.3 bar
T683.5 injected 20.2 liters grout @ 1.79 bar
P677.5 injected 20.0 liters grout @ 1.82 bar
P668.5 injected 28.3 liters grout @ 1.8 bar

At P704.5 and S698.5 we reached maximum volume and rest of the locations injected grout until reach 0 liters/ min grout flow at Pmax and wait for 5 minutes.
Skip P680 because casing was filled upto 1.5 m from bottom with cement-bentonite slurry type material and could not be cleaned uless lowering the casing down to weathered rock.

It was discussed in the morning construction meeting that locations where casings could not be plugged due to cement-bentonite slurry like material and could not be cleaned, may be need to extend further down to weathered rock socketed properly but waiting for final decision from SNC design team.

SITE GUIDELINES (guidelines, memos, modification proposals, etc.)

No	Subject	Given to

SPECIFIC ELEMENTS VERIFIED

Elements	Location, batch or other	Scope and comments
Grout	Injrction unit	Marsh value, Bleed, Specific gravity and temperature
		Filtration test for Mix C

SAFE AND SAFETY REMARKS

- Dress up properly for extreme cold conditions

Issued by : *Muhammad Saleem* — Signature — **20-11-2019** — Date

Verified by : *Nina Zuan* — Signature — **20-11-2019** — Date

SNC·LAVALIN

DAILY FIELD REPORT
(Detailed)

20191121
Document number

Date	Time (Start/End)	Project No.	Prepared by
21-11-2019	6:30 am 6:30 pm	669034	Muhammad Saleem / Jin Dong Du

Project	Client
Whale Tail Dike Remedial Drilling and Grouting Works	Agnico Eagle

Consultant	Contractor
SNC-Lavalin	TCG

Weather : ☐Sunny ☒Cloudy ☐Rain ☐Storm ☐Snow ☐Glaze

Wind : ☐None ☐Light ☒Moderate ☐Strong, gusts

Temperature : -22 to -26 °C

Comments :

Appendix : ☐Yes ☐No Pictures ☒Yes ☐No Inspection report or other :

Picture in the folder :

ACTIVITIES PERFORMED BY SNC-LAVALIN (indicate if test forms were used)

- Attended daily meeting at Contractor trailer.
- 10 casings installed by TCG (these casings have been installed since yesterday during day and night shift). All casings reached bedrock and 0.3 to 0.5 m socketed into bedrock. At one of the locations (Station T353.5m) the bedrock depth and maximum casing length reached at the same elevation; the casing should be drilled further 0.3 m into bedrock; but this is not shown on the field log. Will talk to TCG in the construction meeting to correct these issues.
- TCG was reminded to install Whip guard on grout pressure pipe but not installed yet.
- TCG was also requested to inform SNC when they try to clean hole.
- TCG was also advised to minimum 0.3 m into bedrock when bedrock encountered at the maximum casing length.

Casing Plug

10 casings plugged today using Mix C based on the trial test and inline with grouting committee recommendations. Packer placed at about 2 m above the bottom of the casing and 15 liters grout injected prior to inflate packer.

Grout Test 1 Marsh Value = 56 sec. Specific gravity = 1.8 Bleed = <2% Temperature = 21.0 C
Grout Test 2 Marsh Value = 57 sec. Specific gravity = 1.62 Bleed = <2% Temperature = 17.0 C
We have hard time today to get proper mix, have to discard one batch, TCG tried different ways to add celbex to obtain peoper mix.

P662.5 injected 18.9 liters grout @ 1.86 bar
T659.5 injected 27.9 liters grout @ 1.81 bar

P656.5 injected 26.1 liters grout @ 1.81 bar
T653.5 injected 127.2 liters grout @ 1.9 bar
S650.5 injected 19.3 liters grout @ 1.72 bar
T647.5 injected 35.8 liters grout @ 1.81 bar
P644.5 injected 29.44 liters grout @ 1.96 bar
T641.5 injected 23.9 liters grout @ 1.88 bar
S638.5 injected 20.9 liters grout @ 1.89 bar
T635.5 injected 18.2 liters grout @ 1.7 bar with 2 m of casing filled from the bottom with mud. Talked to TCG ; the crew was not aware of this. This casing might need to push down to bedrock to properly plug.

All 10 casings plugged, injected grout until reach 0 liters/ min grout flow at Pmax and waited for 5 minutes.

The grouting acquisition system (pressure readings on the mornitor) did not work properly in the afternoon. TCG was asked to fix the data acquisition system. In the afternoon pressure was monitored with gauge at collar.

SITE GUIDELINES (guidelines, memos, modification proposals, etc.)

No	Subject	Given to

SPECIFIC ELEMENTS VERIFIED

Elements	Location, batch or other	Scope and comments
Grout	Injection unit	Marsh value, Bleeding, Specific gravity and temperature

SAFE AND SAFETY REMARKS

- Dress up properly for extreme cold conditions

Issued by :	*Muhammad Saleem / Jin Dong Du*	**21-11-2019**
	Signature	Date
Verified by :	*Nina Luan*	**21-11-2019**
	Signature	Date

SNC·LAVALIN

DAILY FIELD REPORT
(Detailed)

20191122
Document number

Date	Time (Start/End)	Project No.	Prepared by
22-11-2019	6:30 am 6:30 pm	669034	Jin Dong Du

Project	Client
Whale Tail Dike Remedial Drilling and Grouting Works	Agnico Eagle

Consultant	Contractor
SNC-Lavalin	TCG

Weather : ☐Sunny ☒Cloudy ☐Rain ☐Storm ☐ Snow ☐Glaze

Wind : ☐None ☐Light ☒Moderate ☐Strong, gusts

Temperature : -30 °C

Comments :

Appendix : ☐Yes ☒No Pictures ☐Yes ☒No Inspection report or other :

Picture in the folder :

ACTIVITIES PERFORMED BY SNC-LAVALIN (indicate if test forms were used)

- Attended daily meeting at Contractor trailer.
- Checked the logs for eight boreholes which casings were installed by TCG yesterday during the day and night shifts. They are five boreholes from Stations 416.5 to 428.5m and three boreholes at Stations P356.5m, S410.5 and T413.5m. All casings reached bedrock and socketed into bedrock by 0.3 m except the borehole at Station P356.5m did not reach the bedrock at the required maximum drilling depth. Casing was broken in the borehole at Station P416.5m at the night shift and fixed at the next day shift.
- Reminded TCG to install whip guards on grout pressure pipes in the daily construction meeting; TCG said they would install whip guards when injection resumes.
- Advised TCG to check and fix the discrapency between the gauge pressure readings and the pressure readings shown in the mornitor. The pressure readings should be same on the gauge and on the monitor. This may not be critical for the plug, but Contracor shall be ready for the blanket grouting.

Casing Plug
No injection was conducted due to shift change.

SITE GUIDELINES (guidelines, memos, modification proposals, etc.)

No	Subject	Given to

SPECIFIC ELEMENTS VERIFIED

Elements	Location, batch or other	Scope and comments

SAFE AND SAFETY REMARKS

- Dress up properly for extreme cold conditions

Issued by : *Jin Dong Du* — Signature — **22-11-2019** — Date

Verified by : *Abdellah El Bensi* — Signature — **22-11-2019** — Date

SNC·LAVALIN

DAILY FIELD REPORT
(Detailed)

20191123
Document number

Date	Time (Start/End)	Project No.	Prepared by
23-11-2019	6:30 am 6:30 pm	669034	Jin Dong Du

Project	Client
Whale Tail Dike Remedial Drilling and Grouting Works	Agnico Eagle

Consultant	Contractor
SNC-Lavalin	TCG

Weather : ☒Sunny ☐Cloudy ☐Rain ☐Storm ☐Snow ☐Glaze

Wind : ☐None ☒Light ☐Moderate ☐Strong, gusts

Temperature : -22 °C

Comments :

Appendix : ☐Yes ☒No Pictures ☒Yes ☐No Inspection report or other :

Picture in the folder :

ACTIVITIES PERFORMED BY SNC-LAVALIN (indicate if test forms were used)

- Checked the logs for nine boreholes which casings were installed by TCG yesterday during the day and night shifts.
- Three casings were installed during the day shift at Stations T431.5m, P416.5m and P437.5m. Casing at P416.5m, which had been broken at the previous night shift, was fixed during the day shift.
- Six casings were installed at the night shift at Stations 443.5m, 446.5m and from Stations 455.5m to 464.5m.
- All casings reached bedrock and socketed into bedrock by 0.3 m.
- Inspected the installed casings and the locations of the uninstalled casings. See Photos 1 to 4 at the the end of the report.

Casing Plug

No injection was conducted due to shift change.

SITE GUIDELINES (guidelines, memos, modification proposals, etc.)

No	Subject	Given to

SPECIFIC ELEMENTS VERIFIED

Elements	Location, batch or other	Scope and comments

SAFE AND SAFETY REMARKS

- Dress up properly for extreme cold conditions

Issued by : *Jin Dong Du* — Signature — **23-11-2019** — Date

Verified by : *Abdellah El Bensi* — Signature — **23-11-2019** — Date

Photo1 : Looking west approx. from Station 735m, uninstalled casings (wood sticks with green flags) a little offset from the installed casings

Photo2： Looking east approx.from Station 718m

Photo3 : Installed casings, Looking west approx.from Station 465m

Photo4 : Installed casings, Looking west approx.from Station 425m

SNC·LAVALIN

DAILY FIELD REPORT
(Detailed)

20191124
Document number

Date	Time (Start/End)	Project No.	Prepared by
24-11-2019	6:30 am 6:30 pm	669034	Jin Dong Du

Project	Client
Whale Tail Dike Remedial Drilling and Grouting Works	Agnico Eagle

Consultant	Contractor
SNC-Lavalin	TCG

Weather : ☒Sunny ☐Cloudy ☐Rain ☐Storm ☐Snow ☐Glaze

Wind : ☐None ☐Light ☒Moderate ☐Strong, gusts

Temperature : -24 °C

Comments :

Appendix : ☐Yes ☒No Pictures ☐Yes ☒No Inspection report or other :

Picture in the folder :

ACTIVITIES PERFORMED BY SNC-LAVALIN (indicate if test forms were used)

- Attended daily construction meeting at Contractor trailer.
- Checked the logs for three boreholes which casings were installed by TCG yesterday at Stations S206.5m, T467.5 and T473.5m during the day shift. All casings reached bedrock and socketed into bedrock by 0.3 m. The inconssitency of the borehole depth in the borehole log of S206.5 needs to be corrected.
- Observed the grouting for casing plugs for 11 boreholes.
- Inqured TCG for the QC for marking borehole locations on the dike in the daily meeting . TCG said the surveyor always checked existing chainage stakes and the distance from the center line to ensure the accuracy.
- Observed that two whip guards were installed closed to the two pressure Gauges during the injection.

Casing Plug

A total of 11 casing plugs were grouted today using Mix C based on the trial tests and in line with grouting committee recommendations. Packer was placed at about 2 m above the bottom of the casing, and 15 liters of grout were injected prior to inflating the packer.

Grout Test 1 Marsh Value = 65 sec. Specific gravity = 1.75, Bleeding <1% .
Grout Test 2 Marsh Value = 85sec. Specific gravity = 1.74, Bleeding <1% .

Hole ID	Hole depth	Casing into the Bedrock (m)	Casing Plug				
			Date	Grout Type	Grout Taken (L)	Gauge Pressure (Bar)	Remarks
T-599.5	11.880	*No	November 24, 2019	C	200.7	0.48	Controled by Vmax
S-602.5	12.270	*No	November 24, 2019	C	39	2.13	
T-605.5	12.450	0.33	November 24, 2019	C	17.1	2.21	
T-611.5	12.070	0.29	November 24, 2019	C	26.3	2.03	
S-614.5	11.240	0.3	November 24, 2019	C	20.4	1.93	
T-617.5	11.260	0.3	November 24, 2019	C	26.3	2.11	
P-620.5	11.650	0.3	November 24, 2019	C	20.9	1.94	
T-623.5	12.180	0.36	November 24, 2019	C	16.5	1.87	
S-626.5	11.880	0.38	November 24, 2019	C	18.4	2.03	
T-629.5	12.170	0.18	November 24, 2019	C	32	2.01	
P-632.5	12.380	*No	November 24, 2019	C	24.9	1.92	

*The boreholehole reached the calculated maxumu length (as-built rock surface elevation + 500 mm) but the rock was not encountered.

Due to relatively large intake at low pressure, the grouting in T-599.5 hole stopped when Vmax reached. All other 10 casings were injected grout until reaching approximately 0 liters/ min grout flow at Pmax and waiting for 5 minutes.

SITE GUIDELINES (guidelines, memos, modification proposals, etc.)

No	Subject	Given to

SPECIFIC ELEMENTS VERIFIED

Elements	Location, batch or other	Scope and comments
Grouting for casing plugs	Injection unit	Marsh value, Bleeding, Specific gravity

SAFE AND SAFETY REMARKS

- Dress up properly for extreme cold conditions

Issued by : *Jin Dong Du* (Signature) **24-11-2019** (Date)

Verified by : *Abdellah El Bensi* (Signature) **24-11-2019** (Date)

SNC·LAVALIN

DAILY FIELD REPORT
(Detailed)

20191125
Document number

25-11-2019	6:30 am 6:30 pm	669034	Jin Dong Du
Date	Time (Start/End)	Project No.	Prepared by

Whale Tail Dike Remedial Drilling and Grouting Works	Agnico Eagle
Project	Client

SNC-Lavalin	TCG
Consultant	Contractor

Weather : ☒Sunny ☐Cloudy ☐Rain ☐Storm ☐Snow ☐Glaze

Wind : ☐None ☐Light ☒Moderate ☐Strong, gusts

Temperature : -16 °C

Comments :

Appendix : ☐Yes ☒No Pictures ☐Yes ☒No Inspection report or other :

Picture in the folder :

ACTIVITIES PERFORMED BY SNC-LAVALIN (indicate if test forms were used)

- Attended daily construction meeting at Contractor trailer.
- Checked the log for the only borehole which casing was installed by TCG yesterday at Stations T707.5m. The casing is socketed 0.3 m into bedrock. However, the bedrock surface in this borehole is 2.06m deeper than the calculated max. borehole length using the as-built bedrock surface elevation .
- Inspected today's casing plugs grouting process for 11 boreholes.
- Inspectd the locations of the uninstalled casings and installed casings. TCG put the stakes at the center line of the dike today. The locations of the casings are ≥ 0.7m from the center lines.
- In the daily meeting, suggested to put on hold for grouting the casing plugs for those boreholes which did not reach bedrock surface at the maximum calculated depth and for those boreholes which have cement-bentonite at the bottom according to drilling logs.

Casing Plug

A total of 9 casing plugs were grouted today using Mix C . Packer was placed at about 2 m above the bottom of the casing, and 15 liters of grout were injected prior to inflating the packer. All casings were injected grout until reaching approximately 0 liters/ min grout flow at Pmax and waiting for 5 minutes.

Grout Test 1 Marsh Value = 65 sec. Specific gravity = 1.75, Bleeding <1%, Temprature 27 °C .
Grout Test 2 Marsh Value = 62sec. Specific gravity = 1.67, Bleeding <1% . Temprature 25 °C.

Hole ID	Hole depth		Casing Plug

		Casing inot Bedrock (m)	Date	Grout Type	Grout Taken (L)	Pressure (Bar)	Comments
T-521.5	9.93	0.3	November 25, 2019	C	88.3	1.6	
P-524.5	10.95	0.3	November 25, 2019	C	19.94	1.8	
T-527.5	9.95	0.3	November 25, 2019	C	20.62	1.7	
P-536.5	9.89	0.3	November 25, 2019	C	22.67	1.66	
T-539.5	9.87	0.3	November 25, 2019	C	21.92	1.65	
S-542.5	8.97	0.3	November 25, 2019	C	19.3	1.51	
T-545.5	8.97	0.3	November 25, 2019	C	17.9	1.5	
T-551.5	10.2	0.3	November 25, 2019	C	17.9	1.48	
T-557.5	10.53	0.3	November 25, 2019	C	69	1.7	

SITE GUIDELINES (guidelines, memos, modification proposals, etc.)

No	Subject	Given to

SPECIFIC ELEMENTS VERIFIED

Elements	Location, batch or other	Scope and comments
Grouting for casing plugs	Injection unit	Marsh value, Bleeding, Specific gravity, Temprature

SAFE AND SAFETY REMARKS

- Dress up properly for extreme cold conditions

Issued by : *Jin Dong Du* (Signature) **25-11-2019** (Date)

Verified by : *Tom Xue* (Signature) **25-11-2019** (Date)

SNC·LAVALIN

DAILY FIELD REPORT
(Detailed)

20191126
Document number

26-11-2019	6:30 am 6:30 pm	669034	Jin Dong Du
Date	Time (Start/End)	Project No.	Prepared by

Whale Tail Dike Remedial Drilling and Grouting Works	Agnico Eagle
Project	Client

SNC-Lavalin	TCG
Consultant	Contractor

Weather : ☒Sunny ☐Cloudy ☐Rain ☐Storm ☐Snow ☐Glaze

Wind : ☐None ☐Light ☒Moderate ☐Strong, gusts

Temperature : -16 °C

Comments :

Appendix : ☐Yes ☒No

Pictures ☐Yes ☒No

Inspection report or other :

Picture in the folder :

ACTIVITIES (indicate if test forms were used)

- Attended daily construction meeting at Contractor trailer.
- Checked the log for four boreholes which casings were installed by TCG yesterday dayshift from Stations 710.5 to 719.5m. The casings were socketed 0.3 m into bedrock. However, the bedrock surfaces in these boreholes are deeper than the expected borehole length calculated from the as-built bedrock surface elevations .
- Inspected today's casing plug grouting process for 10 boreholes.
- Inspectd the locations of the uninstalled casings and installed casings. The locations of the casings are ≥ 0.7m from the center line.
- Today, TCG issued the modified borehole length due to the issues they have identified in the GHD field logs during the second measurements conducted before grouting the casing plugs for these boreholes. After the verification in the field by TCG, the following modifications were made for the original field logs:
    - 0.2m drill bit length was added
    - Recalculated and corrected the problematic borehole length which caused by errors regarding the measurements of the second cuts of the casings, the actual length of the casing or the length of the stickup .
- TCG had informed GHD to take direct measurements for the borehole length, rather than only calculating the boreohoe length from the casing length, to avoid the potential errors. GHD has started this practice since Nov. 20. Meanwhile, TCG will continue to verifiy the the depth of the boreholes shown in the GHD field logs when TCG takes the second measurements for the depth of the boreholes before grouting the casing plugs and correct the errors if identified.

Casing Plug

A total of 10 casing plugs were grouted today using Mix C. Packer was placed at about 2 m above the bottom of the casing, and 15 liters of grout were injected prior to inflating the packer. All casings were injected with grout until reaching approximately 0 liters/ min grout flow at Pmax and waiting for 5 minutes.

Grout Test 1 Marsh Value =80 sec. Specific gravity = 1.75, Bleeding 1%, Temprature 28 °C .
Grout Test 2 Marsh Value = 67sec. Specific gravity = 1.69, Bleeding 1% Temprature 27 °C.

Hole ID	Casing into Rock (m)	Casing Plug				
		Date	Grout Type	Grout Taken (L)	Pressure (Bar)	Comments
S-494.5	0.16	November 26, 2019	C	22.2	1.49	-
T-497.5	0.3	November 26, 2019	C	29.2	2.0	-
P-500.5	0.2	November 26, 2019	C	18.3	1.56	-
T-503.5	0.3	November 26, 2019	C	20.2	1.54	-
S-506.5	0.3	November 26, 2019	C	26.9	1.6	-
T-509.5	1.4	November 26, 2019	C	25.5	1.95	Deeper than required 0.3 to 0.5 m into rock
P-512.5	0.3	November 26, 2019	C	25.8	1.78	-
T-515.5	0.3	November 26, 2019	C	21.8	1.5	-
S-518.5	0.3	November 26, 2019	C	49.3	1.25	-
S-530.5	0.3	November 26, 2019	C	19.9	1.63	-

SITE GUIDELINES (guidelines, memos, modification proposals, etc.)

No	Subject	Given to

SPECIFIC ELEMENTS VERIFIED

Elements	Location, batch or other	Scope and comments
Grouting for casing plugs	Injection unit	Marsh value, Bleeding, Specific gravity, Temprature

SAFE AND SAFETY REMARKS

- Dress up properly for extreme cold conditions

Issued by : *Jin Dong Du* (Signature) **26-11-2019** (Date)

Verified by : *Tom Xue* (Signature) **26-11-2019** (Date)

SNC·LAVALIN

DAILY FIELD REPORT
(Detailed)

20191127
Document number

Date	Time (Start/End)	Project No.	Prepared by
27-11-2019	6:30 am 6:30 pm	669034	Jin Dong Du

Project	Client
Whale Tail Dike Remedial Drilling and Grouting Works	Agnico Eagle

Consultant	Contractor
SNC-Lavalin	TCG(KCG)

Weather : ☒Sunny ☐Cloudy ☐Rain ☐Storm ☐Snow ☐Glaze

Wind : ☐None ☒Light ☐Moderate ☐Strong, gusts

Temperature : -26 °C

Comments :

Appendix : ☐Yes ☒No Pictures ☐Yes ☒No Inspection report or other :

Picture in the folder :

ACTIVITIES (indicate if test forms were used)

SNC-Lavalin' activiteis

- Attended daily construction meeting at Contractor trailer.
- Checked the log for two boreholes which casings were installed by TCG (KCG)yesterday dayshift at Stations 571.m and 574.5m. The casings were socketed 0.3 m into bedrock.
- Oberved the grouting for casing plugs.

Casing Plug

A total of 10 casing plugs were grouted today using Mix C. Packer was placed at about 2 m above the bottom of the casing, and 15 liters of grout were injected prior to inflating the packer. Most casings were injected with grout until reaching approximately 0 liters/ min grout flow at Pmax and waiting for 5 minutes. The grouting for two casings in the boreohles at T467.5m and T473.5m was ending at Vmax at low pressure. Check and redo grout plug as necessary before blanket hole drilling and grouting.

Grout Test 1 Marsh Value =76 sec. Specific gravity = 1.74, Bleeding 0%, Temprature 25 °C .
Grout Test 2 Marsh Value = 63sec. Specific gravity = 1.69, Bleeding 0% Temprature 27 °C.
Grout Test 3 Marsh Value = 66sec. Specific gravity = 1.73, Bleeding 0% Temprature 27 °C.

Hole ID	Casing into Rock (m)	Casing Plug				
		Date	Grout Type	Grout Taken (L)	Pressure (Bar)	Comments
P-464.5	0.3	November 27, 2019	C	147.8	1.45	-
T-467.5	0.3	November 27, 2019	C	172.6	0.02	Controlled by Vamx; check and redo grout plug as necessary before blanket hole drilling and grouting
S-470.5	0.3	November 27, 2019	C	20.6	1.48	-
T-473.5	0.3	November 27, 2019	C	163.1	0.02	Controlled by Vamx; check and redo grout plug as necessary before blanket hole drilling and grouting
P-476.5	0.3	November 27, 2019	C	25	1.61	-
T-479.5	0.3	November 27, 2019	C	27.9	1.51	-
S-482.5	0.3	November 27, 2019	C	28.2	1.62	-
T-485.5	0.3	November 27, 2019	C	19.1	1.3	-
P-488.5	0.35	November 27, 2019	C	60.2	1.68	-
T-491.5	0.26	November 27, 2019	C	18.5	1.36	-

Other Activites
Borehole at Station 745.5m was further drilled to 5 m into bed rock for the preparation of rock grouting.

SITE GUIDELINES (guidelines, memos, modification proposals, etc.)

No	Subject	Given to

SPECIFIC ELEMENTS VERIFIED

Elements	Location, batch or other	Scope and comments
Grouting for casing plugs	Injection unit	Marsh value, Bleeding, Specific gravity, Temprature

SAFE AND SAFETY REMARKS

- Dress up properly for extreme cold conditions

Issued by : *Jin Dong Du* (Signature) **27-11-2019** (Date)

Verified by : *Tom Xue* (Signature) **27-11-2019** (Date)

SNC·LAVALIN

DAILY FIELD REPORT
(Detailed)

20191128
Document number

Date	Time (Start/End)	Project No.	Prepared by
28-11-2019	6:30 am 6:30 pm	669034	Jin Dong Du

Project	Client
Whale Tail Dike Remedial Drilling and Grouting Works	Agnico Eagle

Consultant	Contractor
SNC-Lavalin	TCG(KCG)

Weather: ☐Sunny ☒Cloudy ☐Rain ☐Storm ☐Snow ☐Glaze

Wind: ☐None ☐Light ☐Moderate ☒Strong, gusts

Temperature: -13 ~ -16 °C

Comments:

Appendix: ☐Yes ☒No Pictures ☐Yes ☒No Inspection report or other:

Picture in the folder:

ACTIVITIES (indicate if test forms were used)

SNC-Lavalin' Activities

- Attended daily construction meeting at Contractor trailer.
- Checked the field logs for four boreholes which casings were installed by TCG (KCG)yesterday dayshift from Stations 584.5m and 593.5m. The casings were socketed 0.3 m into bedrock.
- Observed the grouting for casing plugs.
- In the daily morning meeting, SNC-Lavlain was informed that the bedrock grouting has been planned to be conducted for the section between Station 596.5 to 749.5m in the vicinity of the east abutment; at the time of the meeting, TCG had finished the bedrock drilling (target is to reach the depth at 5m below the bedrock surface) in borehole P740.5, and bedrock drilling in P728.5 was on going. TCG would start to grout these holes when the bedrock drilling in five (5) holes is completed.
- The filed log for the borehole at T449.5 is missing. GHD needs to find the log and send to TCG.
- As per Site Instructions for Drilling and Blanket Grouting, bedrock drilling shall be conducted after grouting the casing plug in a borehole. However, the bedrock drilling was conducted in the borehole at Station P716.5m before the casing plug was installed today. When SNC-Lavalin field engineer verified this issue with the TCG on-site supervisor at the time close to noon, SNC-Lavalin engineer was told that the drilling had almost completed. The solution for this issue needs to be determined.
- No bedrock drilling logs have been received by SNC-Lavalin. These logs need to be sent to SNC-Lavalin before the bedrock grouting starts.
- The plan for each day's bedrock drilling and grouting needs to be sent to SNC-Lavalin in advance.
- According to TCG, the bedrock depth at P728.5 was deeper than it recorded in the field log, additional 1.7-m casing has been added in order to reach the bedrock. It is noteworthy that the hole only took 3L grout for casing plug due to one-meter mud in the casing.

Casing Plug

A total of 5 casing plugs were grouted today using Mix C. Packer was placed at about 2 m above the bottom of the casing, and 15 liters of grout were injected prior to inflating the packer. Most casings were injected with grout until reaching approximately 0 liters/ min grout flow at Pmax and waiting for 5 minutes. The grouting for the casing plug in the borehole at T443.5m was ended at Vmax at low pressure; check and redo grout plug as necessary before blanket hole drilling and grouting.

No personnel were available for the grout testing for the injection in the morning. The planned grout testing at the noon were not carried out because grouting was stopped for repairing the grouting equipment until the end of the shift.

Hole ID	Casing into Rock (m)	Casing Installed Date	Casing Plug				
			Date	Grout Type	Grout Taken (L)	Pressure (Bar)	Comments
T-443.5	0.3	November 22, 2019	November 28, 2019	C	177.3	0.46	Ended at Vmax
T-449.5	Field log is missing		November 28, 2019	C	18.9	1.58	Grouting based on the second measurement taken before plugging the casing
P-452.5	0.3	November 13, 2019	November 28, 2019	C	28.9	1.51	
T-455.5	0.3	November 22, 2019	November 28, 2019	C	88.5	1.56	
S-458.5	0.3	November 22, 2019	November 28, 2019	C	19.3	1.57	

SITE GUIDELINES (guidelines, memos, modification proposals, etc.)

No	Subject	Given to

SPECIFIC ELEMENTS VERIFIED

Elements	Location, batch or other	Scope and comments
Grouting for casing plugs	Injection unit	Marsh value, Bleeding, Specific gravity, Temperature

SAFE AND SAFETY REMARKS

- Dress up properly for extreme cold conditions

Issued by:	*Jin Dong Du*	**28-11-2019**
	Signature	Date
Verified by:	*Tom Xue*	**28-11-2019**
	Signature	Date

SNC·LAVALIN

DAILY FIELD REPORT
(Detailed)

20191129
Document number

Date	Time (Start/End)	Project No.	Prepared by
29-11-2019	6:30 am 6:30 pm	669034	Jin Dong Du

Project	Client
Whale Tail Dike Remedial Drilling and Grouting Works	Agnico Eagle

Consultant	Contractor
SNC-Lavalin	TCG(KCG)

Weather: ☐Sunny ☐Cloudy ☐Rain ☒Storm ☐ Snow ☐Glaze

Wind: ☐None ☐Light ☐Moderate ☒Strong, ☐ gusts Temperature: -8~ -14 °C

Comments:

Appendix: ☐Yes ☒No Pictures ☐Yes ☒No Inspection report or other:

Picture in the folder:

ACTIVITIES (indicate if test forms were used)

SNC-Lavalin' Activities

- Attended daily construction meeting and weekly meeting at the Contractor trailer.
- Checked the field logs for three (3) boreholes which casings were installed by TCG (KCG)yesterday dayshift from Stations 575.5m and 581.5m. The casings were imbedded 0.3 m into bedrock. The depth of the boreholes at Stations S578.5 and T581.5 is deeper than the expected depth.
- Observed the grouting for casing plugs.
- As discussed in the morning meeting, SNC-Lavalin design team was requested to provide the comments for the following two issues regarding the yesterday's bedrock drilling for the blanket grouting.
  - The bedrock drilling was conducted in the borehole P716.5 m which casing plug was not installed.
  - During the bedrock drilling, TCG found that the casing in Borehole P728.5 did not reach the bedrock. Therefore, additional 1.7m-casing was added and driven to reach the required depth in the bedrock (according to TCG). In addition, the casing plug in this borehole only took 3L grout which was injected in Nov.19 likely due to the mud in the casing.
- Considering TCG's suggestion, SNC-Lavalin design team provided the comments as follows:

  Packer depth
  - Step 1. Make sure that the bottom of the packer is placed at the same depth of the bottom of the casing; and then conduct the bedrock grouting. If excessive grout take occurs without pressure built-up, then Step 2 below should be followed.
  - Step 2. Lower the packer to put the upper half of the packer in the casing and the lower half of the packer in the bedrock underneath, then start grouting again.

  Future work
  - The procedures in the Specs and Site Instructions shall be followed for drilling and grouting the other holes.

Casing Plug

A total of three (3) casing plugs were grouted today using Mix C. Packer was placed at about 2 m above the bottom of the casing, and 15 liters of grout were injected prior to inflating the packer. The casings were injected with grout until reaching approximately 0 liters/ min grout flow at Pmax and waiting for 5 minutes.

The planned grout testing was not carried out because grouting was stopped in the morning due to extreme weather condition.

Hole ID	Casing into Rock (m)	Casing Plug				
		Date	Grout Type	Grout Taken (L)	Pressure (Bar)	Comments
P-428.5	0.3	November 29, 2019	C	29.53	1.73	-
T-431.5	0.3	November 29, 2019	C	176.4	1.53	-
T-437.5	0.3	November 29, 2019	C	21.6	1.63	-

Other Activities

TCG issued first set of the borehole deviation data for the casing. The bedrock portion of the drilled boreholes also needs to be surveyed for the deviation from the vertical for each borehole as per the specifications.

SITE GUIDELINES (guidelines, memos, modification proposals, etc.)

No	Subject	Given to

SPECIFIC ELEMENTS VERIFIED

Elements	Location, batch or other	Scope and comments
Grouting for casing plugs	Injection unit	Marsh value, Bleeding, Specific gravity, Temperature

SAFE AND SAFETY REMARKS

- Dress up properly for extreme cold conditions

Issued by: *Jin Dong Du* (Signature) **29-11-2019** (Date)

Verified by: *Tom Xue* (Signature) **29-11-2019** (Date)

SNC·LAVALIN

DAILY FIELD REPORT
(Detailed)

20191130
Document number

Date	Time (Start/End)	Project No.	Prepared by
2019-11-30	6:30 am 6:30 pm	669034	Jin Dong Du

Project	Client
Whale Tail Dike Remedial Drilling and Grouting Works	Agnico Eagle

Consultant	Contractor
SNC-Lavalin	TCG(KCG)

Weather: ☒Sunny ☒Cloudy ☐Rain ☐Storm ☐Snow ☐Glaze

Wind: ☐None ☐Light ☒Moderate ☒Strong, ☐ gusts Temperature: -14~ -16 °C

Comments:

Appendix: ☐Yes ☒No Pictures ☐Yes ☒No Inspection report or other:

Picture in the folder:

ACTIVITIES (indicate if test forms were used)

SNC-Lavalin' Activities

- Attended daily construction meeting at the Contractor trailer.
- Checked the field logs for three (3) boreholes which casings were installed by TCG (KCG)yesterday dayshift from Stations 566.5m to 572.5m. The casings were embedded 0.3 m into bedrock. The depth of the boreholes at Stations T569 & P572m is deeper than the expected depth.
- Worked with TCG to finalize the calculation for the grouting parameters for bedrock grouting
- Observed the bedrock grouting for Borehole P740.5.
- As requested by AEM, SNC-Lavalin design team agrees AEM's suggestion to conduct the bedrock grouting starting with Mix C without cellbex. When injection volume reaches 400L without pressure building up, Cellbex will be added according to the specifications.
- As discovered by AEM, the boreholes at 434.5m and 254.5m are too close to the instrumentation shacks, and the casings cannot be installed. AEM proposed to offset the two boreholes on the downstream side. AEM proposed the new distance from the dike centerline to the two boreholes at Stations 434.5m and 254.5m to be 1.8m and 2.15m respectively. SNC-Lavalin design team agrees with the changes.

Bedrock grouting

Bedrock grouting was conducted for borehole P740.5 today. The grouting was ended when Vmax was reached without significant pressure.

The grouting started with Mix C without Cellbex being added. Cellbex was added when the intake of the grout reached approximately 400L. Grout tests were conducted before and when Cellbex was added first time, as well as every 5 batches. The Marsh values became very unstable after Cellbex was added because the new batch quickly mixed with the previous batch due to large grout intake in this borehole. Although testing results showed very high marsh values,

the intake of grout was high without significant pressure. The borehole was not back filled because of the large grout intake without significant pressure being applied.

Grout testing	Marsh value	Specific Gravity	Temperature (°C)	Bleeding (%)	Remarks
Test 1	74''	1.71	25	1	No cellbex
Test 2	>180''	1.77	25	Not enough time was left before end of the shift.	Cellbex added
Test 3	90''	1.72	22		Cellbex added
Test 4	>180''	1.70	20		Cellbex added

Hole ID	Interface grouting				
	Date	Grouting Length (m)	Gauge Pressure (Bar)	Volume Injected (L)	Comments
P-740.5	201-11-30	5.1	0.15	2079	The bottom of packer was placed 0.2m above the bottom of the casing to protect the packer.

Bedrock drilling
Bedrock drilling was conducted for three boreholes. After drilling, borehole P680.5 was decided to be skipped because the casing did not reach the bedrock. Bedrock drilling was completed for Boreholes P656.5 and P644.5.

Deviation of boreholes
TCG issued first set of the borehole deviation data for the casing yesterday. The data shows that deviations from the vertical of many holes are larger than 0.5% which is required in the specifications. It is noteworthy that the accuracy of the deviation surveyed by the inclinometer can reach 35% of the required 0.5%. Also, the current temperature was likely lower than the lowest temperature (-10°C) suggested in the manufacture's instructions.

SITE GUIDELINES (guidelines, memos, modification proposals, etc.)

No	Subject	Given to

SPECIFIC ELEMENTS VERIFIED

Elements	Location, batch or other	Scope and comments
Bedrock Grouting	Injection unit	Marsh value, Bleeding, Specific gravity, Temperature

SAFE AND SAFETY REMARKS

- Dress up properly for extreme cold conditions

Issued by: *Jin Dong Du* (Signature) **30-11-2019** (Date)

Verified by: *Tom Xue* (Signature) **30-11-2019** (Date)

SNC·LAVALIN

DAILY FIELD REPORT
(Detailed)

20191201
Document number

Date	Time (Start/End)	Project No.	Prepared by
2019-12-01	6:30 am 6:30 pm	669034	Jin Dong Du

Project	Client
Whale Tail Dike Remedial Drilling and Grouting Works	Agnico Eagle

Consultant	Contractor
SNC-Lavalin	TCG(KCG)

Weather: ☒Sunny ☒Cloudy ☐Rain ☐Storm ☐Snow ☐Glaze

Wind: ☐None ☐Light ☒Moderate ☒Strong, ☐ gusts Temperature: -14~ -18 °C

Comments:

Appendix: ☐Yes ☒No Pictures ☐Yes ☒No Inspection report or other:

Picture in the folder:

ACTIVITIES (indicate if test forms were used)

SNC-Lavalin' Activities

- Attended daily construction meeting at the Contractor trailer.
- Checked the field logs for two (2) boreholes which casings were installed by TCG (KCG) yesterday dayshift at Stations 560.5m and 563.5m. The casings were embedded 0.3 m into bedrock.
- Observed the bedrock grouting for Boreholes P728.5, P716.5 and P704.5.

Work Method

- The boreholes which bedrock grouting ends at the maximum volume at low pressure will not be backfilled awaiting final decision according to AEM's comments.
- Casing plugs in Boreholes P716.5 and P680.5 were not grouted. Casing plug in P728.5 were considered ineffective due to low grout take, and the casing was pushed down after casing plug being grouted. The bedrock grouting for the three boreholes were planned to be conducted today. In today's daily construction meeting, it was decided that the three boreholes will be directly grouted by positioning the upper half of the packer in the casing and the lower half of the packer in the bedrock underneath to seal the casing annular space (Step 2 in 20191129 Daily Field Report). Bedrock grouting of all other boreholes shall be conducted after casing plugs are grouted in these boreholes.

Bedrock Grouting

- Bedrock grouting was conducted for boreholes P728.5, P716.5 and P704.5 today. The planned bedrock grouting for Borehole P680.5 was not conducted today.
- Packer was placed with the upper part in the casing and the lower part in the bedrock underneath in the boreholes P716.5 & P728.5.
- P728.5 finished at the Pmax with the Mix C grout without Cellbex being added. Casing in Borehole P728.5 was only about 5cm into the bedrock. The hole was backfilled with Mix C grout after grouting was finished.

- P716.5 was finished at the Vmax at very low pressure with Mix C. Cellbex was added when about 600L of grout was injected. This hole was not backfilled as per AEM's comments.
- P704.5 was finished at the Vmax at very low pressure with Mix C . CellBex was added when about 400L of grout was injected. This hole was also not backfilled as per AEM's comments.
- Grout tests were conducted before and when Cellbex was added first time, as well as every 5 batches. The Marsh values became very unstable after Cellbex was added because the new batch quickly mixed with the previous batch due to large grout intake in this borehole. Although testing results showed very high marsh values, the intake of grout was high without significant pressure. It was hard to control temperature of the grout especially when calcium chloride was added according to the operator of the grout-mix unit.

BH#	Grout testing	Time	Marsh value (second)	Specific Gravity	Temperature (°C)	Bleeding (%)	Remarks
P728.5	Test 1	7:15	71	1.74	27.6	1%	No Cellbex.
	Test 2	8:20	67	1.76	26.9	-	No Cellbex.
P716.5	Test 1	9:25	66	1.73	30	-	No Cellbex.
	Test 2	10:11	86	1.76	29	-	No Cellbex.
	Test 3	10:15	>180	1.77	31.5	-	Cellbex added
	Test 4	10:35	>180	1.77	29	-	Cellbex added
	Test 5	10:53	>180	1.74	30	-	Cellbex added
P704.5	Test 1	14:55	73	1.78	33.5	1.5%	No Cellbex.
	Test 2	15:35	71	1.77	20.4	-	Cellbex added
	Test 3	16:03	>180	1.8	21.3	-	Cellbex added
	Test 4	16:22	>180	1.77	20.5	-	Cellbex added

BH #	Casing into Bedrock (m)	Ground Water Level(m)	Grouting Date	Grouting Length (m)	Gauge Pressure at the End (Bar)	Volume Injected (L)	Comments
P-704.5	0.45	6.17	2019-12-01	4.55	0.72	1901	Half of the packer in the casing
P-716.5	0.3	-	2019-12-01	4.67	0.47	1958	No casing plug; half of the packer in the casing
P-728.5	0.06	6.02	2019-12-01	5.06	3.45	428.5	Casing plug is likely not effective; half of the packer in the casing
P-740.5	0	6.82	2019-11-30	5.1	0.15	2079	Casing at the rock surface

Bedrock Drilling
Bedrock drilling was completed for 8 new primary boreholes from Stations 476.5 to 632.5. Bedrock drilling in Borehole at Station P680.5 was not finished yesterday but completed today.

SITE GUIDELINES (guidelines, memos, modification proposals, etc.)

No	Subject	Given to

SPECIFIC ELEMENTS VERIFIED

Elements	Location, batch or other	Scope and comments
Bedrock Grouting	Injection unit	Marsh value, Bleeding, Specific gravity, Temperature

SAFE AND SAFETY REMARKS

- Dress up properly for extreme cold conditions

Issued by: *Jin Dong Du* (Signature) **01-12-2019** (Date)

Verified by: *Tom Xue* (Signature) **01-12-2019** (Date)

SNC·LAVALIN

DAILY FIELD REPORT
(Detailed)

20191202
Document number

2019-12-02	6:30 am 6:30 pm	669034	Jin Dong Du
Date	Time (Start/End)	Project No.	Prepared by

Whale Tail Dike Remedial Drilling and Grouting Works	Agnico Eagle
Project	Client

SNC-Lavalin	TCG(KCG)
Consultant	Contractor

Weather: ☒Sunny ☒Cloudy ☐Rain ☐Storm ☐Snow ☐Glaze

Wind: ☐None ☐Light ☒Moderate ☒Strong, ☐ gusts Temperature: -26 ~ -28 °C

Comments:

Appendix: ☐Yes ☒No Pictures ☐Yes ☒No Inspection report or other:

Picture in the folder:

ACTIVITIES (indicate if test forms were used)

SNC-Lavalin' Activities

- Attended daily construction meeting at the Contractor trailer.
- Checked the field logs for three (3) boreholes which casings had been previously installed and were further advanced today to reach the bedrock at Stations 404.5m, 533.5m and 596.5m. The casings were embedded 0.3 m into bedrock.
- Observed the bedrock grouting for Boreholes P692.5m and P680.5m.
- Attended the meeting with AEM to discuss the issues and questions according the behaviors of the first a few bedrock grouting holes.

Work Method and Plan

- KCG planned to continue to grout the casings plugs of the secondary and tertiary holes in the current bedrock grouting section tomorrow.
- KCG planned to advance all the casings, which have not reached the bedrock, to the bedrock with 0.3m embedment.
- The inaccuracy which has been discovered in the field logs for the casing drilling has caused considerable inconvenience for the bedrock grouting. KCG has found the reasons for the occurrence of the inaccuracy. To avoid the similar mistakes to reoccur, in the daily meeting, QA recommended that it is important for KCG to develop a working instruction to guide the filed logging process and filed data processing for different shifts of the work. It will become important for the casing drilling for the upstream grouting blanket.

Bedrock Grouting

- Bedrock grouting was conducted for boreholes P692.5 and P680.5 today.

- Packer was placed with the upper part in the casing and the lower part in the bedrock underneath in the boreholes P680.5 which casing was not plugged.
- The bedrock grouting in both two holes was finished at the Vmax at relatively low pressures with Mix C. Cellbex was added when about 400L of grout was injected. The final pressure was higher than those of the bedrock grouting conducted yesterday in Hole P740.5 and P716.5. Gauge pressure at Borehole P680.5 had reached about 3 bar a few time shorlty but gone back to lower pressures soon again. Boreholes P692.5 and P680.5 were not backfilled as per AEM's comments.
- Grout tests were conducted before and when Cellbex was added first time, as well as every 5 batches. The Marsh values became very unstable after Cellbex was added because the new batch quickly mixed with the previous batch due to large grout intake in this borehole. Although testing results showed very high marsh values, the intake of grout was high at relatively low pressure. It was hard to control temperature of the grout especially when calcium chloride was added according to the operator of the grout-mix unit.

BH#	Grout testing	Time	Marsh value (second)	Specific Gravity	Temperature (°C)	Bleeding (%)	Remarks
P692.5	Test 1	8:10	82	1.7	25	1%	No Cellbex.
	Test 2	8:45	>180	1.78	28	-	Cellbex added
	Test 3	9:22	>180	1.80	19.5	-	Cellbex added
	Test 4	9:55	>180	1.81	21	-	Cellbex added
P680.5	Test 1	13:45	63	1.77	22.5	-	No Cellbex.
	Test 2	14.55	108	1.8	31	-	Cellbex added
	Test 3	15.25	>180	1.80	24	-	Cellbex added
	Test 4	15:50	>180	1.80	23.5	-	Cellbex added

BH #	Casing into Bedrock (m)	Ground Water Level(m)	Grouting Date	Grouting Length (m)	Gauge Pressure at the End (Bar)	Volume Injected (L)	Comments
P-680.5	0.34	6.61	2019-12-02	4.81	1.2	2064	No casing Plug
P-692.5	0.3	6.48	2019-12-02	4.51	1.12	2076	

Bedrock Drilling
Bedrock drilling was completed for two new primary boreholes from Stations 680.5 to 668.5.

Others

- TCG took the measurements for two boreholes (P716.5 and P740.5) which bedrock grouting was completed yesterday at Vmax and low pressure and found there was about 1m grout staying in the hole bottom.
- KCG backfilled a borehole, which was mistakenly drilled about 20cm from borehole T647.5, using grout Mix C.
- Today TCG found bedrock drilling has completed for three more boreholes which casings were not plugged. During today's meeting between AEM and SNC-Lavalin, it is agreed that bedrock grouting can be conducted for the three holes by positioning half packer in the casing and half in the rock underneath.

SITE GUIDELINES (guidelines, memos, modification proposals, etc.)

No	Subject	Given to

SPECIFIC ELEMENTS VERIFIED

Elements	Location, batch or other	Scope and comments
Bedrock Grouting	Injection unit	Marsh value, Bleeding, Specific gravity, Temperature

SAFE AND SAFETY REMARKS

- Dress up properly for extreme cold conditions

Issued by: *Jin Dong Du* (Signature) **02-12-2019** (Date)

Verified by: *Tom Xue* (Signature) **02-12-2019** (Date)

SNC·LAVALIN

DAILY FIELD REPORT
(Detailed)

20191203
Document number

Date	Time (Start/End)	Project No.	Prepared by
2019-12-03	6:30 am 6:30 pm	669034	Jin Dong Du

Project	Client
Whale Tail Dike Remedial Drilling and Grouting Works	Agnico Eagle

Consultant	Contractor
SNC-Lavalin	TCG(KCG)

Weather: ☒Sunny ☒Cloudy ☐Rain ☐Storm ☐Snow ☐Glaze

Wind: ☐None ☐Light ☒Moderate ☒Strong, ☐ gusts Temperature: -26 ~ -28 °C

Comments:

Appendix: ☐Yes ☒No Pictures ☐Yes ☒No Inspection report or other:

Picture in the folder:

ACTIVITIES (indicate if test forms were used)

SNC-Lavalin' Activities

- Attended daily construction meeting at the Contractor trailer.
- Checked the field logs for three (3) boreholes which casings had been previously installed and were further advanced yesterday to reach the bedrock at Stations 380.5m, 389.5m and 392.5m. The casings were embedded 0.3 m into bedrock.
- Observed the bedrock grouting for Boreholes P668.5 and casing plug grouting for 7 boreholes.
- SNC-Lavalin issued the work instructions for re-grouting the boreholes which bedrock grouting ended at Vmax at low pressures.
- Involved in other QA related activities.

Work Method and Plan

- AEM sent KCG the instructions for re-grouting the boreholes which bedrock grouting ended at Vmax at low pressures.
- KCG grouted the rest of casing plugs in the bedrock grouting section and planned to start to re-grout the boreholes which bedrock grouting did not reach pressure refusal tomorrow.
- Vicat tests was requested to determine the set times of the grout mix used.

Bedrock Grouting

- Bedrock grouting was conducted for boreholes P668.5 today.
- The bedrock grouting in this hole was finished at the Vmax (2327L) at relatively high pressure of 2.76Bar (Calculated Pmax =3.6bar) with Mix C. Cellbex was added when about 400L of grout was injected.

- About 200L more than the calculated Vmax grout was injected with the intention to reach Pmax, but the grouting ended when the flow rate had the trend to increase to avoid the grout injected into the bedrock being washed out.
- The hole was not backfilled and will be regrouted.
- Grout tests were conducted before and when Cellbex was added first time, as well as every 5 batches. The Marsh values became very unstable after Cellbex was added because the new batch quickly mixed with the previous batch due to large grout intake in this borehole. Although testing results showed very high marsh values, the intake of grout was high at relatively low pressure. It was hard to control temperature of the grout especially when calcium chloride was added according to the operator of the grout-mix unit.

BH#	Grout testing	Time	Marsh value (second)	Specific Gravity	Temperature (°C)	Bleeding (%)	Remarks
P668.5	Test 1	7:40	80	1.8	35	1%	No Cellbex.
	Test 2	9:15	>180	1.79	23.8	-	Cellbex added

Hole ID	Casing into bedrock (m)	Water level (m)	Bedrock Grouting				
			Date	Grouting Length (m)	Gauge Pressure (bar)	Volume Injected (L)	Comments
P-668.5	0.3	6.61	December 3, 2019	4.86	2.76	2327	-

Casing plug

A total of 7 casing plugs were grouted today using Mix C. Packer was placed at about 2 m above the bottom of the casing, and 15 liters of grout were injected prior to inflating the packer. The casings were injected with grout until reaching approximately 0 liters/ min grout flow at Pmax and waiting for 5 minutes.

Grout Test 1 Marsh Value =61 sec. Specific gravity = 1.78, Temperature 28 °C.

Hole ID	Casing Rock Socketed	Casing Plugged				
		Date	Grout Type	Grout Taken (L)	Pressure (Bar)	Comments
T-665.5	0.3	December 3, 2019	C	12.8	1.67	-
T-671.5	0.3	December 3, 2019	C	17.7	1.73	-
S-674.5	0.32	December 3, 2019	C	17	1.77	-
T-707.5	0.3	December 3, 2019	C	24.6	2.01	-
S-710.5	0.3	December 3, 2019	C	24.8	2.04	-

T-713.5	0.3	December 3, 2019	C	18.4	2.21	-
T-719.5	0.3	December 3, 2019	C	23	1.65	-

Increase of the PH value of seepage water

- The AEM weekly water testing results showed that an increase of the PH value from about 7 to about 9 yesterday for the seepage water in the trench about 15m away from the downstream toe of the dike. It is believed that it is typical of water contaminated by shotcrete, grout, or concrete activities. The typical values range from 6-8 historically prior to grouting.
- AEM has decided to increase the frequency of the water testing for the seepage water to twice a day for PH and Turbidity values. This decision will be helpful to monitor and evaluate the effects of the on-going grouting.

SITE GUIDELINES (guidelines, memos, modification proposals, etc.)

No	Subject	Given to

SPECIFIC ELEMENTS VERIFIED

Elements	Location, batch or other	Scope and comments
Bedrock Grouting, casing plug	Injection unit	Marsh value, Bleeding, Specific gravity, Temperature

SAFE AND SAFETY REMARKS

- Dress up properly for extreme cold conditions

Issued by: *Jin Dong Du* (Signature) **03-12-2019** (Date)

Verified by: *Tom Xue* (Signature) **03-12-2019** (Date)

SNC·LAVALIN

DAILY FIELD REPORT
(Detailed)

20191204
Document number

Date	Time (Start/End)	Project No.	Prepared by
2019-12-04	6:30 am 6:30 pm	669034	Jin Dong Du

Project	Client
Whale Tail Dike Remedial Drilling and Grouting Works	Agnico Eagle

Consultant	Contractor
SNC-Lavalin	TCG(KCG)

Weather: ☒Sunny ☒Cloudy ☐Rain ☐Storm ☐Snow ☐Glaze

Wind: ☐None ☒Light ☒Moderate ☐Strong, ☐ gusts Temperature: -30 °C

Comments:

Appendix: ☐Yes ☒No Pictures ☐Yes ☒No Inspection report or other:

Picture in the folder:

ACTIVITIES (indicate if test forms were used)

SNC-Lavalin' Activities

- Attended daily construction meeting at the Contractor trailer.
- Checked the field logs for three (3) boreholes which casings had been previously installed and were further advanced yesterday to reach the bedrock at Stations 344.5m, 353.5m and 356.5m. The casings were embedded 0.3 m into bedrock. The borehole number of T353.5 is incorrect in the field borehole log.
- Observed the bedrock re-grouting for Boreholes of P716.5 and P740.5.
- Modified re-grouting method according to the behaviors of the first re-grouted hole.
- Involved in other QA related activities.

Work Method and Plan

- Due to no pressure refusal when re-grouting bedrock in borehole P716.5, thicker Mix was decided to be used for the re-grouting the next hole (P740.5) starting with Mix C with Cellbex and switching to Mix D after 400L of Mix C is injected. This modification will apply to the rest of the re-grouting.
- 400-600L Mix D was used for the third grouting for P740.5 with refusal pressure at 2 bar as suggested by SNC-Lavalin.
- Vicat tests will be conducted for each Mix used for the grouting.
- Using Tremie for the re-grouting was canceled.

Bedrock Re-Grouting

- Bedrock re-grouting was conducted for boreholes P716.5 and P740.5 today.
- The bedrock re-grouting in borehole P716.5 was finished at the Vmax (1247L) at pressure of 1.4Bar (target Pmax =3.2bar). The re-grouting started with Mix C without Cellbex; Cellbex was added when about 400L of grout had been injected; Mix D was used after about 800L grout had been injected. KCG measured the depth of the grout

a few hours after the re-grouting and found the grout depth was higher than the casing bottom depth. Then, the borehole was backfilled at the end of the shift.

- The bedrock re-grouting in borehole P740.5 was finished at the Vmax (1401L) at the pressure of 1.8 Bar (target Pmax =2.87bar). The bedrock re-grouting in Borehole P740.5 started with Mix C with Cellbex and switched to Mix D after about 400L grout had been injected. About two hours after the re-grouting, KCG measured the depth of the grout. The result shows there was still 3.7m hole in the bedrock is empty. Then the third grouting was conducted by injecting 455L of Mix D. However, the pressure refusal was still not achieved, and about 3.3m hole in the bedrock was empty. This hole is not backfilled awaiting further solution.
- Grout tests were conducted for Mix C without Cellbex, Mix C with Cellbex and Mix D. Vicat test was conducted for Mix C with Cellbex, with the initial setting time of 279 minutes. The final results will be issued tomorrow according to KCG.

Borehole ID	Grout testing	Time	Marsh value (second)	Specific Gravity	Temperature (°C)	Bleeding (%)	Remarks
P716.5	Test 1	7:45	105	1.82	26.5	-	Mix C (no CellBex)
	Test2	8:35	N/A	1.81	22	0	Mix C with Cellbex
	Test 3	9:05	N/A	1.80	21	-	Mix D (toothpaste like material)
P740.5	Test 1	10:35	N/A	1.75	23	-	Mix C with Cellbex
	Test2	11:07	N/A	1.79	24	-	Mix D (toothpaste like material)
	Test 3	14:42	N/A	1.75	25.9	1%	Mix D (toothpaste like material), Third grouting

Hole ID	Casing into bedrock (m)	Water depth (m)	After first bedrock grouting		Second grouting						After second bedrock grouting		Mix
			Depth of grout (m)	Empty Length in bedrock after grouting (m)	Date	Grouting Length (m)	Target Pmax (bar)	Target Volume (L)	Gauge Pressure (bar)	Volume Injected (L)	Depth of grout (m)	Empty Length in bedrock after grouting (m)	
P-716.5	0.3	6.15	15.37	3.44	2019-12-04	3.44	3.2	1200	1.48	1247	11.3	-0.63	Mix C no Cellbex, Mix C +Cellbex at about 400L, Mix D at 800L
P-740.5	casing at the rock surface	6.82	13.35	3.95	2019-12-04 morning	3.95	2.87	1200	1.86	1401	13.1	3.7	Cellbex at about 400L, Mix D at 800L

Third Grouting for P740.5								
Date	**Grouting Length (m)**	**Target Pmax (bar)**	**Target Volume (L)**	**Gauge Pressure (bar)**	**Volume Injected (L)**	**Depth of grout (m)**	**Empty Length in bedrock after grouting (m)**	Mix
2019-12-04 afternoon	3.7	2	400-600	1.05	445	13.5(measured right after grouting), 12.7m measured next day	3.3	Mix D

SITE GUIDELINES (guidelines, memos, modification proposals, etc.)

No	Subject	Given to

SPECIFIC ELEMENTS VERIFIED

Elements	Location, batch or other	Scope and comments
Bedrock Re-Grouting	Injection unit	Marsh value, Bleeding, Specific gravity, Temperature

SAFE AND SAFETY REMARKS

- Dress up properly for extreme cold conditions

Issued by: *Jin Dong Du* (Signature) **04-12-2019** (Date)

Verified by: *Tom Xue* (Signature) **04-12-2019** (Date)

SNC·LAVALIN

DAILY FIELD REPORT
(Detailed)

20191205
Document number

2019-12-05	6:30 am 6:30 pm	669034	Jin Dong Du /Muhammad Saleem
Date	Time (Start/End)	Project No.	Prepared by

Whale Tail Dike Remedial Drilling and Grouting Works	Agnico Eagle
Project	Client

SNC-Lavalin	TCG(KCG)
Consultant	Contractor

Weather: ☒Sunny ☒Cloudy ☐Rain ☐Storm ☐Snow ☐Glaze

Wind: ☐None ☒Light ☒Moderate ☐Strong, ☐ gusts Temperature: -30 °C

Comments:

Appendix: ☐Yes ☒No Pictures ☐Yes ☒No Inspection report or other:

Picture in the folder:

ACTIVITIES (indicate if test forms were used)

SNC-Lavalin' Activities

- Attended daily construction meeting at the Contractor trailer.
- Checked the field logs four (4) boreholes which casings had been previously installed and were further advanced yesterday to reach the bedrock at Stations 176.5m, 272.5m, 311.5m and 338.5m. The casings were embedded 0.3 m into bedrock.
- Observed the bedrock re-grouting for Boreholes of P704.5 and P680.5.
- Observed the calibration of Marsh funnel and mud balance.
- Involved in other QA related activities.

Work Method and Plan

- Due to no pressure refusal when regrouting bedrock using Mix D in borehole P680.5, thicker Mix E was decided to used.
- KCG planed to finish the rest of the casing installatinos for three holes today if not then tomorrow.
- Due to crew change, there may not be grouting activity tomorrow.

Casing deepening

KCG has finished deepening all the casings which did not reach the bedrock. These casings have been embeded 0.3m into the bedrock.

Bedrock Re-Grouting

- Bedrock re-grouting was conducted for boreholes P 680.5 and P704.5 and backfilling for P692.5 today.
- The bedrock re-grouting in borehole P680.5 was stopped at the Vmax (1383L) at pressure of 1.14Bar. The regrouting started with Mix C with Cellbex. After injecting 450 liters of grout, Mix D was started and injected

about 700 liters of Mix D grout. Due to no pressure refusal met about 233 liters of Mix E was injected. KCG will check grout elevation tomorrow morning and if grout found above the bottom of the casing, hole will be backfilled. Otherwise if empty length exists regrout will be required.

- At P704.5 the depth was measured prior to start re-grouting and hole was open to 10.3 m depth that was just 0.4 m below the bottom of the casing. Pressure refusal (1.77 bar) was met just after injecting 5 liters of grout and waiting for 5 minutes. Hole backfilled to surface after grouting.
- P692.5 which was regrouted yesterday, the grout was found inside the casing and hole backfilled.
- Grout tests were conducted for Mix C with Cellbex, Mix D and Mix E. Vicat test was conducted yesterday and only initial set time was checked. Another sample of Mix C with Cellbex was taken today to check initial and final set time.
- Marsh funnel was tested with water and got only 23 secons which is 3 sec. lower than the marsh time for water. Marsh funnel along with two other marsh funnels were tested in the lab and got 26 seconds marsh time. The variation in the marsh time of water in the injection trailer and lab possible due to water temperature.

BH#	Grout testing	Marsh value (second)	Specific Gravity	Temperature (°C)	Bleeding (%)	Remarks
P680.5	1	N/A	1.73	24.2	0	Mix C+Cellbex
	2	N/A	1.81	17.4	0	Mix D
	3	N/A	1.8	25	-	Mix E
P704	1	N/A	1.76	22	-	Mix C+Cellbex

Date	Grouting Length (m)	Target Pmax (bar)	Target Volume (L)	Gauge Pressure (bar)	Volume Injected (L)	Mix
2019-12-05	4.99	1.77	1200	1.14	1383	Mix C + Cellbex: 450L; Mix D: 700L; Mix E: 233L;
2019-12-05	0.31	3.48	1200	1.77	5	Mix C + Cellbex

SITE GUIDELINES (guidelines, memos, modification proposals, etc.)

No	Subject	Given to

SPECIFIC ELEMENTS VERIFIED

Elements	Location, batch or other	Scope and comments
Bedrock Re-Grouting	Injection unit	Marsh value, Bleeding, Specific gravity, Temperature

SAFE AND SAFETY REMARKS

- Dress up properly for extreme cold conditions

Issued by: *Jin Dong Du/ Muhammad Saleem* — Signature — **05-12-2019** — Date

Verified by: *Tom Xue* — Signature — **05-12-2019** — Date

SNC·LAVALIN

DAILY FIELD REPORT
(Detailed)

20191206
Document number

Date	Time (Start/End)	Project No.	Prepared by
2019-12-06	6:30 am 6:30 pm	669034	Muhammad Saleem

Project	Client
Whale Tail Dike Remedial Drilling and Grouting Works	Agnico Eagle

Consultant	Contractor
SNC-Lavalin	TCG(KCG)

Weather: ☒Sunny ☒Cloudy ☐Rain ☐Storm ☐Snow ☐Glaze

Wind: ☐None ☒Light ☒Moderate ☐Strong, ☐ gusts Temperature: -33 °C

Comments:

Appendix: ☐Yes ☒No Pictures ☐Yes ☒No Inspection report or other:

Picture in the folder:

ACTIVITIES (indicate if test forms were used)

SNC-Lavalin' Activities

- Attended daily construction meeting at the Contractor trailer.
- Checked the field logs for two (2) boreholes S254.5 and T365.5 which casings had been installed yesterday. The casings were embedded 0.3 m into bedrock.
- Last casing is installed today but the data is not available yet.
- Collected missing rock drilling data and update the progress chart and Master Sheet.
- Attend AEM-SNC weekly meeting.

Work Method and Plan

As per the recommendations from grouting committee and discussion during the weekly meeting:

- Those holes that have not been drilled in the bedrock will be drilled and grouted as per down-stage method.
- 1st stage will be 1.5 m and 2nd stage will be 3.5 m.
- Cellebx will be added in the Mix C using open throat pump, with inceasing Cellbex gradually in stages until the Pmax achieved or maximum volume injected.
- Data from first few holes will be reviewed by Designer to come up with appropriate grouting procedure for remaining of the job.
- Priority will be to close holes those could not be closed during initial grouting or re-grouting and then the remaining holes already been drilled 5 m in the bedrock.
- Designer will provide preliminary instructions to start grouting with Cellbex using open throat system for different options.

Casing Installation.
Last casing T434.5 for the down stream blanket installed today.

Bedrock Re-Grouting
No grouting activity today due to crew change. TCG mechanic is working on the installation of open throat pump.
The hole P680 regrouted yesterday still open to 16.95 m below ground elevation (4.86 m in the rock) with water level at 5.65 m.
P668 was grouted once, P680 was re-grouted once and P740 was regrouted twice but not closed yet, still open 3.3 to 5.43 m in the rock.

Wifi internet in the site office is down since noon time today.

SITE GUIDELINES (guidelines, memos, modification proposals, etc.)

No	Subject	Given to

SPECIFIC ELEMENTS VERIFIED

Elements	Location, batch or other	Scope and comments

SAFE AND SAFETY REMARKS

- Dress up properly for extreme cold conditions

Issued by: *Muhammad Saleem* — Signature — **06-12-2019** — Date

Verified by: *Tom Xue* — Signature — **06-12-2019** — Date

SNC·LAVALIN

DAILY FIELD REPORT
(Detailed)

20191207
Document number

Date	Time (Start/End)	Project No.	Prepared by
2019-12-07	6:30 am 6:30 pm	669034	Muhammad Saleem

Project	Client
Whale Tail Dike Remedial Drilling and Grouting Works	Agnico Eagle

Consultant	Contractor
SNC-Lavalin	TCG(KCG)

Weather: ☒Sunny ☒Cloudy ☐Rain ☐Storm ☐Snow ☐Glaze

Wind: ☐None ☒Light ☒Moderate ☐Strong, ☐ gusts Temperature: -36 °C

Comments:

Appendix: ☐Yes ☒No Pictures ☒Yes ☐No Inspection report or other:

Picture in the folder:

ACTIVITIES (indicate if test forms were used)

SNC-Lavalin' Activities

- Attended daily construction meeting at the Contractor trailer.
- Checked the field logs for last casing installed yesterday. The casing was embedded 0.3 m into bedrock.
- Total 188 casings were installed. Four casing locations T335.5, T359.5, P440.5 and P608.5 are not on the list (casing locations) provided by SNC. Checked with Abdellah, these locations are not on the list because of the locations of the instrumentation cables could not be confirmed.

Work Method and Plan

- Site instruction was provided to start regrouting and grouting of already drilled holes 5 m in the rock using Cellbex with open throat pump.
- TCG is planning to regrout P740.5, P680.5 and P668.5 using open throat pump to add Cellbex. It will be chellange to add right amout of Clebex in the Mix but crew was advised to maintain a uniform quantity of Cellbex as much as possible.
- Cellbex quantity will be adjusted as per field observation if needed

Bedrock Re-Grouting

- TCG install the open throat pump system and test the equipment first with water and then with grout by adding Cellbex. During testing pump, they poured grout inside the casing. Before grouting when chekcked, the grout was at 5.5 m depth inside the casing. Casing washed out with water and able to clean up to previous depth of 12.58 m.
- Started grouting P740.5 in the afternoon with Mix C about 90 liters and then switch to Mix C with Cellbex using open throat pump.

- Injected Mix C 90 Liters @ 0.24 bar
- Injected Mix C +Cellbex 146.5 liters @ 20 bar @ 20 liters / min (% of cellbex not known as operator add cellbex without measuring weight.)

TCG could not control the Presure and pressure jumped up to 20 bars and could not reduce the flow rate to control the pressure. Also the feeding of cellbex in the open throat pump was not constant which cause the fluctuation in the viscosity of the grout and pressure. Most of the time the flowrate was about 20 l/min.
Discuss with AEM and TCG to to find out the way to add Cellbex to get unform grout viscosity. Propsed to develope a chart to add known quantity of Celbex per minute per known flow rate for different prcentages of cellbex.
Also discuss and agreed to start with 2% Cellbex and then increased if needed.

Grout Test
Mix C Marsh Value = 45 sec. S.G = 1.72 Temp. = 18 C Bleed = 1%
Sample was taken yesterday for final set time of Mix C. Today morning after 15 hours QC checked and sample already reached its final set time. So the final set time for Mix C with Cellbex is < 15 hrs

Wifi internet in the site office is down

SITE GUIDELINES (guidelines, memos, modification proposals, etc.)

No	Subject	Given to
FWI-001	Field work instructions for grouting with Open throat pum	TCG

SPECIFIC ELEMENTS VERIFIED

Elements	Location, batch or other	Scope and comments
Grout Testing	Injection Unit	Masrsh Funnel, Specific Gravity, Tempretaure, Bleed

SAFE AND SAFETY REMARKS

- Dress up properly for extreme cold conditions

Issued by: *Muhammad Saleem* (Signature) **07-12-2019** (Date)

Verified by: *Tom Xue* (Signature) **07-12-2019** (Date)

Cleaning hole P740

Open throat Pump

Adding Cellbex in the open throat pump

SNC·LAVALIN

DAILY FIELD REPORT
(Detailed)

20191208
Document number

Date	Time (Start/End)	Project No.	Prepared by
2019-12-08	6:30 am 6:30 pm	669034	Muhammad Saleem

Project	Client
Whale Tail Dike Remedial Drilling and Grouting Works	Agnico Eagle

Consultant	Contractor
SNC-Lavalin	TCG(KCG)

Weather: ☒Sunny ☒Cloudy ☐Rain ☐Storm ☐Snow ☐Glaze

Wind: ☐None ☒Light ☒Moderate ☐Strong, ☐ gusts Temperature: -36 °C

Comments:

Appendix: ☐Yes ☒No Pictures ☐Yes ☒No Inspection report or other:

Picture in the folder:

ACTIVITIES (indicate if test forms were used)

SNC-Lavalin' Activities

- Did not attend the daily construction meeting due to busy at the injection unit.
- After completing rock grouting for P680.5, have a meeting with TCG and AEM at Injection unit to discuss the results of 2 holes grouted with open throat pump and path forward for the other holes. TCG recommended to adjust the cellbex by looking at the pressure on the monitor without knowing actual percentage of cellbex being added. Not agreed with their recommendation insisted to use the known percentage of cellbex to have consistent viscosity of the grout.
- Agreed to start with 0.3% cellbex and then increased by 0.2% gradually after about 200 liters of grout injected and if possible when pressure start building keep the flow rate as low as possible.

Work Method and Plan

- As 3% of Cellbex looks to much, plan to start with low percentage of Cellbex and then increased gradually.
- Plan for tomorrow is to do interface grouting for downstream blanket for P656.5, P644.5, P632.5 and P620.5. these holes are already drilled 5 m in to bedrock.

Bedrock Re-Grouting

- P680.5 injected Mix C = 140 liters and Mix C+ 0.7% Cellbex = 203 liters at 20 bars @15liters/ min.
- Pre-filled 40 liters of Mix C to displace water and then after packer inflated injectd another 100 liters of Mix C prior to start adding Cellbex (229 g/min = 0.7% by weight of cement with flow rate of 15 liters per minutes. Pressure fluctuate a lot at one time it suddenly goes to 32 bars and then drop down to below 1 bar, this is possibly when cellbex did not mixed properly and clots of mix passes through pipe. When pressure gradually

start raising didn't drop dwon grouting stopped at 20 bar pressure @ 15 l/min flow. Depth of the grout measure after 30 minutes and found about 0.5 m of grout inside the casing.

- In total 3790 liters of grout injected during initial stage, 1st regrouting and 2nd re-grouting stage.

Note=- At P680.5 the bedrock encountered below the maximum casing length based on the secant was socket elevation. 1.6 m casing was extended to reach bedrock.

- P668.5 After discussion with TCG and AEM start injection with 0.3% Cellbex and then increased Cellbex by 0.2%
- Prefilled Mix C = 40 liters
  Injected Mix C = 140 Liters
  Injected Mix C + 0.3% Cellbex = 180
  Injected Mix C + 0.5% Cellbex = 160
  Injected Mix C + 0.7% Cellbex = 220
  Injected Mix C + 0.9% Cellbex = 150
  Injected Mix C + 1.4% Cellbex = 220
  Injected Mix C + 2% Cellbex = 43 at 10 bars @ 10 liters / min flow
  When stopped injection pressure was still more than 2 bars on the gauge.
  In total 3440 liters of grout injected during initial and regrout stages.
  Note=- the pressure diffence on the computer screen and on the hole collar observed less than 1 bar at any time.
  Pressure fluctuate few times due to Cellbex that accomulated along the edges of the open throat pump hopper and then passes through hose.

All the holes for regrouting completed and next will start those holes that had already been drilled 5 m in the bdrock.

No grouting after lunch due to frost fighter stop working besides the mixing tank and waterlines freezed and blow up when start mixer.

GROUT TEST

Mix C @ P680.5 Marsh Value = 75 sec. S.G = 1.74 Temp. = 20.4 C Bleed = 1%
Mix C @ P668.5 Marsh Value = 57 sec. S.G = 1.72 Temp. = 18.9 C Bleed = 1%

Wifi internet in the site office is down

SITE GUIDELINES (guidelines, memos, modification proposals, etc.)

No	Subject	Given to

SPECIFIC ELEMENTS VERIFIED

Elements	Location, batch or other	Scope and comments
Grout Testing	Injection Unit	Masrsh Funnel, Specific Gravity, Tempretaure, Bleed

SAFE AND SAFETY REMARKS

- Forecast for blizzard like conditions next few days.
- Dress up properly for extreme cold conditions

Issued by: *Muhammad Saleem* (Signature) **08-12-2019** (Date)

Verified by: *Tom Xue* (Signature) **08-12-2019** (Date)

SNC·LAVALIN

DAILY FIELD REPORT
(Detailed)

20191209 (rev-01)
Document number

Date	Time (Start/End)	Project No.	Prepared by
2019-12-09	6:30 am 6:30 pm	669034	Muhammad Saleem

Project	Client
Whale Tail Dike Remedial Drilling and Grouting Works	Agnico Eagle

Consultant	Contractor
SNC-Lavalin	TCG(KCG)

Weather: ☐ Sunny ☒ Cloudy ☐ Rain ☐ Storm ☐ Snow ☐ Glaze

Wind: ☐ None ☒ Light ☐ Moderate ☒ Strong, ☐ gusts Temperature: -31 °C

Comments:

Appendix: ☐ Yes ☒ No Pictures ☐ Yes ☒ No Inspection report or other:

Picture in the folder:

ACTIVITIES (indicate if test forms were used)

SNC-Lavalin' Activities

- Attend the daily construction meeting at the contractor trailer.
- KGC requested to try with 400 liters of Mix D with Rheomac 450 after injecting 400 liters of Mix C, after discussion with AEM and Designer agreed to use the Mix D as a trial for few holes.
- SNC will revise the Work Instruction based on the rsults from last three holes grouted using open throat pump.

Work Method and Plan

- KGC is planning to try Mix D after injecting 400 L of Mix C and prior to adding Cellbex in Mix C.
- After reviewing the results of holes grouted using open throat pump, decided to use open throat pump only for regrouting or after Vmax reached without refusal. The reason for this decision is according to KGC the open throat pump cannot be run with less than 10 l/min flowrate when using Celbex, so Spec. could not be followed for refusal criteria.

Bedrock Re-Grouting
P656.5

- Pre-filled 31.5 liters of Mix C to displace water and then after packer inflated injected another 400 liters of Mix C. Flow rate increased gradually starting from 5 l/min to 20 l/m but the pressure does not move stays between 0.0 bar to 0.15 bar and few times pressure chart shows -ve value and instantly go back to 0.0 bar
- About 400 liters of Mix D injected with 1% of calcium chloride and 500 ml (per batch) of Rheomac 450. Mix D was injected at 20 l/min flow rate and right after injection start with Mix D pressure start moving gradually and reaches to about 2 bar after about 200 liters of grout injected and then stays at about 2 bars until switch to Mix c + Celbex. Flow rate during Mix D injection stays between 15 liters / min to 22 liters / min.

- 288 liters of Mix C injected with 2% of calcium chloride and 0.2% of Celbex by the weight of cement. Mix C start with flow rate of 20 liters / min and pressure drop to about 1.5 bars and pressure start building up again after about 50 liters of grout injected. After about 250 liters of Mix C + Celbex injected the pressure reached Pmax at 20 liters /min flow rate and then flow rate start decreasing. Some spikes of pressure up to 5 bars observed and then flow rate quickly decreased to below 1 liters/ min (0.7 liters/min) and stopped injection as the technician worries of system clogging at that low flow rate with Celbex.
- Could not wait for 5 minutes when reached Pmax with flow rate less than 3 l/min to avoid any clogging in the system due to Celbex.
- Grout elevation will be checked in the hole tomorrow morning prior to backfilling

No grouting in the morning due to crew has issue with water tanks and fuel tank.
No Bedrock drilling since Dec 1, 2019 due to Drill rig was broke down

GROUT TEST

Mix C	Marsh Value = 69 sec. S.G = 1.73 Temp. = 17.8 C Bleed = 1%
Mix D	Marsh Value = n/a. S.G = 1.8 Temp. = 15.8 C
Mix D	Marsh Value = n/a. S.G = 1.79 Temp. = 12.6 C
Mix C+ 0.2% Cellbex	Marsh Value = n/a. S.G = 1.81 Temp. = 13.3 C

Wifi internet in the site office is down

SITE GUIDELINES (guidelines, memos, modification proposals, etc.)

No	Subject	Given to

SPECIFIC ELEMENTS VERIFIED

Elements	Location, batch or other	Scope and comments
Grout Testing	Injection Unit	Masrsh Funnel, Specific Gravity, Tempretaure, Bleed

SAFE AND SAFETY REMARKS

- Forecast for blizzard like conditions next few days.
- Dress up properly for extreme cold conditions

Issued by: *Muhammad Saleem* (Signature) **09-12-2019** (Date)

Verified by: *Tom Xue* (Signature) **09-12-2019** (Date)

SNC·LAVALIN

DAILY FIELD REPORT
(Detailed)

2019121910
Document number

Date	Time (Start/End)	Project No.	Prepared by
2019-12-10	6:30 am 6:30 pm	669034	Muhammad Saleem

Project	Client
Whale Tail Dike Remedial Drilling and Grouting Works	Agnico Eagle

Consultant	Contractor
SNC-Lavalin	TCG(KCG)

Weather: ☐Sunny ☒Cloudy ☐Rain ☐Storm ☐Snow ☐Glaze

Wind: ☐None ☒Light ☐Moderate ☒Strong, ☒ gusts Temperature: -30 °C

Comments:

Appendix: ☐Yes ☒No Pictures ☐Yes ☒No Inspection report or other:

Picture in the folder:

ACTIVITIES (indicate if test forms were used)

SNC-Lavalin' Activities

- Attend the daily construction meeting at the contractor trailer.
- Crew waiting for snow clearing at WTD and fuel truck
- No Rock drill still rig is down.
- Update data and issued weekly site report.

Work Method and Plan

- SNC revised the Site instruction for already drilled 5 m stage holes. Will use Mix D on trial basis prior to use Mix C with Celbex to see if its effective.
- TCG requested to inject some Mix C without Celbex after the refusal with Mix C with Celbex to avoid clogging in the system. This will be tested in the next hole and monitored carefully to see if this will not violate the refusal criteria.

No grouting today due to very high wind and blizzard like conditions. In the morning crew was waiting for snow clearing at WTD and fuel truck and later on high wind and blowing snow create blizzard like condition.

Wifi internet in the site office is down

SITE GUIDELINES (guidelines, memos, modification proposals, etc.)

No	Subject	Given to
FWI-001 (Revision 01)	Field work instruction for grouting and re-grouting of holes that had been drilled per 5 m stage	KCG (TCG)

SPECIFIC ELEMENTS VERIFIED

Elements	Location, batch or other	Scope and comments

SAFE AND SAFETY REMARKS

- Forecast for blizzard like conditions next few days.
- Dress up properly for extreme cold conditions

Issued by: *Muhammad Saleem* (Signature) **10-12-2019** (Date)

Verified by: *Tom Xue* (Signature) **10-12-2019** (Date)

SNC·LAVALIN

DAILY FIELD REPORT
(Detailed)

20191211
Document number

Date	Time (Start/End)	Project No.	Prepared by
2019-12-11	6:30 am 6:30 pm	669034	Muhammad Saleem

Project	Client
Whale Tail Dike Remedial Drilling and Grouting Works	Agnico Eagle

Consultant	Contractor
SNC-Lavalin	TCG(KCG)

Weather: ☐Sunny ☒Cloudy ☐Rain ☐Storm ☐Snow ☐Glaze

Wind: ☐None ☐Light ☒Moderate ☐Strong, ☐ gusts Temperature: -26 °C

Comments:

Appendix: ☐Yes ☒No Pictures ☒Yes ☐No Inspection report or other:

Picture in the folder:

ACTIVITIES (indicate if test forms were used)

SNC-Lavalin' Activities

- No construction meeting today.
- Drill rig fixed and will resume drilling starting with Secondary holes where primary holes already grouted.
- Updated spread sheet and other QA related activities.

Work Method and Plan

- Bedrock drilling for secondary holes are going to start for 1.5 m depth as per grouting committee recommendations
- Today completed grouting for three holes (P620.5, P632.5 and P644.5), two holes got refusal with Mix D. Didn't switch mix after 400 liters of Mix D injected as per work instruction due to pressure start building up with Mix D and kept injecting the same mix until refusal.

Bedrock Drilling

- Bedrock drilling started today for secondary holes as per Committee recommendations for down stage method.
- Six holes (S746.5, S734.5, S710.5, S698.5, S686.5 and S674.5). At each location hole was drilled 1.5 m in to bedrock.
- At S722.5, casing was not reached to bedrock initially, casing will be extended to embed 0.3 m to 0.5 m into bedrock.

Bedrock Grouting

P644.5

- Prefilled 33 liters of Mix C grout to displace water and then after packer inflated injected total 109.1 liters of Mix C.

- Pressure start building up right a way after started injection and reach the Pmax within 5 minutes of grouting started. After reaching Pmax flow reduced to less than 3 liters/ min within few minutes and then wait for 5 minutes.
- The closing pressure was 3.3 bar at flow rate of 0.0 l/min.

P620.5

- Pre-filled 30 liters of Mix C to displace water and then after packer inflated injected another 340 liters of Mix C.
- Flow rate increased gradually starting from 5 l/min to 20 l/min but the pressure did not change and stayed between 0.0 bar and 0.05 bars at 20 l/min.
- About 951 liters of Mix D injected with 1% of calcium chloride and 500 ml (per batch) of Rheomac 450.
- Mix D was injected at 20 l/min flow rate and right after injection started with Mix D, pressure started building up gradually and reached to about 1.0 to 1.5 bar. After about 230 liters of grout injected, pressure quickly moved to Pmax and flow rate started slowing down gradually. Flow rate fluctuated a bit and stayed between 4 and 12 liters /min for about one hour.
- When flow rate goes below 3 l/ min at Pmax, waited for 5 minutes.
- The closing pressure was 3.5 bar at 2 liters / minute
- A total of 1321 liters (Mix C=370l + Mix D=951l) grout was injected.

P632.5

- Pre-filled 35.6 liters of Mix C to displace water and then after packer inflated injected another 439.4 liters of Mix C. Flow rate increased gradually starting from 5 l/min to 20 l/m but the pressure did not respond and stayed between 0.0 bar and 0.25 bars at 20 l/min.
- About 952 liters of Mix D was injected with 1% of calcium chloride and 500 ml (per batch) of Rheomac 450.
- Mix D was injected at 20 l/min flow rate and right after injection started with Mix D, pressure started building up gradually and reached to about 2 bar.
- After about 640 liters of grout injected, the operator slowed down the grout flow due to waiting for cement.
- After reaching Pmax, flow rate still fluctuate between 5 and 15 liters / min and took more than one hour to flow decreased to below 3 l/min.
- When flow rate goes below 3 l/ min at Pmax, waited for 5 minutes.
- The closing pressure was 4.18 bar at 2.9 liters / minute
- A total of 1427 liters (Mix C=475l + Mix D=952l) grout was injected.

P656.5 (Grouted on December 9, 2019 but not backfilled)

- Grout elevation was checked and found at 11.77 m below ground while the bottom of casing was at 11.9 m below ground. This is good to backfill.

GROUT TEST

Mix C	Marsh Value = 50 sec.	S.G = 1.76	Temp. = 26.2 C	Bleeding = 1%
Mix C	Marsh Value = 55 sec	S.G = 1.76	Temp. = 27.1 C	
Mix C	Marsh Value = 66 sec.	S.G = 1.79	Temp. = 25 C	Bleeding = 1%
Mix D	Marsh Value = n/a.	S.G = 1.78	Temp. = 26 C	Bleeding = 0%
Mix D	Marsh Value = n/a.	S.G = 1.82	Temp. = 20.2 C	
Mix D	Marsh Value = n/a.	S.G = 1.8	Temp. = 24.5 C	

Head Loss

Head loss was checked for Mix D by comparing the pressures on the monitor screen and the gauge at the collar. About 1.6 bar of pressure loss was observed for 12 m long flexible pipe. TCG will adjust the head loss for Mix D in Pmax calculation.

Wifi internet in the site office is down

SITE GUIDELINES (guidelines, memos, modification proposals, etc.)

No	Subject	Given to

SPECIFIC ELEMENTS VERIFIED

Elements	Location, batch or other	Scope and comments
Grout Testing	Injection Unit	Masrsh Funnel, Specific Gravity, Tempretaure, Bleed

SAFE AND SAFETY REMARKS

- Dress up properly for extreme cold conditions

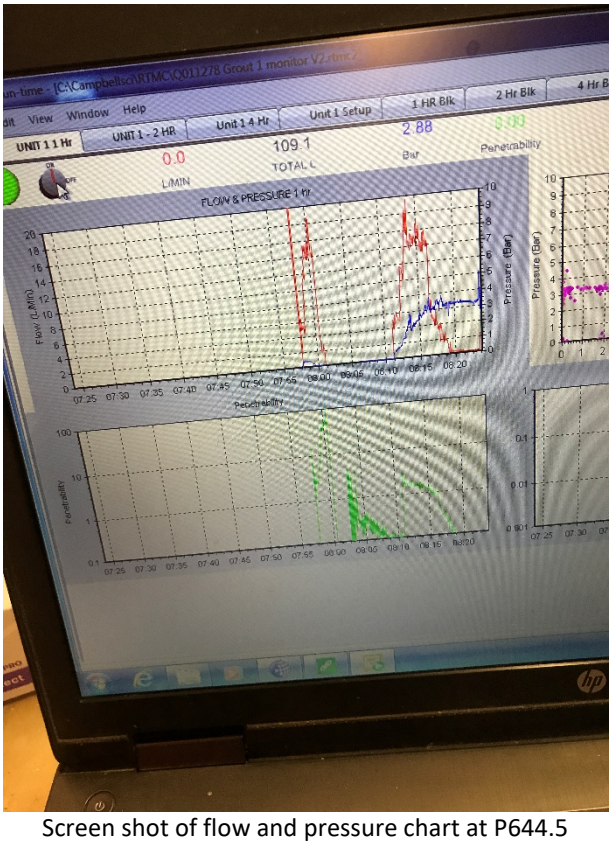
Issued by: *Muhammad Saleem* (Signature) **11-12-2019** (Date)

Verified by: *Tom Xue* (Signature) **11-12-2019** (Date)

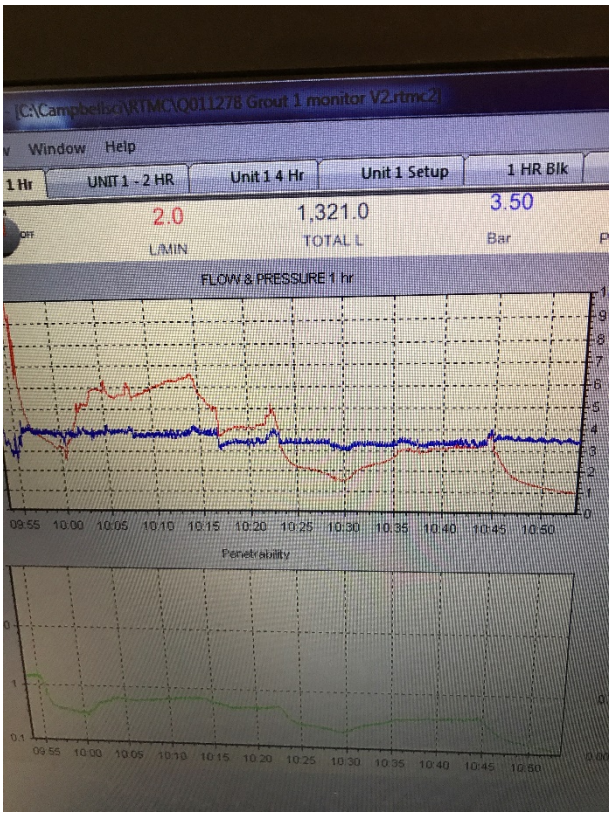
Monitoring Flow and Pressure

Backfilling P644.5 after grouting

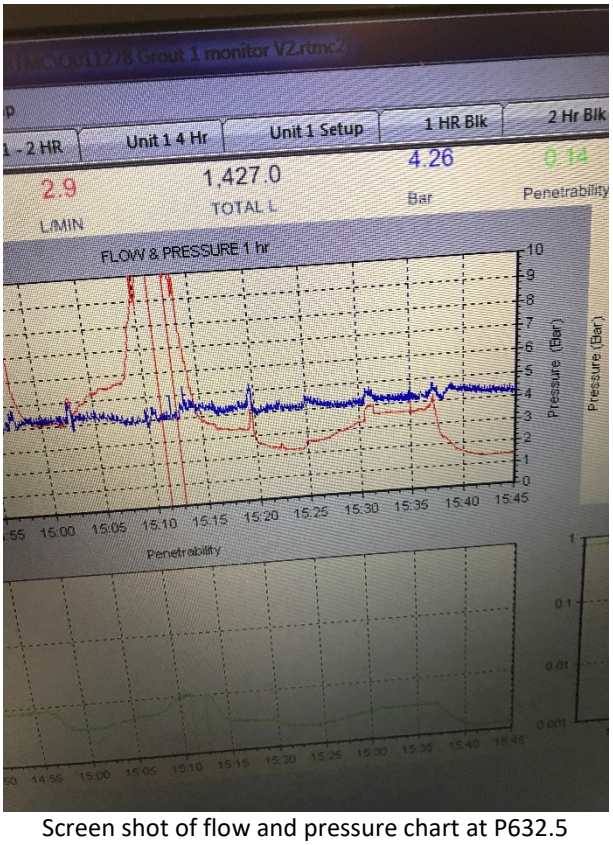
Drilling for 1.5 m into rock at S698.5



Screen shot of flow and pressure chart at P644.5



Screen shot of flow and pressure chart at P620.5



Screen shot of flow and pressure chart at P632.5

SNC·LAVALIN

DAILY FIELD REPORT
(Detailed)

20191212
Document number

Date	Time (Start/End)	Project No.	Prepared by
2019-12-12	6:30 am 6:30 pm	669034	Muhammad Saleem

Project	Client
Whale Tail Dike Remedial Drilling and Grouting Works	Agnico Eagle

Consultant	Contractor
SNC-Lavalin	TCG(KCG)

Weather: ☐Sunny ☒Cloudy ☐Rain ☐Storm ☐Snow ☐Glaze

Wind: ☐None ☐Light ☒Moderate ☐Strong, ☐ gusts Temperature: -30 °C

Comments:

Appendix: ☐Yes ☒No Pictures ☒Yes ☐No Inspection report or other:

Picture in the folder:

ACTIVITIES (indicate if test forms were used)

SNC-Lavalin' Activities

- Attended daily construction meeting at KCG trailer.
- Attend weekly meeting between AEM and SNC
- At S722.5 casing was not embedded in the bedrock initially, casing will be extended at this location to embed 0.3 to 0.5 m into bedrock and then start drilling in rock for 1.5 m stage.
- Only one Primary hole P596.5 remains to be drilled and grouted between station 749.5 and 596.5.
- P632.5 completed yesterday having refusal with Mix D, checked depth today and found grout about 2 m below the bottom of the casing.
- Updated spread sheet and other QA related activities.

Work Method and Plan

- Today will start grouting secondary holes between stations 749.5 and 596.5 with 1.5 m stage as recommended by grouting committee.
- At S722.5 casing will be extended to embed 0.3 to 0.5 m into bedrock and then will be drilled 1.5 m into bedrock.
- As the casing is not plugged at S722.5, half of the packer will be placed in the casing and half in the hole and after grouting refusal, packer will be lifted 1 m to place 0.5 above the bottom of the casing to seal casing bottom and grout top 0.5 m hole in the rock

Bedrock Drilling

- Five holes (S722.5, S626.5, S638.5, S650.5 and S662.5) completed. At each location hole was drilled 1.5 m into bedrock.
- At S722.5, encountered lot of water at about 13 m below ground surface.

Casing Extended

- S722.5 Extended casing to bedrock depth with 0.35 m embedment.
- 3.4 m of casing was extended.
- Bedrock encountered at 12.45 m depth.

Casing Plug

- P596.5 casing plugged with Mix C
- Injected 53.6 liters of grout at 1.93 bar and waited 5 minutes after flow rate reduced to below 1 l/min. closing flow rate was 0 l/min.

Bedrock Re-grouting

P632.5

- This hole was grouted yesterday with refusal with mix D but found grout elevation at 2 m below bottom of the casing today morning.
- The water level in the hole was measured 5.47 m below ground surface.
- Prefilled 18 liters of Mix C grout to displace water and then after packer inflated injected total 167.4 liters of Mix C.
- Pressure start building up right away after started injection and reach the Pmax within 10 minutes of grouting started. After reaching Pmax flow reduced to less than 3 liters/ min within few minutes and then waited for 5 minutes.
- The closing pressure was 2.58 bar at flow rate of 0.0 l/min.

Bedrock Grouting

Started grouting secondary holes in 1.5 m stage as per grouting committee recommendations.

S746.5

- Prefilled 10 liters of Mix C grout to displace water and then after packer inflated injected a total of 18.9 liters of Mix C.
- Pressure started building up right away after started injection and reached Pmax within a couple of minutes since grouting started. After reaching Pmax flow rate reduced to less than 1 liters/ min within one minutes and then waited for 5 minutes.
- The closing pressure was 1.95 bar at flow rate of 0.4 l/min.

S734.5

- Prefilled 10 liters of Mix C grout to displace water and then after packer inflated injected a total of 72.1 liters of Mix C.
- Pressure started building up right away after started injection and reached the Pmax within 5 minutes since grouting started. After reaching Pmax flow rate reduced gradually to less than 1 liters/ min within few minutes and then waited for 5 minutes.
- The closing pressure was 1.96 bar at flow rate of 0.4 l/min.

S710.5

- Prefilled 10 liters of Mix C grout to displace water and then after packer inflated injected a total of 218.8 liters of Mix C.
- Pressure started building up gradually and reached Pmax within about 8 minutes of grouting started. After reaching Pmax flow rate reduced gradually to less than 1 liters/ min within 10 minutes and then waited for 5 minutes.
- The closing pressure was 2.53 bar at flow rate of 0.0 l/min.

S722.5

- Casing was not plugged at this location, so packer was installed half inside the casing and half in the open hole.
- Pre-filled 10 liters of Mix C to displace water and then after packer inflated injected another 445.2 liters of Mix C. Flow rate increased gradually starting from 5 l/min to 20 l/m but the pressure did not respond and stayed between 0.0 bar and 0.4 bars at 20 l/min.
- After about 300 liters of Mix C was injected, pressure started building up gradually and reached to Pmax and flow rate started slowing down gradually.
- When flow rate reduced to less than 1 liter /minute waited for 5 minutes before stop grouting.
- At this time 445.2 liters of Mix C grout was already injected.
- Raised the packer by 1 m to place about 0.5 m above the bottom of the casing, re-start grouting.
- Pressure built up immediately while flow rate was less than 4 liters / min and the flow rate dropped to less than 0.5 liters / min. Only 2.6 liters of grout was injected during this stage.
- A total of 447.8 liters of grout injected in this hole.
- During drilling lot of water was encountered at 13 m below ground surface at this location.

Note=- All the secondary holes completed today got refusal with Mix C without Celbex and left open after refusal because has to drill for remaining 3.5 to complete 5 m depth of downstream blanket.

Hole Backfilled

P740.5

Grout level was checked and found at about 7 m (about 2 m above the bottom of the casing) below the ground surface. Hole backfilled with Mix C.

Gout Test

Mix C	Marsh Value = 57 sec.	S.G = 1.78	Temp. = 28.2 C	Bleeding = 1%
Mix C	Marsh Value = 63 sec	S.G = 1.82	Temp. = 23 C	
Mix C	Marsh Value = 58 sec.	S.G = 1.8	Temp. = 21.2 C	Bleeding = 1%
Mix C	Marsh Value = 57 sec.	S.G = 1.78	Temp. = 24.6 C	
Mix C	Marsh Value = 58 sec.	S.G = 1.8	Temp. = 22.5 C	

SITE GUIDELINES (guidelines, memos, modification proposals, etc.)

No	Subject	Given to

SPECIFIC ELEMENTS VERIFIED

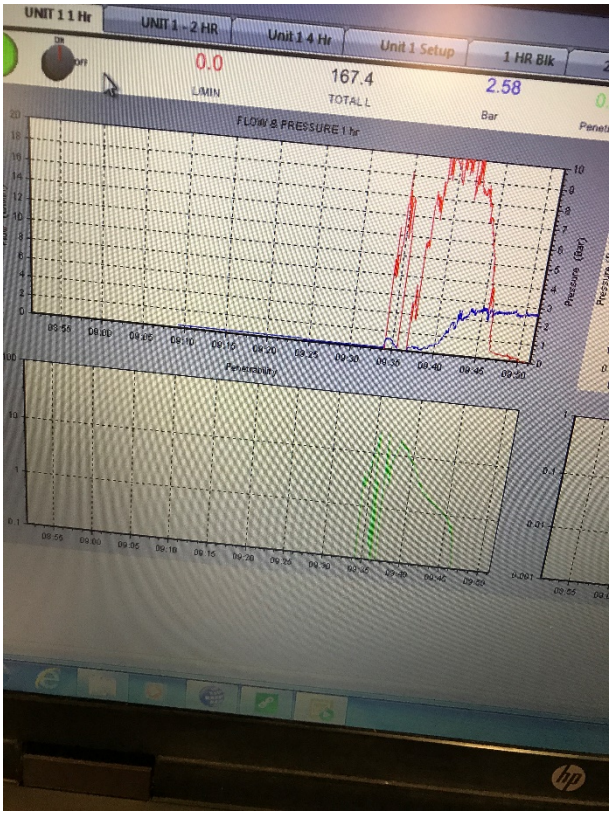
Elements	Location, batch or other	Scope and comments
Grout Testing	Injection Unit	Masrsh Funnel, Specific Gravity, Tempretaure, Bleed

SAFE AND SAFETY REMARKS

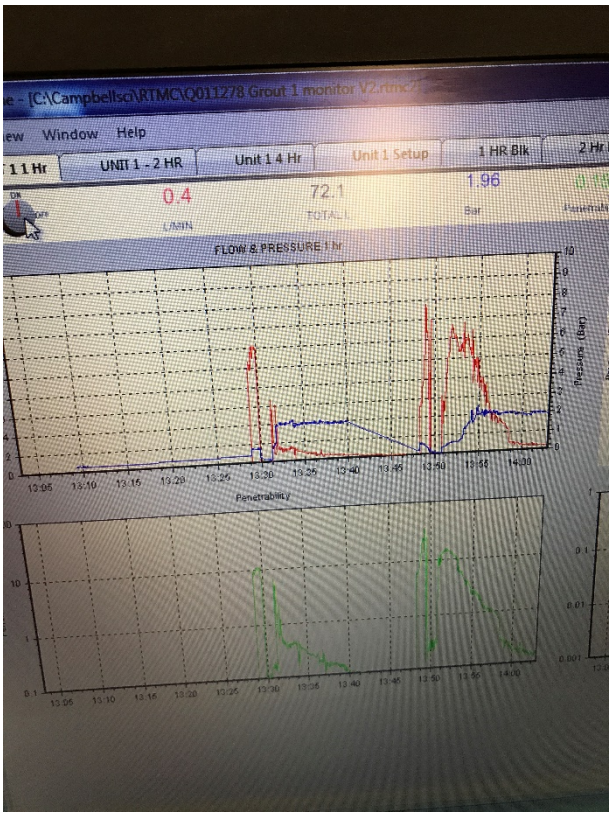
- Dress up properly for extreme cold conditions

Issued by:	*Muhammad Saleem*	**12-12-2019**
	Signature	Date
Verified by:	*Tom Xue*	**12-12-2019**
	Signature	Date

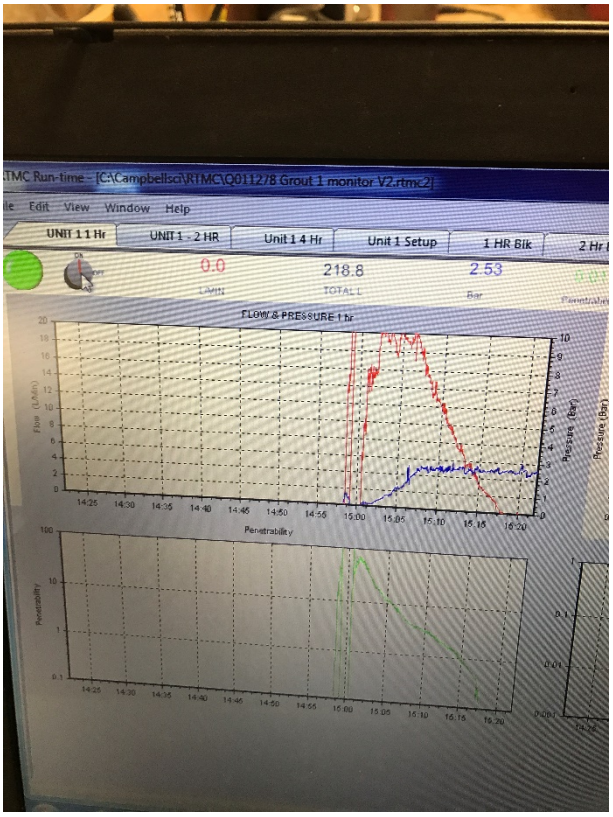
Backfilling P632.5 after re-grouting



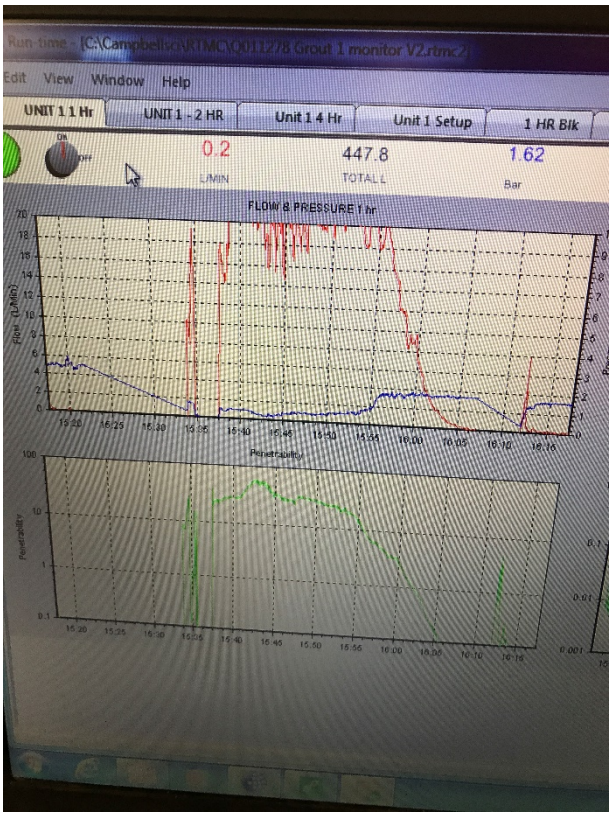
Screen shot of flow and pressure chart at P632.5



Screen shot of flow and pressure chart at S746.5 and S734.5 from left to right



Screen shot of flow and pressure chart at S710.5



Screen shot of flow and pressure chart at S722.5

SNC·LAVALIN

DAILY FIELD REPORT
(Detailed)

20191213
Document number

Date	Time (Start/End)	Project No.	Prepared by
2019-12-13	6:30 am 6:30 pm	669034	Muhammad Saleem

Project	Client
Whale Tail Dike Remedial Drilling and Grouting Works	Agnico Eagle

Consultant	Contractor
SNC-Lavalin	TCG(KCG)

Weather: ☒Sunny ☒Cloudy ☐Rain ☐Storm ☐Snow ☐Glaze

Wind: ☐None ☐Light ☐Moderate ☒Strong, ☐ gusts Temperature: -35 °C

Comments:

Appendix: ☐Yes ☒No Pictures ☒Yes ☐No Inspection report or other:

Picture in the folder:

ACTIVITIES (indicate if test forms were used)

SNC-Lavalin' Activities

- Attended daily construction meeting at KCG trailer.
- There is only one hole P596.5 remains to be drilled and grouted between station 749.5 and 596.5. KCG requested to drill and grout this hole in 5 m stage to save time of moving drill and injection unit multiple time which will also delay the grouting of secondary holes beside this hole.
- After discussion with KCG, AEM and SNC decided to drill and grout this hole in 5 m stage.
- Review drilling reports
- Updated spread sheet and other QA related activities.

Work Method and Plan

- At P596.5 the hole will be drilled and grouted in single 5 m stage due to logistic reasons instead of grouting in two stages of 1.5 m and 3.5 m as per grouting committee recommendations.

Bedrock Drilling

- Eight holes (P596.5, S714,.5 S746.5, S734.5, S722.5, S710.5, S698.5 and S686.5) completed.
- P596.5 was drilled 5 m into bedrock for single stage grouting while all secondary holes are drilled for 2nd stage of 3.5 m length except S714.5 is drilled for 1st stage of 1.5 m depth.
- For P596.5 and S714.5 haven't received the drilling report yet.
- At S746.5, S734.5, S722.5, S710.5, S698.5 and S686.5 they observed water loss at 13.4, 12.8, 15.9, 17.0, 12.5 and 13.0 m below ground surface.
- At 734.5 after completed drilling to 14.39 m depth, hole caved to 13.1 m depth.
- At S710.5 they have some issues at 15.3 m depth due to highly fractured rock
- At S686.5 after completed drilling to 15 m depth, hole caved to 13.0 m depth.

- **At S698.5 and S686.5, the holes grouted for 1st stage of 1.5 m depth in the morning and drilled on the same day in the afternoon. KCG was advised to send the drilling hole location for review prior to drilling to avoid this mistake. No drilling for next stage should be started before final set time of the grout for previous stage has reached.**
-

Bedrock Grouting

S698.5

- Prefilled 10 liters of Mix C grout to displace water and then after packer inflated injected a total of 106.1 liters of Mix C without celbex.
- Pressure started building up right away after started injection and reached Pmax within five minutes since grouting started. After reaching Pmax flow rate reduced to less than 1 liters/ min within a couple of minutes and then waited for 5 minutes.
- The closing pressure was 1.93 bar at flow rate of 0.7 l/min.

S686.5

- Prefilled 10 liters of Mix C grout to displace water and then after packer inflated injected a total of 188 liters of Mix C without celbex.
- Pressure started building up right away after started injection and reached the Pmax in less than 10 minutes since grouting started. After reaching Pmax flow rate reduced gradually to less than 1 liters/ min within few minutes and then waited for 5 minutes.
- The closing pressure was 1.93 bar at flow rate of 0.2 l/min.

S674.5

- Prefilled 10 liters of Mix C grout to displace water and then after packer inflated injected a total of 90.1 liters of Mix C without celbex.
- Pressure started building up gradually and reached Pmax within about 5 minutes of grouting started. After reaching Pmax flow rate dropped quickly to less than 1 liters/ min within 5 minutes and then waited for 5 minutes.
- The closing pressure was 2.27 bar at flow rate of 0.6 l/min.

S662.5

- Prefilled 13 liters of Mix C grout to displace water and then after packer inflated injected a total of 49.6 liters of Mix C without celbex.
- Pressure started building up right away after started injection and reached Pmax within two minutes since grouting started. After reaching Pmax flow rate reduced to less than 1 liters/ min within five minutes and then waited for 5 minutes.
- The closing pressure was 2.14 bar at flow rate of 0.5 l/min.

S650.5

- Prefilled 11.7 liters of Mix C grout to displace water and then after packer inflated injected a total of 16.5 liters of Mix C without celbex.
- Pressure started building up right away after started injection and reached Pmax within a couple of minutes since grouting started. After reaching Pmax flow rate reduced to less than 1 liters/ min within five minutes and then waited for 5 minutes.
- The closing pressure was 2.08 bar at flow rate of 0.5 l/min.
- **Very low grout intake also encountered in the nearest primary hole (P644.5). P644.5 had a refusal with only 109 liters of grout (Mix C without celbex) take for 5 m stage length.**

S638.5

- Prefilled 11.8 liters of Mix C grout to displace water and then after packer inflated injected a total of 16.6 liters of Mix C without celbex.

- Pressure started building up right away after started injection and reached Pmax within a minute at flow rate of less than 6 l/min since grouting started. After reaching Pmax flow rate reduced to less than 1 liters/ min within a minute and then waited for 5 minutes.
- The closing pressure was 2.17 bar at flow rate of 0.5 l/min.
- **Very low grout intake encountered in the nearest primary hole (P644.5). P644.5 had a refusal with only 109 liters of grout (Mix C without celbex) take for 5 m stage length.**

Note=- All the secondary holes completed today got refusal with Mix C without Celbex and left open after refusal because has to drill for remaining 3.5 m to complete 5 m depth of downstream blanket.

Hole Backfilled

- P668.5 and P680.5 were backfilled today. These holes were grouted previously and grout elevation was found above the bottom of the casing.

Gout Test

Mix C	Marsh Value = 63 sec.	S.G = 1.76	Temp. = 25.5 C	Bleeding = 1%
Mix C	Marsh Value = 65 sec	S.G = 1.80	Temp. = 23.0 C	
Mix C	Marsh Value = 47 sec.	S.G = 1.67	Temp. = 26.5 C	Bleeding = 1%

SITE GUIDELINES (guidelines, memos, modification proposals, etc.)

No	Subject	Given to

SPECIFIC ELEMENTS VERIFIED

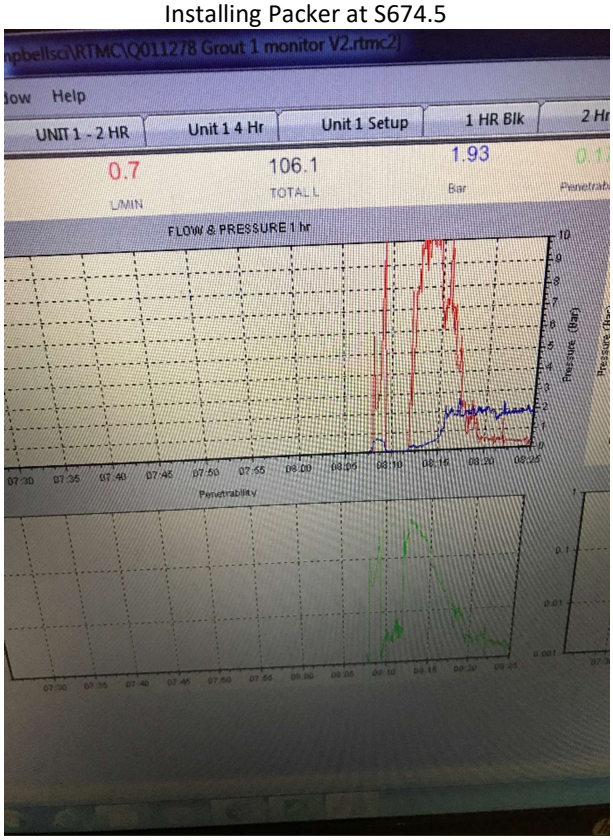
Elements	Location, batch or other	Scope and comments
Grout Testing	Injection Unit	Masrsh Funnel, Specific Gravity, Tempretaure, Bleed

SAFE AND SAFETY REMARKS

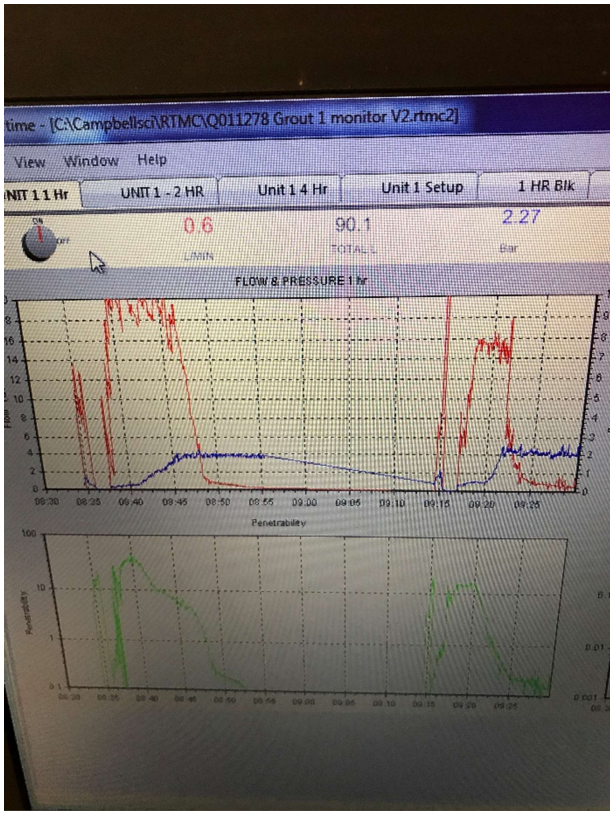
- Dress up properly for extreme cold conditions

Issued by:	*Muhammad Saleem*	**13-12-2019**	
	Signature	Date	
Verified by:	*Tom Xue*	**13-12-2019**	
	Signature	Date	

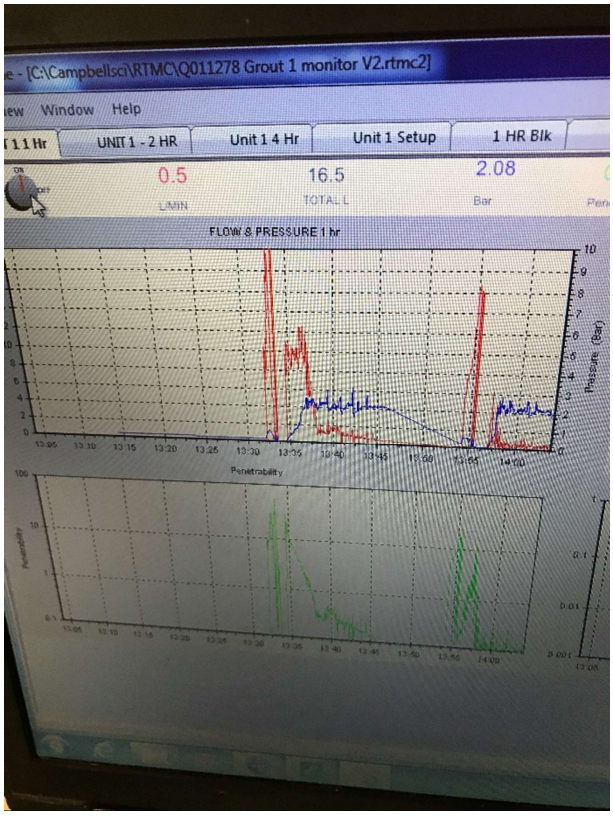
Installing Packer at S674.5



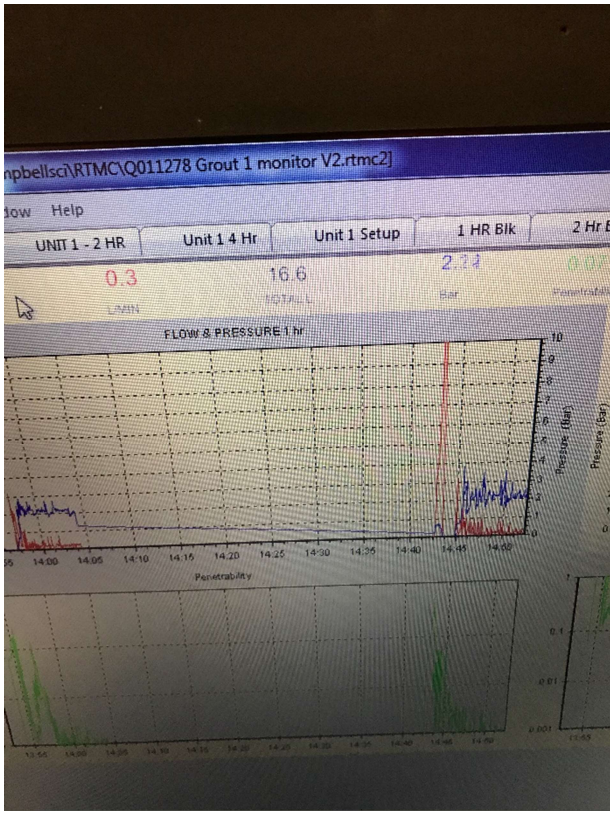
Screen shot of flow and pressure chart at S698.5



Screen shot of flow and pressure chart at S686.5 and S674.5 from left to right



Screen shot of flow and pressure chart at S662.5 & S650.5 from left to right



Screen shot of flow and pressure chart at S638.5

SNC·LAVALIN

DAILY FIELD REPORT
(Detailed)

20191214
Document number

Date	Time (Start/End)	Project No.	Prepared by
2019-12-14	6:30 am 6:30 pm	669034	Muhammad Saleem

Project	Client
Whale Tail Dike Remedial Drilling and Grouting Works	Agnico Eagle

Consultant	Contractor
SNC-Lavalin	TCG(KCG)

Weather: ☒Sunny ☒Cloudy ☐Rain ☐Storm ☐Snow ☐Glaze

Wind: ☐None ☐Light ☐Moderate ☒Strong, ☐ gusts Temperature: -32 °C

Comments:

Appendix: ☐Yes ☒No Pictures ☒Yes ☐No Inspection report or other:

Picture in the folder:

ACTIVITIES (indicate if test forms were used)

SNC-Lavalin' Activities

- Attended daily construction meeting at KCG trailer.
- KCG was advised to send the drilling hole locations for review prior to drilling. No drilling for next stage should be started before final set time of the grout for previous stage has reached.
- Reminded KCG to perform Vicat test on Mix C without celbex for initial and final set time.
- Review drilling reports
- Updated spread sheet and other QA related activities.

Work Method and Plan

- 2nd stage grouting of 3.5 m grouting length for secondary holes has been started today. Packer will be placed inside the casing and grouting will be continued until refusal or Vmax has reached. Effective pressure will be calculated at the middle of the 3.5m ungrouted hole length.
- If Vmax has reached, grouting may be continued by adding higher percentage of celbex through open throat pump as per field work instructions.

Bedrock Drilling

No information received for the bedrock drilling.

Bedrock Grouting

S626.5 1st stage

- Prefilled 11 liters of Mix C grout to displace water and then after packer inflated injected a total of 34.6 liters of Mix C without celbex.

- Pressure started building up right away after started injection and reached Pmax within a minute since grouting started with flow rate of less than 10 l/min.
- After reaching Pmax flow rate reduced to less than 1 liters/ min within ten minutes and then waited for 5 minutes.
- The closing pressure was 2.17 bar at flow rate of 0.3 l/min.

S614.5 1st stage

- Prefilled 10 liters of Mix C grout to displace water and then after packer inflated injected a total of 20.1 liters of Mix C without celbex.
- Pressure started building up right away after started injection and reached the Pmax in less than a minute since grouting started.
- After reaching Pmax flow rate reduced quickly to below 2 l/min and then gradually to less than 1 liters/ min within few minutes and then waited for 5 minutes.
- The closing pressure was 2.15 bar at flow rate of 0.4 l/min.

P596.5 sinle 5 m stage

- Prefilled 32 liters of Mix C grout to displace water and then after packer inflated injected a total of 126 liters of Mix C without celbex.
- Initially grouting started and then stopped for few minutes due to waiting for cement.
- Pressure started building up gradually and reached Pmax within about 5 minutes of grouting started. After reaching Pmax flow rate reduced gradually and then stabilized to less than 3 l/min within 10 minutes and then waited for 5 minutes.
- Few pressure spikes observed up to 5 bar, possible due to impurities in the cement or chunk of dry grout.
- The closing pressure was 3.65 bar at flow rate of 0.5 l/min.

S674.5 2nd stage

- Prefilled 22 liters of Mix C grout to displace water and then after packer inflated injected a total of 73.4 liters of Mix C without celbex.
- Pressure started building up right away after started injection and reached Pmax within five minutes since grouting started. After reaching Pmax flow rate reduced to less than 2 liters/ min within five minutes and then waited for 5 minutes.
- The closing pressure was 3.45 bar at flow rate of 0.7 l/min.
- This is the 1st secondary hole completed with both stages and low take is good sign of effectiveness of primary holes grouting as the both primary holes P668.5 and P680.5 were stopped at Vmax during interface grouting and closed during re-grouting.

Note=- All the holes completed today got refusal with Mix C without Celbex and those holes completed 1st stage left open after refusal because has to drill for remaining 3.5 m to complete 5 m depth of downstream blanket. P596.5 and S674.5 were backfilled after refusal.

Gout Test

Mix C	Marsh Value = 41 sec.	S.G = 1.72	Temp. = 20.0 C	Bleeding = 1%
Mix C	Marsh Value = 43 sec	S.G = 1.75	Temp. = 24.8 C	Bleeding = 1.6%
Mix C	Marsh Value = 50 sec.	S.G = 1.77	Temp. = 24.2 C	
Mix C	Vicat Test	initial set time = 250 min (4hr 10min)		Final Set time = not received yet.

SITE GUIDELINES (guidelines, memos, modification proposals, etc.)

No	Subject	Given to

SPECIFIC ELEMENTS VERIFIED

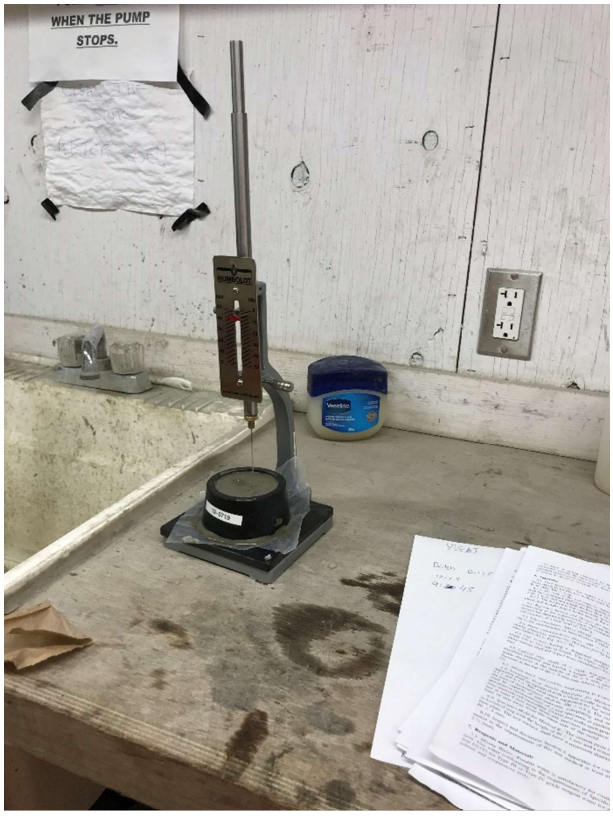
Elements	Location, batch or other	Scope and comments
Grout Testing	Injection Unit	Masrsh Funnel, Specific Gravity, Tempretaure, Bleed, Vicat test

SAFE AND SAFETY REMARKS

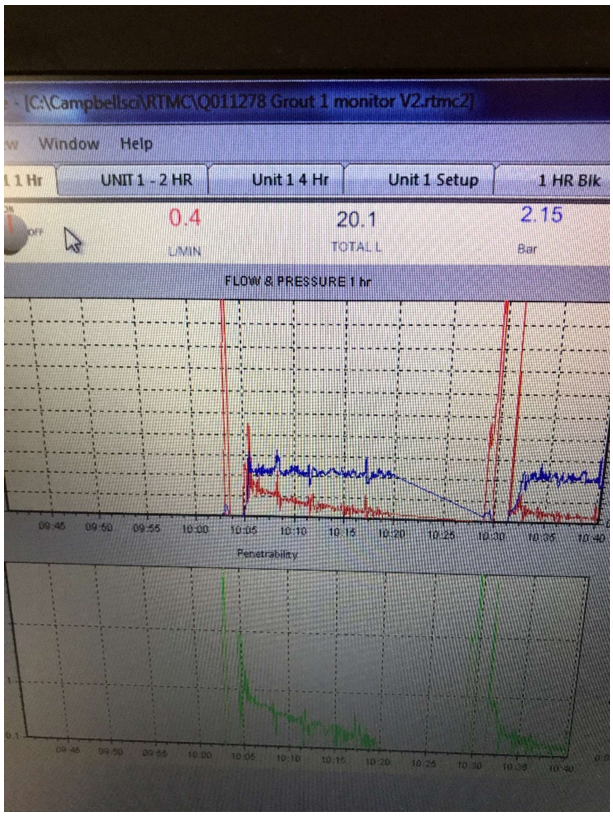
- Dress up properly for extreme cold conditions

Issued by: *Muhammad Saleem* (Signature) **14-12-2019** (Date)

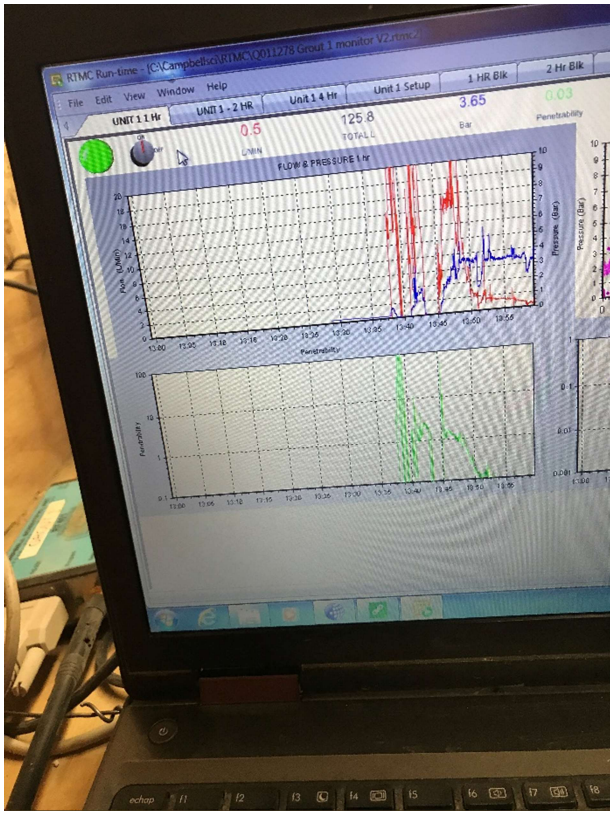
Verified by: *Tom Xue* (Signature) **14-12-2019** (Date)



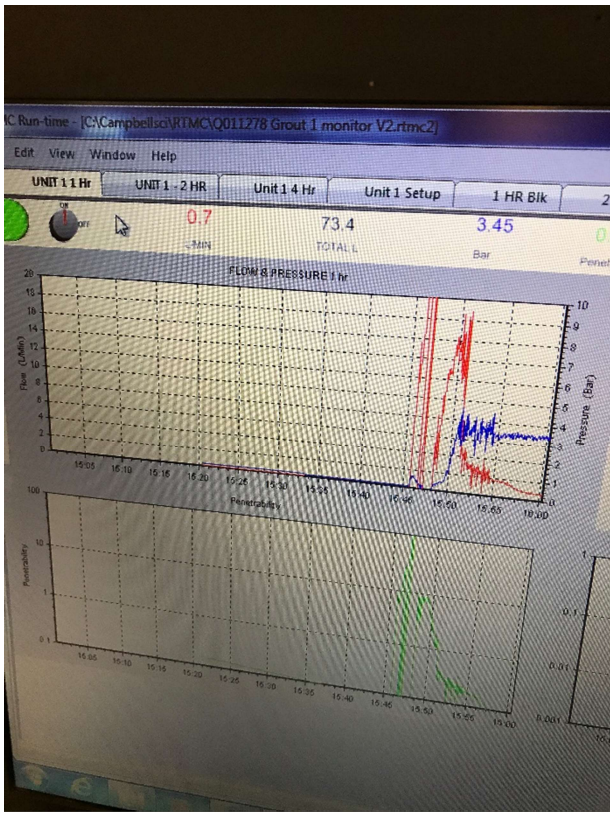
Vicat test for Mix C without celbex



Screen shot of flow and pressure chart at S626.5 and S614.5 from left to right



Screen shot of flow and pressure chart at P596.5



Screen shot of flow and pressure chart at S674.5

SNC·LAVALIN

DAILY FIELD REPORT
(Detailed)

20191215
Document number

2019-12-15	6:30 am 6:30 pm	669034	Muhammad Saleem
Date	Time (Start/End)	Project No.	Prepared by

Whale Tail Dike Remedial Drilling and Grouting Works	Agnico Eagle
Project	Client

SNC-Lavalin	TCG(KCG)
Consultant	Contractor

Weather: ☒Sunny ☒Cloudy ☐Rain ☐Storm ☐Snow ☐Glaze

Wind: ☐None ☐Light ☐Moderate ☒Strong, ☐ gusts Temperature: -31 °C

Comments:

Appendix: ☐Yes ☒No Pictures ☒Yes ☐No Inspection report or other:

Picture in the folder:

ACTIVITIES (indicate if test forms were used)

SNC-Lavalin' Activities

- Attended daily construction meeting at KCG trailer.
- The initial set time for Mix c without celbex is 4hr 10min and final set time about 9hrs. Vicat test report not received yet
- After discussion with AEM and KGC, SNC agreed with AEM proposal of, if the holes on both sides of tertiary hole has a low volume intake, the tertiary hole will be drilled and grouted in single 5 m stage.
- Review drilling reports
- Updated spread sheet and other QA related activities.

Work Method and Plan

- SNC Agreed with AEM proposal of, If the holes on both sides of tertiary holes has a refusal with low grout take, the tertiary hole can be drilled in single 5 m stage.

Bedrock Drilling

- Six secondary holes (S662.5, S650.5, S638.5, S626.5, S614.5 and S602.5) drilled today and one hole (S674.5) was drilled yesterday.
- All holes drilled for 2nd stage of 3.5 m length except S602.5 was drilled for 1st stage of 1.5 m length in the rock.
- All holes observed water loss between 13.2 and 13.6 m depth below ground surface except S602.5 where no water loss observed.
- All holes are open to the bottom of the drilled depth except S662.5 which caved about 0.3 m at the bottom.
- At S602.5 casing was not embedded in the bedrock. Driller observe bedrock at 14.4 m but he did not extend the casing as he thought hole was good and open. Talked to KCG (Alex, he said that KCG will try to grout 1st stage if dosen't work KCG will extend the casing).

Bedrock Grouting

S686.5 2nd stage

- Checked the water level and depth of hole, water at 5.97 m and hole open to 13.2 m from ground surface.
- Prefilled 20 liters of Mix C grout to displace water and then after packer inflated, injected another 660 liters of Mix C without celbex.
- After 200 liters of grout injected, pressure started building up slowly to 1 bar at 15 l/min but pressure dropped suddenly when flow rate increased above 15 l/min.
- Changed to Mix D when 680 liters of Mix C without celbex has been injected.
- Pressure started building up slowly and reached the Pmax at 15 l/min flow rate when about 1150 liters of grout injected.
- We maintain the Pmax for about 45 minutes, flow rate started decreasing but never goes below 5 liters /min and most of the time it stayed above 7 l/min.
- Grouting stopped when 1582 (Mix C =680 liters + Mix D = 902 liters) liters of grout injected as we already passed the Vmax of 1400 liters.
- The closing pressure was about 4 bar at flow rate of 7 l/min.
- **Checked the grout elevation after lunch and the hole was open to 13.15 m depth below ground. Will be regrouted tomorrow using celbex with open throat pump.**

S698.5 2nd stage

- Checked the water level and depth of hole, water at 5.29 m and hole open to 15.29 m from ground surface.
- Prefilled 21 liters of Mix C grout to displace water and then after packer inflated injected total 310 liters of Mix C without celbex.
- With Mix C pressure stayed between 0 and 0.8 bar at 15 l/min
- Changed to Mix D when 310 liters of Mix C without celbex has been injected.
- Pressure started building up slowly and reached the Pmax at 15 l/min flow rate and then flow rate gradually reduced to about 6 l/min and then stabilized at 8 l/min.
- When 1000 liters of grout injectected, flow rate suddenly jumped from 8l/min to 16l/min
- When 1050 liters of grout been injected, used Mix D with 1000ml of Rheomac 450 per batch (120kg cement). Flow rate dropped down to 4 l/min but again raised to 7 l/min.
- At 1206 liters, switched to Mix C with 0.3% celbex using open throat pump.
- At 0.3 % Celbex pressure stayed around 2 bars at 15l/min flow rate.
- Switched to 0.5% celbex when 1380 liters of grout has been injected.
- No change in pressure at same flow rate of 15 l/min
- Switched to 0.7% celbex when 1510 liters of grout has been injected.
- Pressure started building up slowly and start fluctuating between 3 to 5 bars.
- Stopped grouting when suddenly pressure jumped to 10 bar at flow rate of 15 l/min.
- Total 1605 liters of grout been injected and closing pressure was 10 bar at flow rate of 15 liters per minutes.
- Talked to KGC but they said with celbex flow rate cannot be reduced below 15 l/min.
- KGC will check the grout depth tomorrow morning and if grout elevation dropped below the bottom of the 1.5 m stage re-grouting will be done.

Gout Test

Mix C	Marsh Value = 107 sec.			
Mix C	Marsh Value = 69 sec	S.G = 1.77	Temp. = 28.2 C	Bleeding = 1 %
Mix D	Marsh Value = n/a	S.G = 1.80	Temp. = 26.0 C	
Mix D	Marsh Value = n/a	S.G = 1.82	Temp. = 24.5 C	.
Mix C	Marsh Value = 72 sec.	S.G = 1.78	Temp. = 25.5 C	Bleeding = 1%
Mix D	Marsh Value = n/a	S.G = 1.81	Temp. = 25.5 C	Bleeding = 0 %
Mix D	Marsh Value = n/a	S.G = 1.82	Temp. = 28.0 C	
Mix C	Marsh Value = 75 sec.	S.G = 1.84	Temp. = 27.0 C	.

SITE GUIDELINES (guidelines, memos, modification proposals, etc.)

No	Subject	Given to

SPECIFIC ELEMENTS VERIFIED

Elements	Location, batch or other	Scope and comments
Grout Testing	Injection Unit	Masrsh Funnel, Specific Gravity, Tempretaure, Bleed

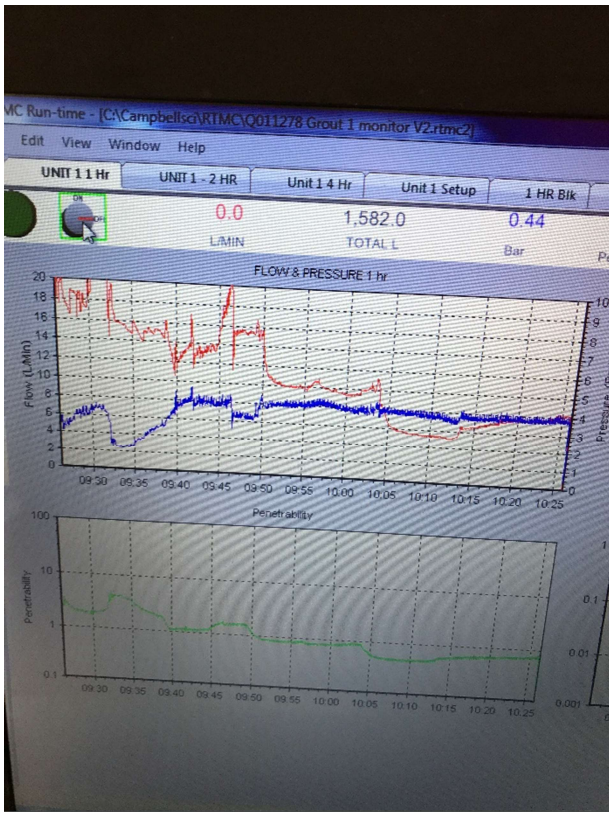
SAFE AND SAFETY REMARKS

- Dress up properly for extreme cold conditions

Issued by: *Muhammad Saleem* — Signature — **15-12-2019** — Date

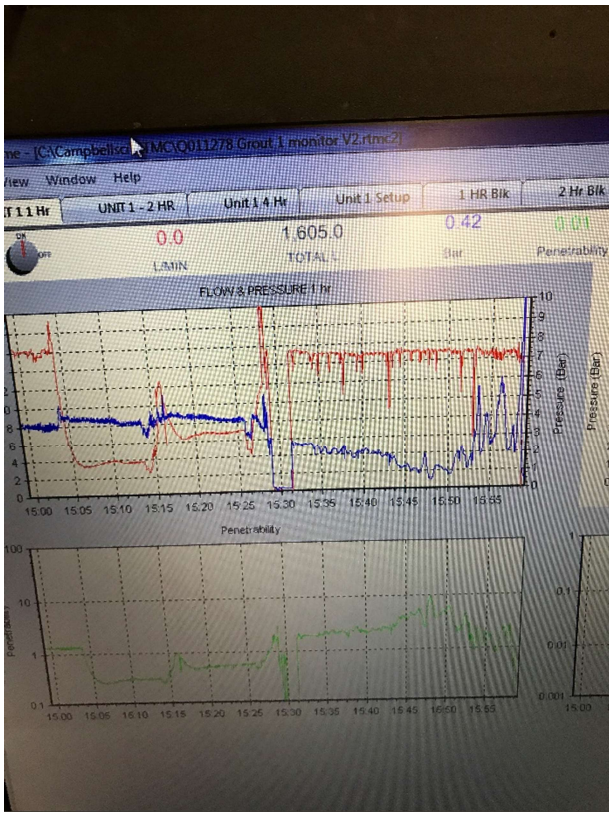
Verified by: *Tom Xue* — Signature — **15-12-2019** — Date

Mix D in the agigater tank



Screen shot of flow and pressure chart at S686.5

Adding celbex in open throat pump while looking at timer.



Screen shot of flow and pressure chart at S698.5

SNC·LAVALIN

DAILY FIELD REPORT
(Detailed)

20191216
Document number

Date	Time (Start/End)	Project No.	Prepared by
2019-12-16	6:30 am 6:30 pm	669034	Muhammad Saleem

Project	Client
Whale Tail Dike Remedial Drilling and Grouting Works	Agnico Eagle

Consultant	Contractor
SNC-Lavalin	TCG(KCG)

Weather: ☒Sunny ☒Cloudy ☐Rain ☐Storm ☐Snow ☐Glaze

Wind: ☐None ☐Light ☐Moderate ☒Strong, ☐ gusts Temperature: -35 °C

Comments:

Appendix: ☐Yes ☒No Pictures ☒Yes ☐No Inspection report or other:

Picture in the folder:

ACTIVITIES (indicate if test forms were used)

SNC-Lavalin' Activities

- Attended daily construction meeting at KCG trailer.
- AEM has installed the thermistor at station 740 to monitor the temperature of the rock.
- No rock drilling today because has to finish grouting for secondary holes first.
- Review GHD reports
- Updated spread sheet and other QA related activities.

Work Method and Plan

- Today regrouting S686.5 and S698.5 using open throat pump as per grouting committee recommendations.
- Have a discussion with SNC design team to discuss the grouting with celbex using through open throat pump. Designer recommended to stop injection if pressure at the collar reached to 10 bar prior to reaching Vmax.

Bedrock Drilling

- No bedrock drilling today

Bedrock Re-Grouting

S686.5 2nd stage

- Checked the water level and depth of hole prior to grouting start, water at 5.7 m and hole open to 13.15 m from ground surface.
- Packer was placed at the bottom of the casing.
- Prefilled 20 liters of Mix C grout to displace water and then after packer inflated, injected total of 106 liters of of Mix C without celbex.

- Switched to Mix C with 0.3% celbex by unit weight of cement using the Open Throat Pump when 106 liters of grout has been injected.
- At 0.3 % Celbex pressure stayed around 2 bars at 15l/min flow rate.
- Switched to 0.5% celbex when 260 liters of grout has been injected.
- No change in pressure at same flow rate of 15 l/min
- Switched to 0.7% celbex when 435 liters of grout has been injected.
- Pressure started building up slowly and start fluctuating between 2 to 6 bars.
- Stopped grouting when pressure jumped to 10 bar at flow rate of 15 l/min.
- Total 666.9 liters of grout injected.
- Hole left open to check the grout elevation if grout stayed above the bottom of the casing or dropped down below.
- **After lunch checked the grout elevation and found about 0.2 m above the bottom of the casing (10.2 m below ground). Hole is good to backfill.**

S698.5 2nd stage

- Checked the water level and depth of hole prior to grouting, water at 5.75 m and hole open to 13.9 m from ground surface.
- Packer was placed at the bottom of the casing
- Prefilled 30 liters of Mix C grout to displace water and then after packer inflated injected total 90 liters of Mix C without celbex.
- With Mix C pressure stayed between 0 and 0.2 bar at 15 l/min
- Switched to Mix C with 0.3% celbex by unit weight of cement when 90 liters of grout has been injected.
- Pressure started building up slowly and start fluctuating up and down but gradually moving up.
- Stopped grouting when pressure jumped to 10 bar at flow rate of 13 l/min.
- Total 177.7 liters of grout injected.
- Hole left open to check the grout elevation if grout stayed above the bottom of the casing or dropped down below.
- **After lunch checked the grout elevation and found about 0.29 m above the bottom of the casing (10.12 m below ground). Hole is good to backfill.**

S746.5 2nd stage

- Checked the water level and depth of hole prior to grouting, water at 6.07 m and hole open to 14.55 m from ground surface.
- Packer was placed at the bottom of the casing.
- Prefilled 22 liters of Mix C grout to displace water and then after packer inflated, injected total of 270 liters of Mix C without celbex.
- With Mix C pressure stayed between 0.3 to 0.51 bar at 20 l/min flow rate.
- Changed to Mix D when 270 liters of Mix C without celbex has been injected.
- Pressure started building up slowly and reached the Pmax at 15 l/min flow rate when about 660 liters of grout has been injected.
- We maintain the Pmax for about 30 minutes, flow rate started decreasing and stabilized at about 4.7 l/min
- Increased Rheomac to 750ml when about 1000 liters of grout have been injected.
- Flow rate decreased slowely and waited for 5 minutes when flow rate came below 2 l/min.
- The closing pressure was 4.4 bar at 1.6 l/min.
- **Checked the grout elevation after about 2 hrs and the hole was open to 14 m depth below ground. Will be regrouted tomorrow using celbex with open throat pump.**

S734.5 2nd stage

- Checked the water level and depth of hole prior to grouting, water at 6.11 m and hole open to 12.93 m from ground surface.
- Packer was placed at the bottom of the casing.
- Prefilled 22 liters of Mix C grout to displace water and then after packer inflated, injected total of 150 liters of Mix C without celbex.
- With Mix C pressure stayed between 0 to 0.2 bar at 20 l/min flow rate.
- Changed to Mix D when 150 liters of Mix C without celbex has been injected.
- Pressure started building up slowly and reached the Pmax at 15 l/min flow rate when about 450 liters of grout injected.
- We maintain the Pmax for about more than 30 minutes, flow rate started decreasing and stabilized at about 4 to 5 l/min
- Increased Rheomac to 750ml when about 750 liters of grout have been injected.
- Flow rate decreased slowely and waited for 5 minutes when flow rate came below 2 l/min.
- Increased the pressure a little bit to compensate pressure loss due to thicker grout.
- The closing pressure was 4.89 bar at 1.9 l/min.
- **Will Check the grout elevation tomorrow prior to backfilling.**

Gout Test

Mix C	Marsh Value = 91 sec	S.G = 1.82	Temp. = 26.8 C	Bleeding = 1 %
Mix C	Marsh Value = 67 sec.	S.G = 1.79	Temp. = 22.5 C	
Mix C	Marsh Value = 58 sec.	S.G = 1.74	Temp. = 26.2 C	Bleeding = 1%
Mix D	Marsh Value = n/a	S.G = 1.79	Temp. = 24.2 C	Bleeding = 0 %
Mix D	Marsh Value = n/a	S.G = 1.82	Temp. = 22.5 C	
Mix C	Marsh Value = 61 sec.	S.G = 1.76	Temp. = 20.5 C	

SITE GUIDELINES (guidelines, memos, modification proposals, etc.)

No	Subject	Given to

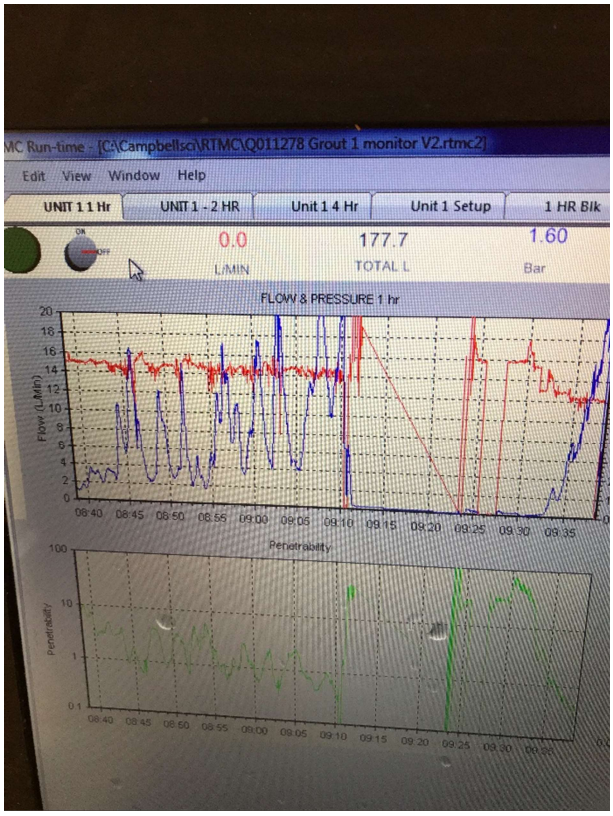
SPECIFIC ELEMENTS VERIFIED

Elements	Location, batch or other	Scope and comments
Grout Testing	Injection Unit	Masrsh Funnel, Specific Gravity, Tempretaure, Bleed

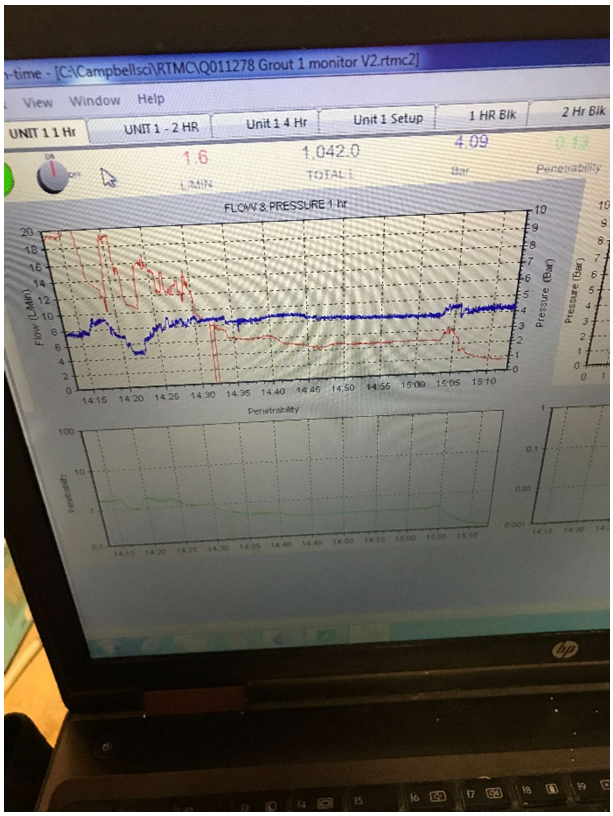
SAFE AND SAFETY REMARKS

- Dress up properly for extreme cold conditions

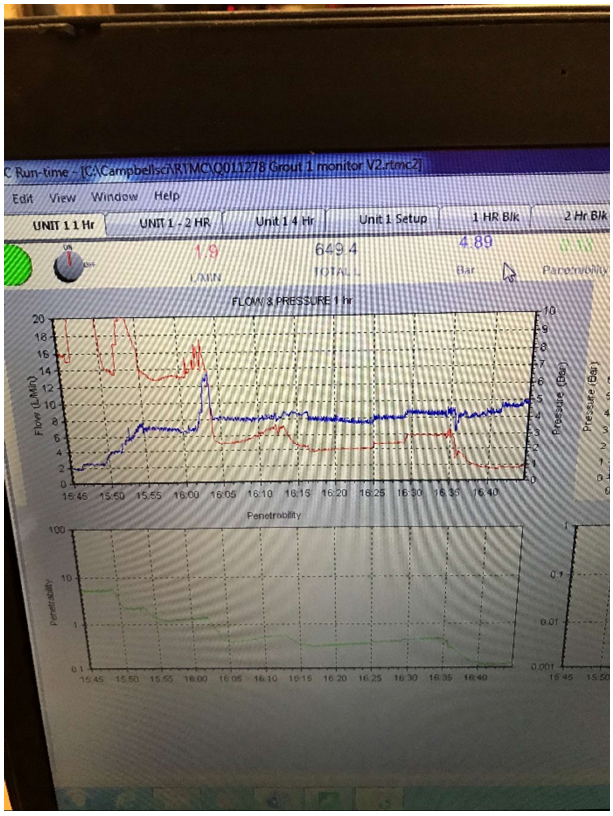
Issued by:	*Muhammad Saleem*	**16-12-2019**
	Signature	Date
Verified by:	*Tom Xue*	**16-12-2019**
	Signature	Date



Screen shot of flow and pressure chart at S686.5 and S698.5 from left to right



Screen shot of flow and pressure chart at S746.5



Screen shot of flow and pressure chart at S734.5

SNC·LAVALIN

DAILY FIELD REPORT
(Detailed)

20191217
Document number

Date	Time (Start/End)	Project No.	Prepared by
2019-12-17	6:30 am 6:30 pm	669034	Muhammad Saleem

Project	Client
Whale Tail Dike Remedial Drilling and Grouting Works	Agnico Eagle

Consultant	Contractor
SNC-Lavalin	TCG(KCG)

Weather: ☒Sunny ☒Cloudy ☐Rain ☐Storm ☐Snow ☐Glaze

Wind: ☐None ☐Light ☐Moderate ☒Strong, ☐ gusts Temperature: -34 °C

Comments:

Appendix: ☐Yes ☒No Pictures ☒Yes ☐No Inspection report or other:

Picture in the folder:

ACTIVITIES (indicate if test forms were used)

SNC-Lavalin' Activities

- Attended daily construction meeting at KCG trailer.
- Requested the data of thermistor installed at the dike to monitor rock temperature.
- Thermistor data at station 740.00 showed temperature of the bedrock within grouting zone is around +0.5 C
- No rock drilling today because has to finish grouting for secondary holes first.
- Review GHD reports
- Updated spread sheet and other QA related activities.

Work Method and Plan

- When re-grouting hole using celbex through open throat pump, grouting has to be stopped when pressure on the gauge installed at the collar of the hole reached 10 bar.

Bedrock Drilling

- No bedrock drilling today

Bedrock Re-Grouting

S746.5 2nd stage 1st re-grout

- Checked the water level and depth of hole prior to grouting start, water at 5.22 m and hole open to 13.65 m from ground surface.
- Packer was placed at the bottom of the casing.
- Prefilled 20 liters of Mix C grout to displace water and then after packer inflated, injected total of 250 liters of Mix C without celbex.

- Switched to Mix C with 0.3% celbex by unit weight of cement using the Open Throat Pump when 250 liters of grout had been injected.
- At 0.3 % Celbex pressure stayed around 2 bars at 15l/min flow rate.
- Switched to 0.5% celbex when 450 liters of grout had been injected.
- Pressure started building up slowly and start fluctuating between 3 to 6 bars.
- Stopped grouting when pressure jumped to 10 bar at flow rate of 15 l/min.
- Total 542.7 liters of grout injected.
- Hole left open to check the grout elevation if grout stayed above the bottom of the casing or dropped down below.
- **After lunch checked the grout elevation and found about 1.79 m above the bottom of the casing (7.9 m below ground). Hole backfilled.**

S734.5 2nd stage 1st re-grout

- Checked the water level and depth of hole prior to grouting start, water at 6.3 m and hole open to 11.89 m from ground surface.
- Packer was placed at the bottom of the casing
- Prefilled 6 liters of Mix C grout to displace water and then after packer inflated started grouting with Mix C without celbex.
- Pressure start increasing within a minute of injection started and reached the Pmax at about 16 l/min.
- When pressure reached at Pmax, flow rate decreased slowly and waited for 5 minutes when flow rate came below 2 l/min.
- Total 109 liters of grout injected.
- Hole backfilled after refusal.

S722.5 2nd stage

- Checked the water level and depth of hole prior to grouting start, water at 5.96 m and hole open to 17.54 m from ground surface.
- Packer was placed at the bottom of the casing
- Prefilled 25 liters of Mix C grout to displace water and then after packer inflated started grouting with Mix C without celbex.
- Pressure start increasing gradually and reach at Pmax at 15 l/min within ten minutes of injection started.
- When pressure reached at Pmax, flow rate decreased slowly and waited for 5 minutes when flow rate came below 2 l/min.
- Total 138 liters of grout injected.
- The closing pressure was 4.03 bar at 0.3 l/min
- Hole backfilled after refusal.

S710.5 2nd stage

- Checked the water level and depth of hole prior to grouting start, water at 6.0 m and hole open to 18.6 m from ground surface.
- Packer was placed at the bottom of the casing
- Prefilled 23 liters of Mix C grout to displace water and then after packer inflated started grouting with Mix C without celbex.
- Pressure start increasing gradually and reach at Pmax at 20 l/min within ten minutes of injection started.
- When pressure reached at Pmax, flow rate decreased slowly and stopped injection when flow rate reached 0 l/min to avoid grout freezing in the pipe just above the casing.
- Total 264.2 liters of grout injected.
- The closing pressure was 4 bar at 0 l/min
- Hole backfilled after refusal.

Gout Test

Mix C	Marsh Value = 50 sec.	S.G = 1.76	Temp. = 22.0 C	Bleeding = 1.5 %
Mix C	Marsh Value = 65 sec.	S.G = 1.79	Temp. = 23.5 C	
Mix C	Marsh Value = 58 sec.	S.G = 1.74	Temp. = 24.1 C	
Mix C	Marsh Value = 99 sec.	S.G = 1.80	Temp. = 24.5 C	Bleeding = 1 %
Mix C	Marsh Value = 62 sec.	S.G = 1.78	Temp. = 20.0 C	

SITE GUIDELINES (guidelines, memos, modification proposals, etc.)

No	Subject	Given to

SPECIFIC ELEMENTS VERIFIED

Elements	Location, batch or other	Scope and comments
Grout Testing	Injection Unit	Masrsh Funnel, Specific Gravity, Tempretaure, Bleed

SAFE AND SAFETY REMARKS

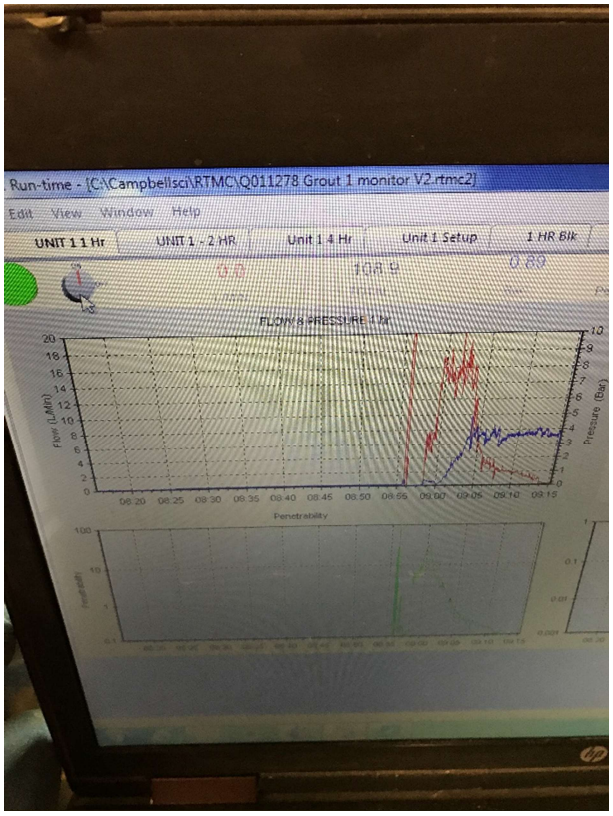
- Dress up properly for extreme cold conditions

Issued by: *Muhammad Saleem* (Signature) **17-12-2019** (Date)

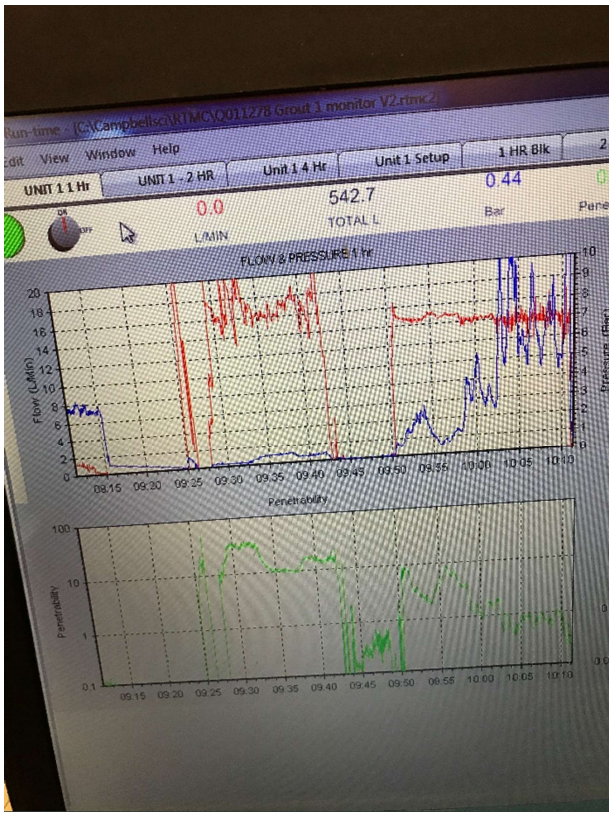
Verified by: *Tom Xue* (Signature) **17-12-2019** (Date)

S734.5 backfilled after refusal

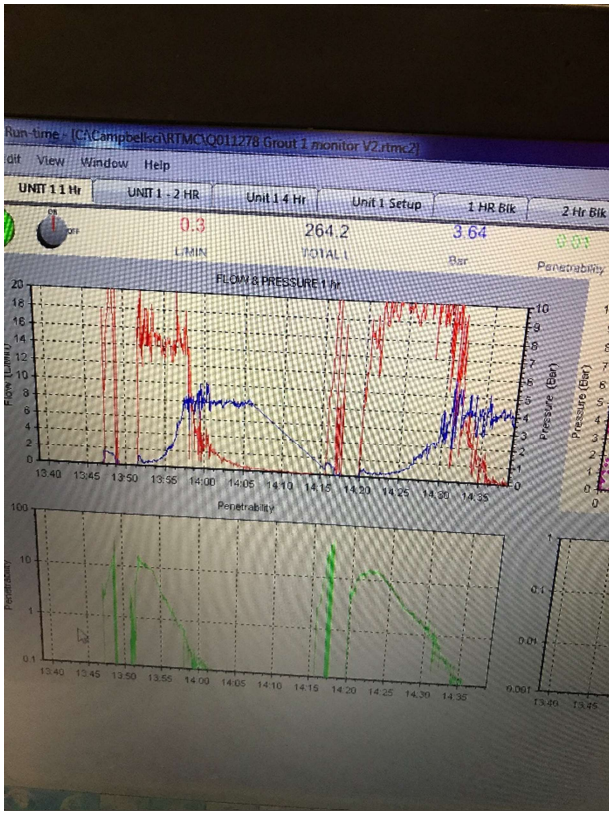
Adding Celbex through open throat pump at S746.5



Screen shot of flow and pressure chart at S734.5 re-grout



Screen shot of flow and pressure chart at S746.5 re-grout



Screen shot of flow and pressure chart at S722.5 and S710.5 from left to right

Gauge installed at the collar of S710.5

SNC·LAVALIN

DAILY FIELD REPORT
(Detailed)

20191218
Document number

Date	Time (Start/End)	Project No.	Prepared by
2019-12-18	6:30 am 6:30 pm	669034	Muhammad Saleem

Project	Client
Whale Tail Dike Remedial Drilling and Grouting Works	Agnico Eagle

Consultant	Contractor
SNC-Lavalin	TCG(KCG)

Weather: ☒Sunny ☒Cloudy ☐Rain ☐Storm ☐Snow ☐Glaze

Wind: ☐None ☐Light ☐Moderate ☒Strong, ☐ gusts Temperature: -35 °C

Comments:

Appendix: ☐Yes ☒No Pictures ☒Yes ☐No Inspection report or other:

Picture in the folder:

ACTIVITIES (indicate if test forms were used)

SNC-Lavalin' Activities

- Attended daily construction meeting at KCG trailer.
- Thermistor data at station 740.00 showed temperature of the bedrock within grouting zone is around +0.5 C
- No rock drilling today because has to finish grouting for secondary holes first.
- Review GHD reports.
- KGC checked borehole inclination but didn't received report yet
- Updated spread sheet and other QA related activities.

Work Method and Plan

- When re-grouting hole using celbex through open throat pump, grouting has to be stopped when pressure on the gauge installed at the collar of the hole reached 10 bar.

Bedrock Drilling

- No bedrock drilling today

Bedrock Grouting.

S650.5 2nd stage

- Checked the water level and depth of hole prior to grouting, water at 5.49 m and hole open to 16.55 m from ground surface.
- Packer was placed at the bottom of the casing.
- Prefilled 22 liters of Mix C grout to displace water and then after packer inflated, injected total of 450 liters of Mix C without celbex.
- With Mix C pressure stayed between 0 to 0.8 bar at 15 l/min flow rate.

- Changed to Mix D when 450 liters of Mix C without celbex has been injected.
- Pressure started building up slowly and reached the Pmax at 10 l/min flow rate in about 20 minutes.
- Maintained the Pmax and flow rate start decreasing gradually and came below 3 l/min in about 25 minutes.
- Waited for 5 minutes after flow rate came below 3 l/min.
- The closing pressure was 4.3 bar at 1.8 l/min.
- **Checked the grout elevation after 2 hrs. and was at 0.4 m above the bottom of the casing (11.4 m below the ground surface) and hole backfilled.**

S662.5 2nd stage

- Checked the water level and depth of hole prior to grouting, water at 5.55 m and hole open to 15.6 m from ground surface.
- Packer was placed at the bottom of the casing.
- Prefilled 22 liters of Mix C grout to displace water and then after packer inflated, injected total of 495 liters of Mix C without celbex.
- With Mix C pressure stayed between 0 and 0.7 bar at 15 l/min flow rate.
- Changed to Mix D when 495 liters of Mix C without celbex has been injected.
- Pressure started building up gradually and reached the Pmax at 10 l/min flow rate in about 30 minutes.
- Maintained the Pmax and flow rate start decreasing gradually and came below 3 l/min in about 30 minutes.
- Waited for 5 minutes after flow rate came below 3 l/min.
- The closing pressure was 5.07 bar at 2.3 l/min.
- We thought the hole was closed but when started backfilling, poured more than 100 liters of grout, grout disappeared in the casing. Decided to check grout elevation after lunch. This is possible due to frost development inside the grout pipe section between the ground and bottom of the injection unit.
- **Checked the grout elevation after lunch and the hole was open to bottom (15.6 m below ground surface). Hole re-grouted.**

Bedrock Re-Grouting

S662.5 2nd stage

- Checked depth of grout and was at 15.6 m below ground surface.
- Packer was placed at the bottom of the casing.
- Prefilled 19 liters of Mix C grout to displace water and then after packer inflated, injection started by adding celbex through open throat pump.
- Started with Mix C with 0.3% celbex by unit weight of cement using the Open Throat Pump.
- At 0.3 % Celbex pressure stayed around 0.5 to 1 bar at 15l/min flow rate.
- Switched to 0.5% celbex when 150 liters of grout has been injected.
- At 0.5 % Celbex pressure stayed around 2 to 6 bars at 15l/min flow rate.
- Switched to 0.7% celbex when 310 liters of grout has been injected.
- Pressure started building up slowly and start fluctuating between 4 to 8 bars.
- Stopped grouting when pressure jumped to 10 bar at flow rate of 15 l/min.
- Total 484.2 liters of grout injected.
- **Checked the grout elevation after packer removed and was at 8.2 m below ground (3.2 m above the bottom of the casing) and hole backfilled.**

Gout Test

Mix C	Marsh Value = 51 sec.	S.G = 1.75	Temp. = 23.0 C	Bleeding = 1 %
Mix D	Marsh Value = n/a	S.G = 1.81	Temp. = 25.2 C	Bleeding = 0 %
Mix D	Marsh Value = n/a	S.G = 1.82	Temp. = 23.2 C	
Mix C	Marsh Value = 65 sec.	S.G = 1.75	Temp. = 20.0 C	
Mix D	Marsh Value = n/a	S.G = 1.80	Temp. = 21.5 C	
Mix C	Marsh Value = 70 sec.	S.G = 1.77	Temp. = 18.0 C	Bleeding = 1 %

Mix C Marsh Value = 65 sec. S.G = 1.78 Temp. = 18.5 C

SITE GUIDELINES (guidelines, memos, modification proposals, etc.)

No	Subject	Given to

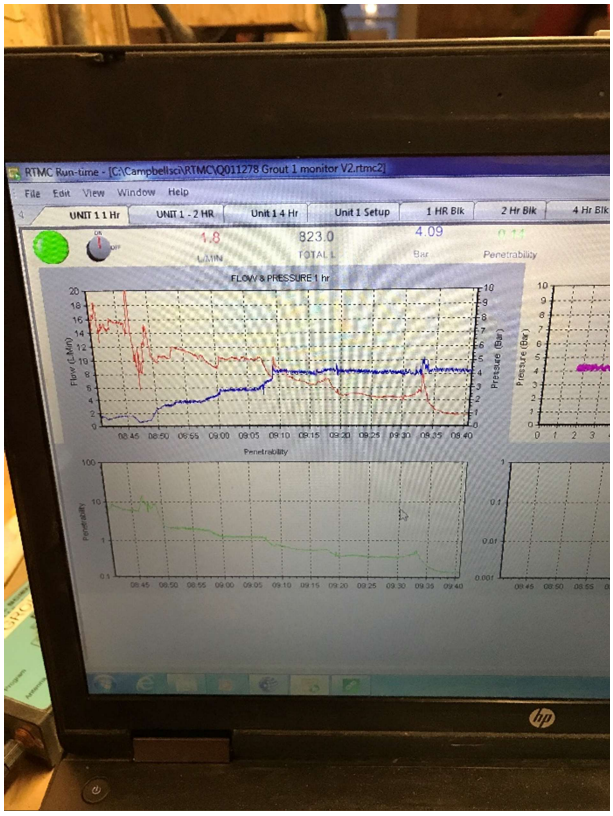
SPECIFIC ELEMENTS VERIFIED

Elements	Location, batch or other	Scope and comments
Grout Testing	Injection Unit	Masrsh Funnel, Specific Gravity, Tempretaure, Bleed

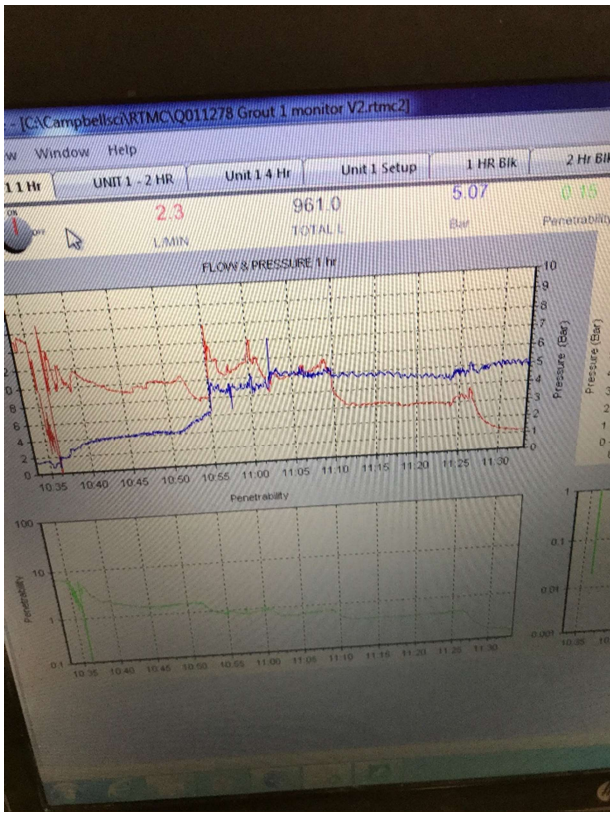
SAFE AND SAFETY REMARKS

- Dress up properly for extreme cold conditions

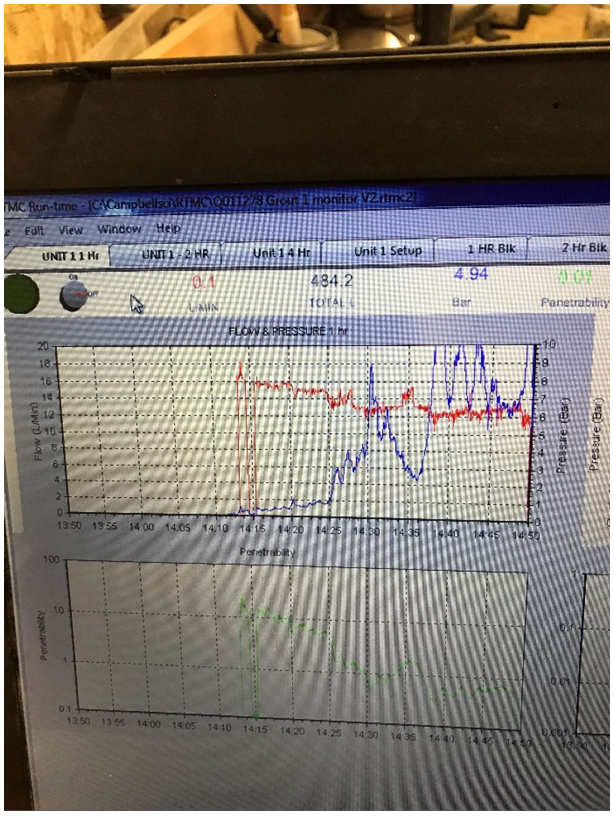
Issued by:	*Muhammad Saleem*	**18-12-2019**	
	Signature	Date	
Verified by:	*Tom Xue*	**18-12-2019**	
	Signature	Date	



Screen shot of flow and pressure chart at S650.5



Screen shot of flow and pressure chart at S662.5



Screen shot of flow and pressure chart at S662.5 re-grout

S662.5 after backfilled

SNC·LAVALIN

DAILY FIELD REPORT
(Detailed)

20191219
Document number

Date	Time (Start/End)	Project No.	Prepared by
2019-12-19	6:30 am 6:30 pm	669034	Muhammad Saleem

Project	Client
Whale Tail Dike Remedial Drilling and Grouting Works	Agnico Eagle

Consultant	Contractor
SNC-Lavalin	TCG(KCG)

Weather: ☒Sunny ☒Cloudy ☐Rain ☐Storm ☐Snow ☐Glaze

Wind: ☐None ☐Light ☐Moderate ☒Strong, ☐ gusts Temperature: -38 °C

Comments:

Appendix: ☐Yes ☒No Pictures ☐Yes ☒No Inspection report or other:

Picture in the folder:

ACTIVITIES (indicate if test forms were used)

SNC-Lavalin' Activities

- Attended daily construction meeting at KCG trailer.
- Attended AEM-SNC.
- No grout injection today, KCG cleaned up injection unit made it ready for injection after Christmas break.
- Review QC and grout injection data received from KCG.
- Organize work folder and documents.
- Updated spread sheet and other QA related activities.

Bedrock Drilling

- No bedrock drilling today.

Bedrock Grouting.

- No grout injection today.

SITE GUIDELINES (guidelines, memos, modification proposals, etc.)

No	Subject	Given to

SPECIFIC ELEMENTS VERIFIED

Elements	Location, batch or other	Scope and comments

SAFE AND SAFETY REMARKS

- Dress up properly for extreme cold conditions

Issued by: *Muhammad Saleem* — Signature — **19-12-2019** — Date

Verified by: *Tom Xue* — Signature — **19-12-2019** — Date

SNC·LAVALIN

DAILY FIELD REPORT
(Detailed)

20200111
Document number

2020-01-11	6:30 am 6:30 pm	669034	Muhammad Saleem
Date	Time (Start/End)	Project No.	Prepared by

Whale Tail Dike Remedial Drilling and Grouting Works	Agnico Eagle
Project	Client

SNC-Lavalin	TCG(KCG)
Consultant	Contractor

Weather: ☒Sunny ☒Cloudy ☐Rain ☐Storm ☐Snow ☐Glaze

Wind: ☐None ☐Light ☒Moderate ☐Strong, ☐ gusts Temperature: -37 °C

Comments:

Appendix: ☐Yes ☒No Pictures ☒Yes ☐No Inspection report or other:

Picture in the folder:

ACTIVITIES (indicate if test forms were used)

SNC-Lavalin' Activities

- Discussion with AEM and KCG after the morning meeting about the drilling methodology for the remaining holes for the downstream blanket.
- Thermistor installed before Christmas break to check the bedrock temperature has been removed.
- Test hole will be drilled in the previously grouted hole to check if hole properly grouted or not and to see if there is any water seepage.
- Review GHD reports.
- Updated spread sheet and other QA related activities.

Work Method and Plan

- As per discussion during the SNC and AEM meeting before Christmas break, the grout will be checked by reducing the calcium chloride to 1% by weight of cement when using Celbex in the grout.
- Drilling for the remaining holes for the D/S blanket will be carried out in a single 5 m stage except if water loss observed within top 1.5 m drilling or hole collapsed, in such cases down stage grouting method will be employed in two short grouting stages.

Re-drilling Grouted Holes

Two holes were re-drilled to check if the grouting is effective or still there is water seepage in the open holes.

S686.5

- S686.5 was drilled to 14.7 m depth. Hole was dry until about 14.2 m depth and water encountered below 14.2 m depth.

- During initial grouting this hole was drilled to 15 m depth but hole was collapsed to 13 m and water loss was also observed at 13 m depth. Hole was grouted during re-grouting with Celbex added through open throat pump.
- Re-drilling indicative of the grout only penetrate to about 1.2 m in the caved rock below caved depth and below that the grouting was not effective.

S746.5

- S746.5 was drilled to about 14.5 m depth. A little bit of water observed at about 9.9 m depth (possible trapped water) but below that hole stayed dry to the bottom at 14.5 m.
- During initial grouting, this hole was drilled to 14.7 m depth and water loss was observed at 13.4 m during drilling and hole was completed after re-grouting with Mix C by adding Celbex through open throat pump.
- Dry hole during re-drilling indicative of that the grouting is effective to cut off water seepage at this location.

Bedrock Grouting.

S638.5 2nd stage

- Checked the depth of hole prior to grouting, hole open to 16.2 m from ground surface.
- Packer was placed at the bottom of the casing.
- Prefilled 21 liters of Mix C grout to displace water and then after packer inflated, injected total of 67.3 liters of Mix C without celbex.
- Pressure started building up right away and gradually reached the Pmax.
- Maintained the Pmax while flow rate start decreasing gradually and came below 2 l/min.
- Waited for 5 minutes after flow rate came below 2 l/min at Pmax.
- The closing pressure was 4.36 bar at 0.6 l/min.
- **Hole backfilled after grouting.**

Casing Plug

5 casings plugged today using Mix C without Celbex.
Packer placed at about 2 m above the bottom of the casing and 15 liters grout injected prior to inflate packer.

S590.5 injected 16.1 liters grout @ 2.25 bar
T587.5 injected 24.0 liters grout @ 2.14 bar
P584.5 injected 39.2 liters grout @ 2.11 bar
T581.5 injected 25.6 liters grout @ 1.96 bar
S578.5 injected 201.2 liters grout @ 0.2 bar (reached maximum volume)
At S578.5, reached maximum volume and rest of the locations injected grout until reached 0 liters/ min grout flow at Pmax. Only waited couple of minutes after flowrate reached 0 l/min to avoid grout freezing in the pipe.

Grout Test

Mix C	(S638.5 grouting)	Marsh Value = 61 sec.	S.G = 1.78	Temp. = 24.0 C	Bleeding = 1 %
Mix C	(Casing Plug)	Marsh Value = 70 sec.	S.G = 1.76	Temp. = 16.4 C	Bleeding = 1 %

SITE GUIDELINES (guidelines, memos, modification proposals, etc.)

No	Subject	Given to

SPECIFIC ELEMENTS VERIFIED

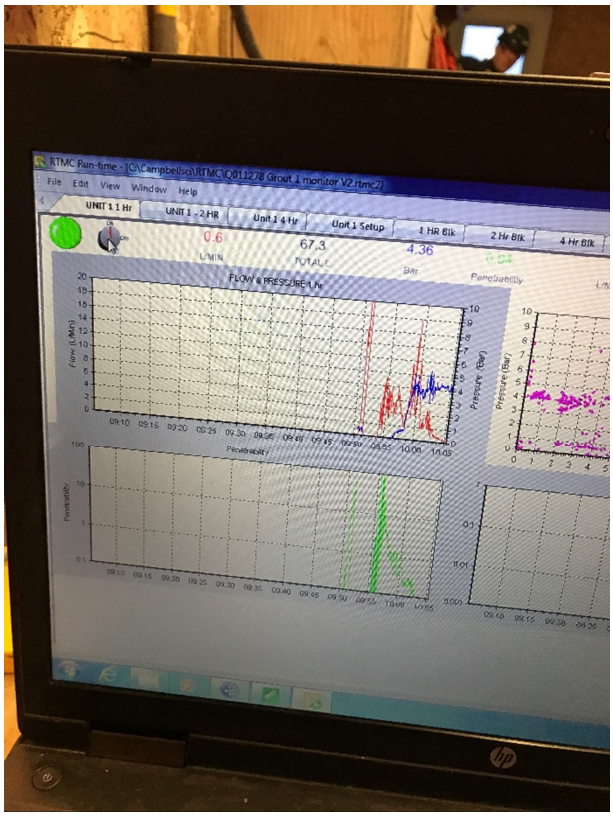
Elements	Location, batch or other	Scope and comments
Grout Testing	Injection Unit	Masrsh Funnel, Specific Gravity, Tempretaure, Bleed

SAFE AND SAFETY REMARKS

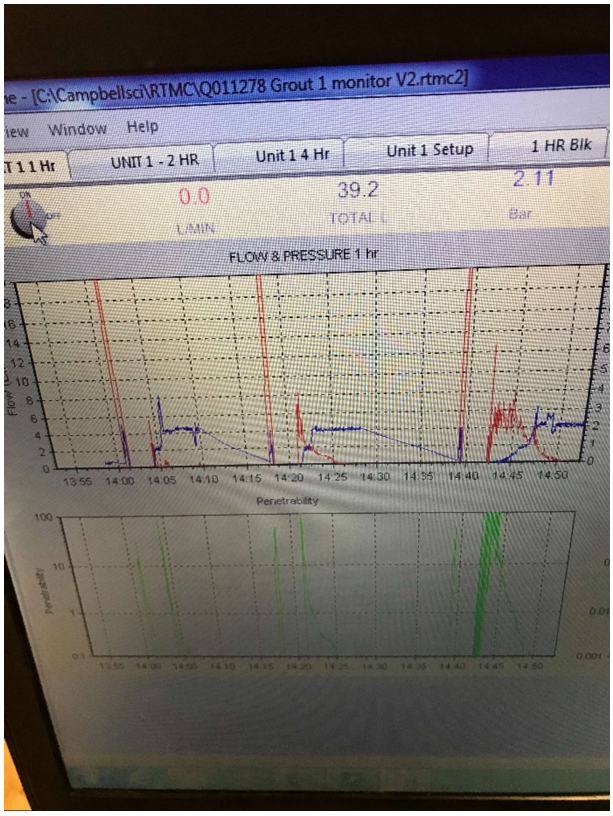
- Dress up properly for extreme cold conditions

Issued by:	*Muhammad Saleem*	**11-01-2020**
	Signature	Date
Verified by:	*Tom Xue*	**11-01-2020**
	Signature	Date

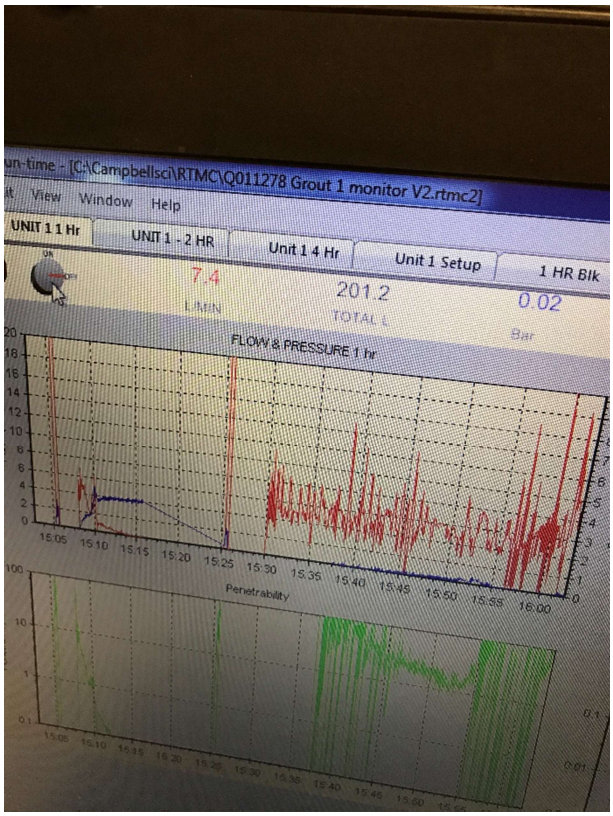
Packer installed and grouting in progress at S638.5



Screen shot of flow and pressure chart at S638.5



Screen shot of flow and pressure chart for casing plug at S590.5, T587.5 and P 584.5 from left to right.



Screen shot of flow and pressure chart for casing plug at T581.5 and S578.5 from left to right.

At S686.5, water encountered at 14.2 m during re-drilling of grouted hole

At S746.5, hole stayed dry during re-drilling of grouted hole

SNC·LAVALIN

DAILY FIELD REPORT
(Detailed)

20200112
Document number

Date	Time (Start/End)	Project No.	Prepared by
2020-01-12	6:30 am 6:30 pm	669034	Muhammad Saleem

Project	Client
Whale Tail Dike Remedial Drilling and Grouting Works	Agnico Eagle

Consultant	Contractor
SNC-Lavalin	TCG(KCG)

Weather: ☒Sunny ☒Cloudy ☐Rain ☐Storm ☐Snow ☐Glaze

Wind: ☐None ☐Light ☒Moderate ☐Strong, ☐ gusts Temperature: -33 °C

Comments:

Appendix: ☐Yes ☒No Pictures ☒Yes ☐No Inspection report or other:

Picture in the folder:

ACTIVITIES (indicate if test forms were used)

SNC-Lavalin' Activities

- Attended daily construction meeting at the Contractor trailer.
- Discuss the results of the test holes completed yesterday.
- During grout plug if using mix C without celbex and no pressure buid up celbex shall be used after about half of the maximum volume injected.
- Review GHD reports.
- Updated spread sheet and other QA related activities.

Work Method and Plan

- When using mix C without celbex for casing plug and no pressure build up, 0.2% of Celbex by weight of cement shall be added after about half of the maximum volume injected.
- Drilling for the remaining holes for the D/S blanket will be carried out in a single 5 m stage except if water loss observed within top 1.5 m drilling or hole collapsed, in such cases down stage grouting method will be employed in two short grouting stages.
- Found lumps of cement in the buckets possible due to buckets filled before Christmas and sitting there for long time. Advised KCG to checked the previously filled buckets to make sure cement is properly screened and no lumps of cement in the buckets.

Bedrock Drilling.

- Bedrock drilling started yesterday for Tertiary holes. Holes will be drilled as per site conditions, if no water loss and hole stayed open, will be drilled for 5 m length and if water loss observed or hole collapsed drilling will be stopped to complete grouting in two short stages.
- Thirteen (13) holes were drilled yesterday from T749.5 to T677.5.

- At T719.5 and T725.5 holes were drilled 3.4 and 4.15 m into the rock respectively but at both locations the hole caved to just below the casing. Casings will be pushed down to embed 0.3 to 0.5 m into bedrock and then redrilled.
- In none of the holes water loss observed.

- At both locations (T725.5 and T731.5) casing was not socketed into bedrock and TCG informed that they don't have machine to push casing down and will grout and redrill hole if it works.
- Note that adjacent holes S722.5 and P728.5 were also casing extended by 3.4 m and 1.7 m respectively.

Bedrock Grouting.

T749.5 5m stage

- Checked the depth of hole prior to grouting, hole opened to 17.2 m and water at 15.53 m from ground surface.
- Packer was placed at the bottom of the casing.
- Prefilled 47.9 liters of Mix C grout to displace water and then after packer inflated, injected a total of 50.2 liters of Mix C without celbex.
- Pressure started building up right a way and reached Pmax in a minute.
- Maintained the Pmax while flow rate decreased quickly below 3 l/min.
- Waited for 5 minutes after flow rate came below 3 l/min at Pmax.
- The closing pressure was 3 bar at 0.0 l/min.
- Possible low grout take and deep water level due to frozen rock at this location.
- **Hole backfilled after grouting.**
-

T743.5 5m stage

- Checked the depth of hole prior to grouting, hole open to 15.53 m and water at 6.04 m from ground surface.
- Packer was placed at the bottom of the casing.
- Prefilled 37 liters of Mix C grout to displace water and then after packer inflated, injected total of 421.6 liters of Mix C without celbex.
- After about 200 liters of grout injected, pressure started building up gradually and reached Pmax in about 15 minutes.
- Maintained the Pmax while flow rate decreased quickly below 3 l/min.
- Waited for 5 minutes after flow rate came below 3 l/min at Pmax.
- The closing pressure was 3.31 bar at 0.1 l/min.
- **Hole backfilled after grouting.**

Casing Plug

4 casings plugged today using Mix C with celbex .
Packer placed at about 2 m above the bottom of the casing and 15 liters grout injected prior to inflate packer.

T575.5 injected 197.3 liters grout (100 liters without celbex and 97.3 liters with celbex) @ 0 bar
P572.5 injected 222.0 liters grout @ 0 bar
S566.5 injected 19.5 liters grout @ 1.9 bar
T563.5 injected 18.7 liters grout @ 1.74 bar
At T575.5 and P572.5, reached maximum volume and rest of the locations injected grout until reached 0 liters/ min grout flow at Pmax. Only waited couple of minutes after flowrate reached 0 l/min to avoid grout freezing in the pipe.

Grout Test

Mix C	(Casing Plug)	Marsh Value = 46 sec.	S.G = 1.76	Temp. = 23.5 C	Bleeding = 1.5 %
Mix C	(rock grouting)	Marsh Value = 60 sec.	S.G = 1.78	Temp. = 30.2 C	Bleeding = 1 %

SITE GUIDELINES (guidelines, memos, modification proposals, etc.)

No	Subject	Given to

SPECIFIC ELEMENTS VERIFIED

Elements	Location, batch or other	Scope and comments
Grout Testing	Injection Unit	Masrsh Funnel, Specific Gravity, Tempretaure, Bleed

SAFE AND SAFETY REMARKS

- Dress up properly for extreme cold conditions

Issued by:	*Muhammad Saleem*	**12-01-2020**
	Signature	Date
Verified by:	*Tom Xue*	**12-01-2020**
	Signature	Date

Adding celbex to the agitator tank for grout plug at T575.5

Lump of cement found in the cement bucket

SNC·LAVALIN

DAILY FIELD REPORT
(Detailed)

20200113
Document number

2020-01-13	6:30 am 6:30 pm	669034	Muhammad Saleem
Date	Time (Start/End)	Project No.	Prepared by

Whale Tail Dike Remedial Drilling and Grouting Works	Agnico Eagle
Project	Client

SNC-Lavalin	TCG(KCG)
Consultant	Contractor

Weather: ☒Sunny ☒Cloudy ☐Rain ☐Storm ☐Snow ☐Glaze

Wind: ☐None ☐Light ☒Moderate ☐Strong, ☐ gusts Temperature: -31 °C

Comments:

Appendix: ☐Yes ☒No Pictures ☒Yes ☐No Inspection report or other:

Picture in the folder:

ACTIVITIES (indicate if test forms were used)

SNC-Lavalin' Activities

- Attended daily construction meeting at the Contractor trailer.
- Discuss discrepencies in hole depth for plug, hole drilled where casing were not embedded into bedrock and hole cleaning prior to grouting for casing plug.
- Review GHD reports.
- Updated spread sheet and other QA related activities.

Work Method and Plan

- T525.5 and T519.5 where hole caved after drilling due to casing was not embedded into bedrock will be skipped for grouting. Casings will be pushed down to embed 0.3 m to 0.5 m into bedrock and then will be redrilled.
- Test hole S686.5 will be grouted at design pressure.
- Vicat test for Mix D will be performed.

Bedrock Drilling.

- Total 11 tertiary holes drilled today from T671.5 to T611.5
- All holes drilled into rock for 5 m grout length.
- No water loss encountered in any of the hole and all holes were open to the bottom after completion.

Bedrock Grouting.

T737.5 5m stage

- Checked the depth of hole prior to grouting, hole opened to 14.68 m and water at 6.10 m from ground surface.
- Packer was placed at the bottom of the casing.

- Prefilled 37 liters of Mix C grout to displace water and then after packer inflated, injected of 580 liters of Mix C without celbex at pressure 0 to 0.35 bar.
- After 580 liters of Mix C injected, switched to Mix D.
- Pressure started building up slowly after Mix D started and took about 20 minutes to reach Pmax at 14 l/min flow rate.
- Pressure and flow rate fluctuate a bit and the after about 30 minutes flow rate dropped to below 3 l/ min.
- Waited for 5 minutes after flow rate came below 3 l/min at Pmax.
- The closing pressure was 4.23 bar at 0.0 l/min.
- Total 1381 litres of groute injected (Mix C without celbex = 580 L + Mix D = 801 L)
- **Hole backfilled after grouting.**

T731.5 5m stage

- when we tried to grout T731.5 found grout at about 7 m depth inside the casing, possible grout communicate when grouting T737.5 in the morning.
- Depth was measured yesterday for T731.5 and was open 15.01 m with water at 5.88 m below ground surface. We installed packer at 6 m inside the casing and injected about 2 liters of Mix C grout at pressure about 5 to 6 bar.
- Hole left open and will be backfilled after confirmation from designer when grouting adjecnt hole T719.5.

T713.5 5m stage

- Packer was placed at the bottom of the casing.
- Prefilled 36.5 liters of Mix C grout to displace water and then after packer inflated, injected total of 161 liters of Mix C without celbex.
- After the grouting started pressure build up gradually and reached to Pmax within 5 minutes
- Waited for 5 minutes after flow rate came below 3 l/min at Pmax.
- The closing pressure was 3.78 bar at 0.8 l/min.
- **Hole backfilled after grouting.**

Grout Test

Mix C	Marsh Value = 46 sec. S.G = 1.77 Temp. = 23.4 C Bleeding = 1 %
Mix D	Marsh Value = n/a S.G = 1.78 Temp. = 28.1 C Bleeding = 0 %
Mix C	Marsh Value = 67 sec. S.G = 1.75 Temp. = 24.5 C Bleeding = 1.5 %

SITE GUIDELINES (guidelines, memos, modification proposals, etc.)

No	Subject	Given to

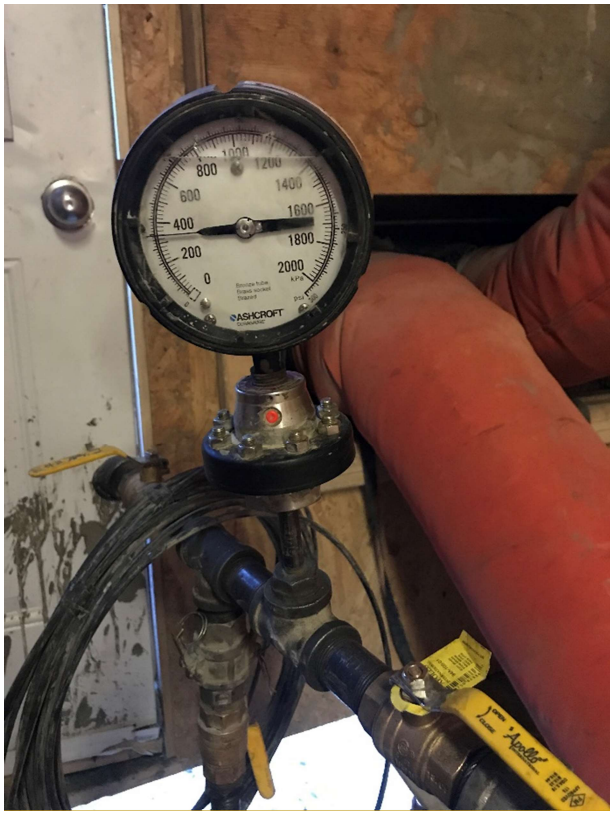
SPECIFIC ELEMENTS VERIFIED

Elements	Location, batch or other	Scope and comments
Grout Testing	Injection Unit	Masrsh Funnel, Specific Gravity, Tempretaure, Bleed

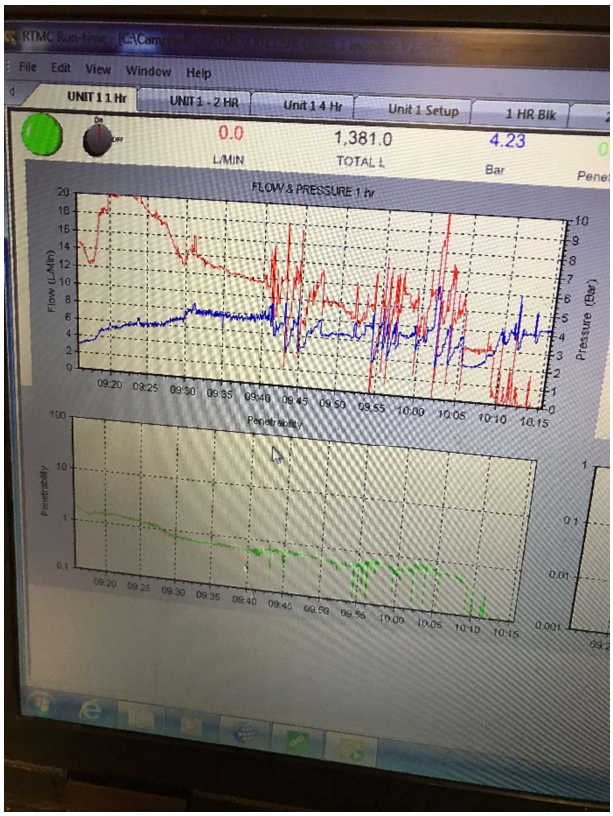
SAFE AND SAFETY REMARKS

- Dress up properly for extreme cold conditions

Issued by:	*Muhammad Saleem*	**13-01-2020**
	Signature	Date
Verified by:	*Tom Xue*	**13-01-2020**
	Signature	Date

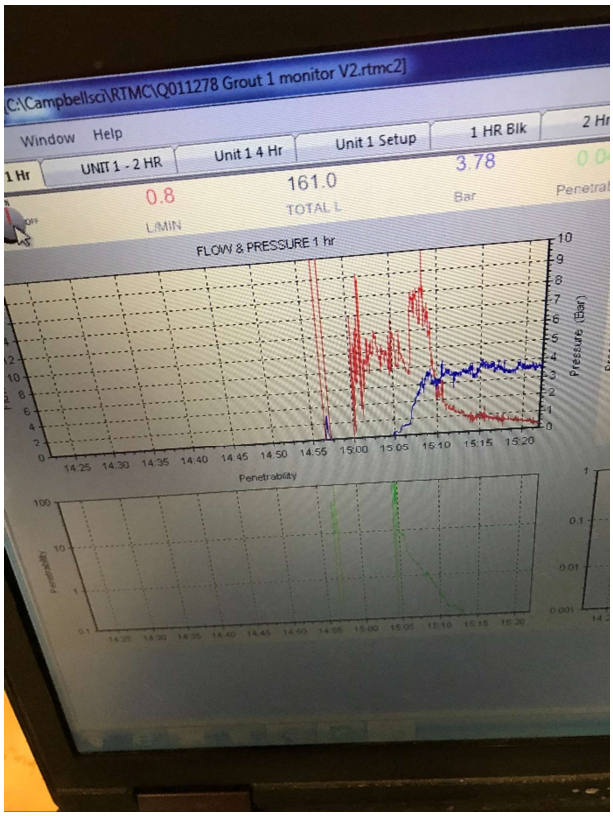


Collar gauge installed at T737.5



Screen shot of pressure and flow chart at T737.5

Grout stick with pipe when checking the hole at T731.5



Screen shot of pressure and flow chart at T713.5

SNC·LAVALIN

DAILY FIELD REPORT
(Detailed)

20200114
Document number

Date	Time (Start/End)	Project No.	Prepared by
2020-01-14	6:30 am 6:30 pm	669034	Muhammad Saleem

Project	Client
Whale Tail Dike Remedial Drilling and Grouting Works	Agnico Eagle

Consultant	Contractor
SNC-Lavalin	TCG(KCG)

Weather: ☒Sunny ☒Cloudy ☐Rain ☐Storm ☐Snow ☐Glaze

Wind: ☐None ☐Light ☒Moderate ☐Strong, ☐ gusts Temperature: -36 °C

Comments:

Appendix: ☐Yes ☒No Pictures ☒Yes ☐No Inspection report or other:

Picture in the folder:

ACTIVITIES (indicate if test forms were used)

SNC-Lavalin' Activities

- Attended daily construction meeting at the Contractor trailer.
- During the meeting AEM informed that during committee meeting discussed how to use celbex through open throat pump (adding celbex by visual observation not by weight). Also drilling and grouting will continue in single 5 m stage or 2 short stages as per site conditions until final decision.
- Cement temperature noted up to 40 C, KCG was advised to check heating in the batching area to control temperature.
- Reviewed GHD reports.
- Updated spread sheet and other QA related activities.

Work Method and Plan

- As per committee meeting held yesterday, drilling and grouting will be continued in single 5 m stage or 2 short stages as per site conditions until final decision.
- Celbex in the open throat pump will be added by visual observation and increased until pressure start building up and then keep the same amount (rate of adding Celbex) continued until refusal. Total celbex used for the total grout injected will be calculated after grouting completed.
- Optimum Celbex dosage (rate of adding Celbex at which grout is more controllable and yet effective in cutting off the seepage through open fractures) shall be established based on injection data.

Bedrock Drilling.

- Completed drilling for S602.5 to 5 m grouting stage. No water loss observed and hole stayed open.
- 2 Primary holes drilled today (P548.5 and P572.5)
- Both holes drilled into rock for 5 m grouting length.

- No water loss encountered in any of the hole and all holes were open to the bottom after completion.
- Cleaned 6 Tertiary and 1 Secondary casings for grout plug.

Bedrock Grouting.

T707.5 5m stage

- Packer was placed at the bottom of the casing.
- Prefilled 36 liters of Mix C grout to displace water and then after packer inflated, injected 550 liters of Mix C without celbex at pressure 0 to 0. 5 bar.
- After 550 liters of Mix C injected, switched to Mix D.
- Pressure started building up slowly after Mix D started and took about 10 minutes to reach Pmax at 8 l/min flow rate.
- Pressure and flow rate fluctuate a bit and after about 20 minutes flow rate dropped to below 3 l/ min.
- Waited for 5 minutes after flow rate came below 3 l/min at Pmax.
- The closing pressure was 4.22 bar at 0.0 l/min and a total of 313 liters of Mix D was injected at closure
- Total 863 liters of grout injected (Mix C without celbex = 550 L + Mix D = 313 L)
- **Hole backfilled after grouting.**

T701.5 5m stage

- Packer was placed at the bottom of the casing.
- Prefilled 41 liters of Mix C grout to displace water and then after packer inflated, injected total of 190.5 liters of Mix C without celbex.
- After the grouting started pressure build up gradually and reached to Pmax within 5 minutes
- Waited for 5 minutes after flow rate came below 3 l/min at Pmax.
- The closing pressure was 3.27 bar at 0.4 l/min.
- **Hole will be backfilled later.**

T695.5 5m stage

- Packer was placed at the bottom of the casing.
- Prefilled 36 liters of Mix C grout to displace water and then after packer inflated, injected 445 liters of Mix C without celbex at pressure 0 to 0. 2 bar.
- After 445 liters of Mix C injected, switched to Mix D.
- Pressure started building up slowly after Mix D started but stayed between 1 to 2 bar at flowrate of 8 to 12 liters/min.
- Pressure and flow rate fluctuate a bit, possible due to some coarse particles in cement.
- After about 1600 liters of grout injected increased Rheomac in Mix D to 1000 ml instead of 500 ml but pressure never go above 2 bar and flow rate stayed above 4 l/min.
- After maximum grout volume injected stopped grouting. A total of 2194 liters was injected at the end of grouting in this hole.
- After 4 hours checked grout elevation in the hole found grout at about 10.1 m below ground surface (0.5 m above bottom of the casing)
- **Hole backfilled after confirming the grout elevation.**

T689.5 5m stage

- Packer was placed at the bottom of the casing.
- Prefilled 36 liters of Mix C grout to displace water and then after packer inflated, injected 400 liters of Mix C without celbex at pressure 0 to 0. 3 bar.
- After 400 liters of Mix C injected, switched to Mix D.
- Pressure started building up slowly after Mix D started and took about more than an hour to reach Pmax while flowrate decreased simultaneously and came below 3 l/min.
- Waited for 5 minutes after flow rate came below 3 l/min at Pmax.

- The closing pressure was 4.01 bar at 0.0 l/min.
- Total 1176 liters of grout injected (Mix C without celbex = 400 L + Mix D = 776 L)
- **Hole backfilled after grouting.**

Grout Test

Mix C	Marsh Value = 66 sec.	S.G = 1.78	Temp. = 25.1 C	Bleeding =	1 %
Mix D	Marsh Value = n/a	S.G = 1.78	Temp. = 30.2 C	Bleeding =	0 %
Mix C	Marsh Value = 50 sec.	S.G = 1.69	Temp. = 26.7 C	Bleeding =	
Mix D	Marsh Value = n/a	S.G = 1.80	Temp. = 25.6 C	Bleeding =	
Mix D	Marsh Value = n/a	S.G = 1.77	Temp. = 25.7 C	Bleeding =	
Mix D	Marsh Value = n/a	S.G = 1.76	Temp. = 32.3 C	Bleeding =	
Mix C	Marsh Value = 43 sec.	S.G = 1.69	Temp. = 23.5 C	Bleeding =	1 %
Mix D	Marsh Value = n/a	S.G = 1.77	Temp. = 23.1 C	Bleeding =	0 %

SITE GUIDELINES (guidelines, memos, modification proposals, etc.)

No	Subject	Given to

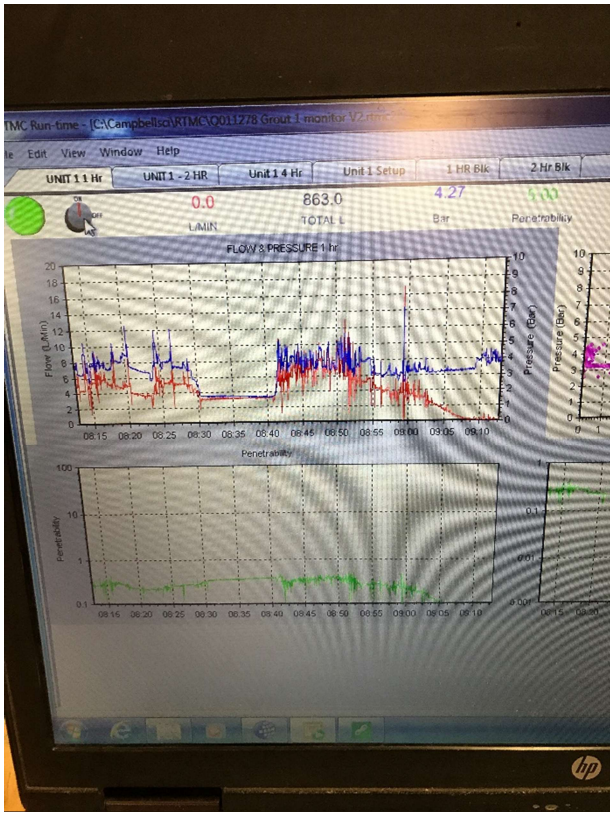
SPECIFIC ELEMENTS VERIFIED

Elements	Location, batch or other	Scope and comments
Grout Testing	Injection Unit	Marsh Funnel, Specific Gravity, Temperature, Bleed

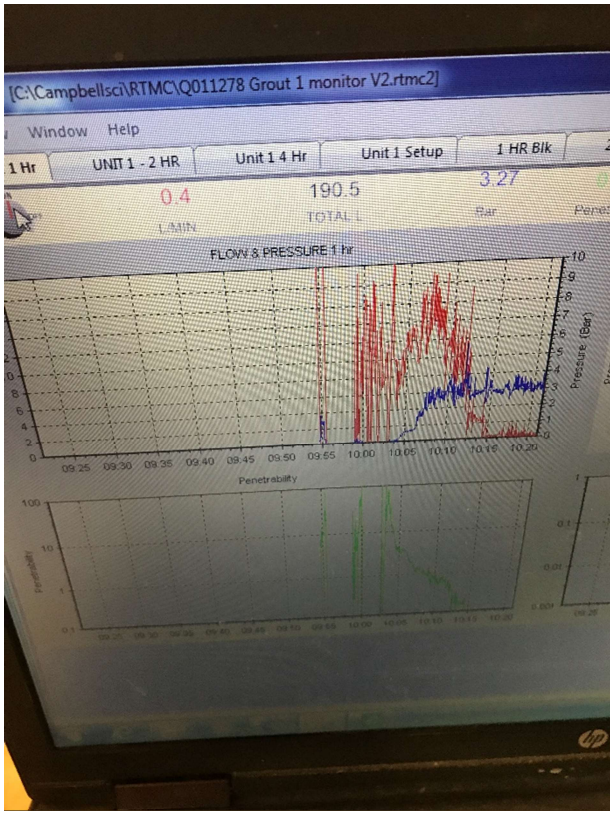
SAFE AND SAFETY REMARKS

- Dress up properly for extreme cold conditions

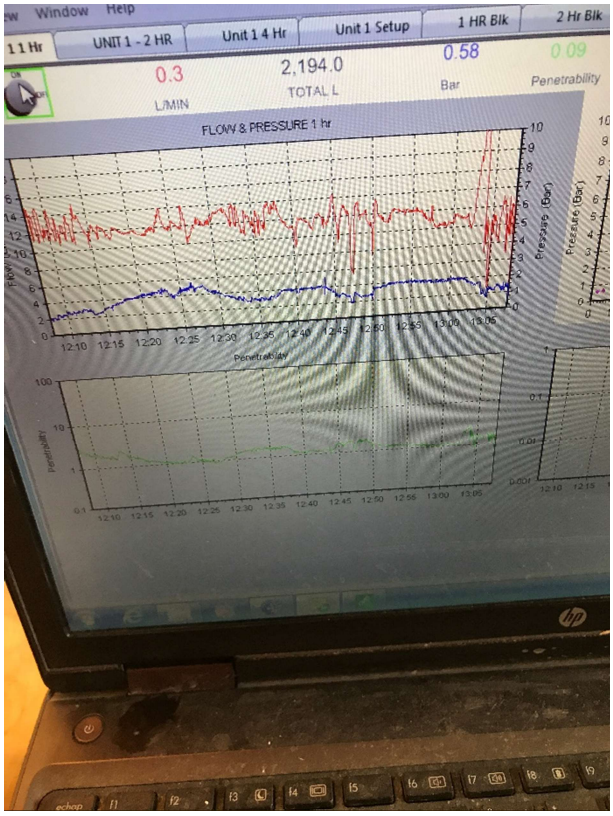
Issued by:	*Muhammad Saleem*	**14-01-2020**
	Signature	Date
Verified by:	*Tom Xue*	**14-01-2020**
	Signature	Date



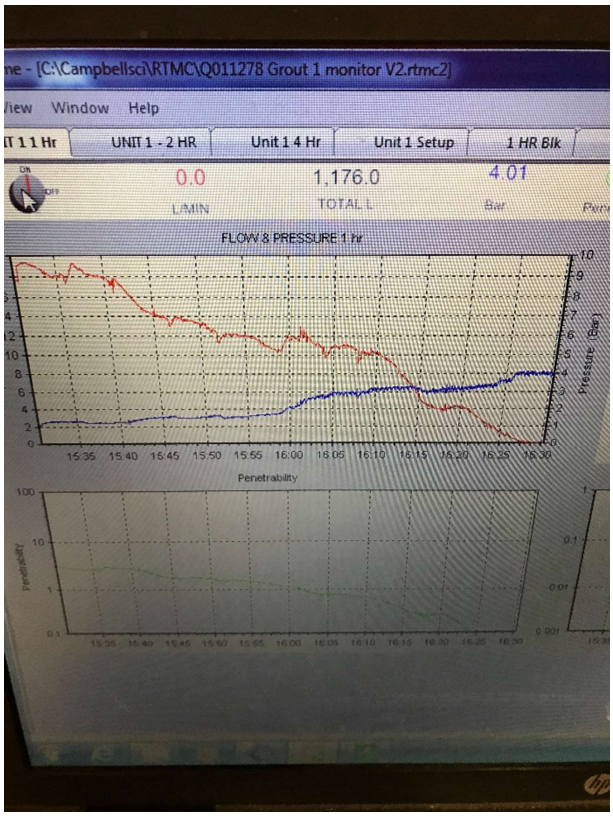
Screen shot of pressure and flow chart at T707.5



Screen shot of pressure and flow chart at T701.5



Screen shot of pressure and flow chart at T695.5



Screen shot of pressure and flow chart at T689.5

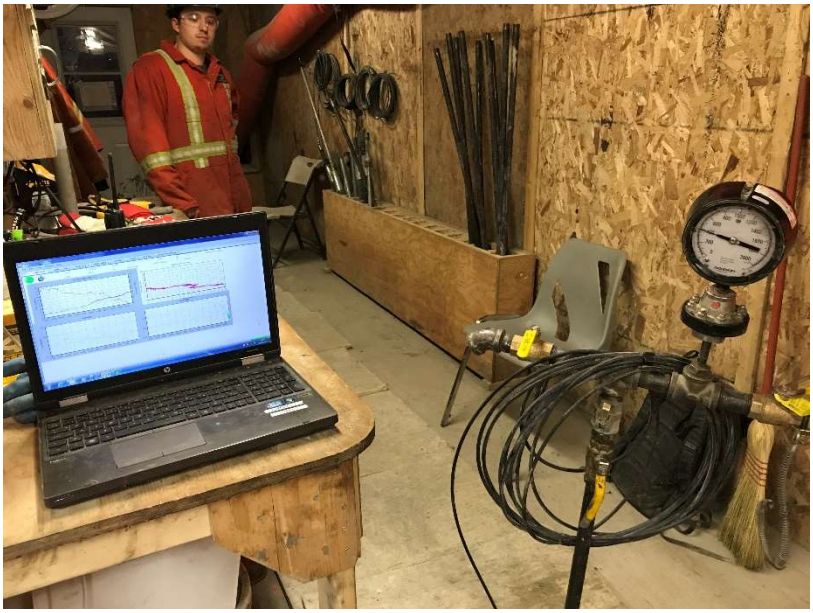


Photo showing gauge pressure t collar and Monitor screen at T689.5

SNC·LAVALIN

DAILY FIELD REPORT
(Detailed)

20200115
Document number

Date	Time (Start/End)	Project No.	Prepared by
2020-01-15	6:30 am 6:30 pm	669034	Muhammad Saleem

Project	Client
Whale Tail Dike Remedial Drilling and Grouting Works	Agnico Eagle

Consultant	Contractor
SNC-Lavalin	TCG(KCG)

Weather: ☒Sunny ☒Cloudy ☐Rain ☐Storm ☐Snow ☐Glaze

Wind: ☐None ☐Light ☒Moderate ☒Strong, ☐ gusts Temperature: -26 °C

Comments: Blizzard like conditions in the afternoon

Appendix: ☐Yes ☒No Pictures ☒Yes ☐No Inspection report or other:

Picture in the folder:

ACTIVITIES (indicate if test forms were used)

SNC-Lavalin' Activities

- Attended daily construction meeting at the Contractor trailer.
- Some coarse particles in the cement, advised KCG to make sure cement properly screened
- T611.5, T617.5. T623.5 and T629.5 were drilled by mistake while S614.5 and S626.5 were not grouted for 5 m grout length. KCG was required to issue a NCR.
- Reviewed GHD reports.
- Updated spread sheet and other QA related activities.

Work Method and Plan

- The holes where Tertiary holes were drilled without grouting Secondary holes. Tertiary holes will be grouted first by placing packer inside the adjacent secondary holes and secondary holes will be grouted after.

Bedrock Drilling.

- Extended casing 2.2 m and 1.5 m at T725.5 and T719.5 respectively to embed casing into the bedrock.
- After casing extended the hole completed for grout stage length of 5 m and cleaned.
- No water loss observed and hole stayed open to the bottom.

Bedrock Grouting.

T683.5 5m stage

- Packer was placed at the bottom of the casing.
- Prefilled 35 liters of Mix C grout to displace water and then after packer inflated, injected 370 liters of Mix C without celbex at pressure 0 to 0.2 bar.
- After 370 liters of Mix C injected, switched to Mix D.

- After Mix D started pressure stayed about 0.3 to 0.5 bar at flow rate of about 10 l/min and then started building up after about 800 liters of grout injected and took more than an hour to reach Pmax.
- While pressure started building up flowrate start decreasing simultaneously.
- Waited for 5 minutes after flow rate came below 3 l/min at Pmax.
- The closing pressure was 4.37 bar at 0.4 l/min.
- Total 1156 liters of grout injected (Mix C without celbex = 370 L + Mix D = 786 L)
- **Hole backfilled after grouting.**

T677.5 5m stage

- Packer was placed at the bottom of the casing.
- Prefilled 35.6 liters of Mix C grout to displace water and then after packer inflated, injected total of 68 liters of Mix C without celbex.
- After the grouting started pressure build up quickly and reached to Pmax within couple of minutes and flowrate dropped below 3 l /min.
- Waited for 5 minutes after flow rate came below 3 l/min at Pmax.
- The closing pressure was 3.52 bar at 0.1 l/min.
- **Hole backfilled after grouting.**

T671.5 5m stage

- Packer was placed at the bottom of the casing.
- Prefilled 36 liters of Mix C grout to displace water and then after packer inflated, injected total of 184.3 liters of Mix C without celbex.
- After about 120 liters of grout injected, pressure started build up gradually and reached to Pmax within 5 minutes.
- After Pmax reached flow rate dropped to below 3 l/ min within a minute.
- Waited for 5 minutes after flow rate came below 3 l/min at Pmax.
- The closing pressure was 3.3 bar at 0.5 l/min.
- **Hole backfilled after grouting.**

Grout Test

Mix C	Marsh Value = 61 sec.	S.G = 1.75	Temp. = 30.2 C	Bleeding = 1 %
Mix D	Marsh Value = n/a	S.G = 1.78	Temp. = 27.7 C	Bleeding = 0 %
Mix D	Marsh Value = n/a	S.G = 1.77	Temp. = 30.7 C	Bleeding =
Mix C	Marsh Value = 71 sec.	S.G = 1.74	Temp. = 20.4 C	Bleeding = 1 %

SITE GUIDELINES (guidelines, memos, modification proposals, etc.)

No	Subject	Given to

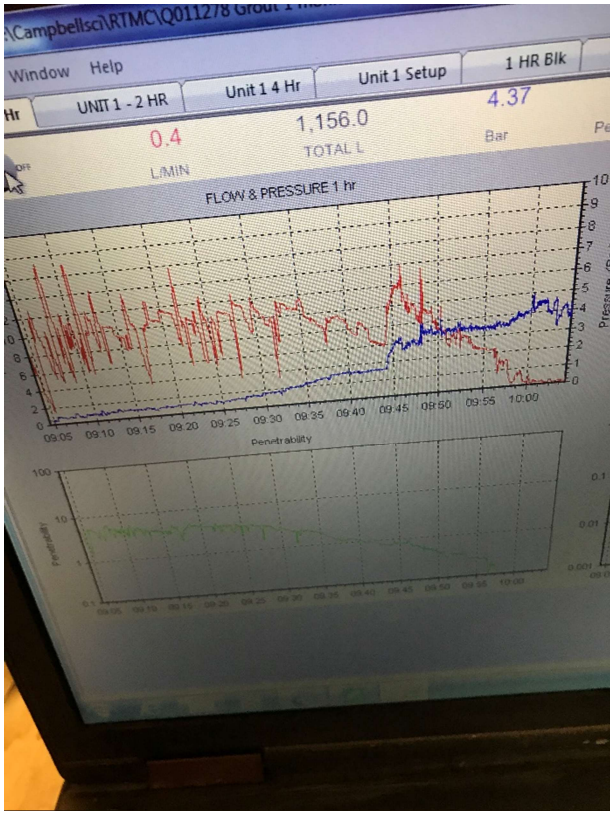
SPECIFIC ELEMENTS VERIFIED

Elements	Location, batch or other	Scope and comments
Grout Testing	Injection Unit	Marsh Funnel, Specific Gravity, Temperature, Bleed

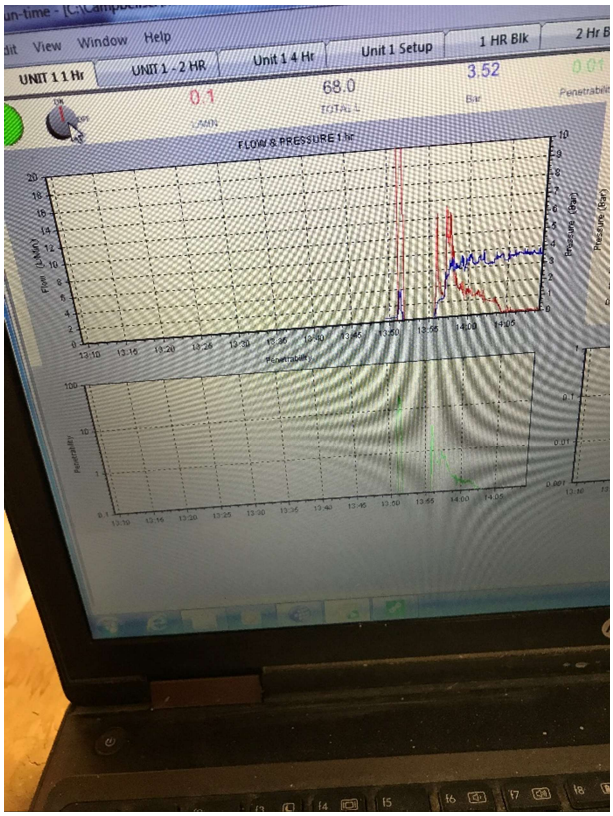
SAFE AND SAFETY REMARKS

- Dress up properly for extreme cold conditions

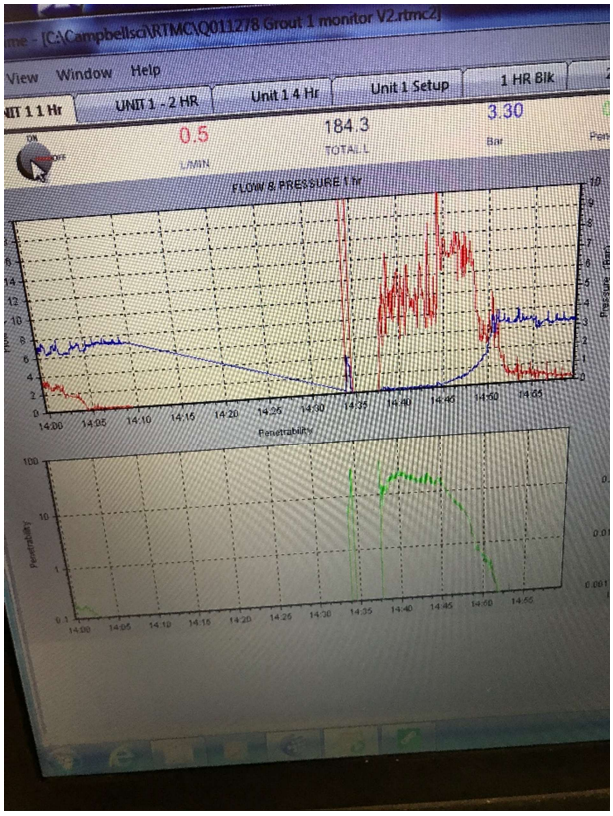
Issued by:	*Muhammad Saleem*	**15-01-2020**
	Signature	Date
Verified by:	*Tom Xue*	**15-01-2020**
	Signature	Date



Screen shot of pressure and flow chart at T683.5



Screen shot of pressure and flow chart at T677.5



Screen shot of pressure and flow chart at T671.5

Hole backfilled after pressure refusal at T677.5

SNC·LAVALIN

DAILY FIELD REPORT
(Detailed)

20200116
Document number

Date	Time (Start/End)	Project No.	Prepared by
2020-01-16	6:30 am 6:30 pm	669034	Muhammad Saleem

Project	Client
Whale Tail Dike Remedial Drilling and Grouting Works	Agnico Eagle

Consultant	Contractor
SNC-Lavalin	TCG(KCG)

Weather: ☒Sunny ☒Cloudy ☐Rain ☐Storm ☐Snow ☐Glaze

Wind: ☐None ☐Light ☒Moderate ☒Strong, ☐ gusts Temperature: -20 °C

Comments: Blizzard like conditions in the afternoon

Appendix: ☐Yes ☒No Pictures ☒Yes ☐No Inspection report or other:

Picture in the folder:

ACTIVITIES (indicate if test forms were used)

SNC-Lavalin' Activities

- Attended daily construction meeting at the Contractor trailer.
- Discussed the sequence of drilling and grouting of tertiary holes, AEM and SNC agreed with KCG proposal to continue drilling and grouting tertiary hole continuously unless found evidence of grout communication between the holes.
- Requested AEM to provide water test results for pH value and turbidity.
- KCG will complete the NCR for drilling tertiary holes without completing secondary holes (S614.5 and S626.5).
- Reviewed GHD reports.
- Updated spread sheet and other QA related activities.
- Attended weekly meeting between AEM and SNC.

Work Method and Plan

- As per KCG recommendation, AEM and SNC agreed to continue drilling and grouting tertiary holes in continuous sequence unless found evidence of grout communication between holes
- Packers shall be set in holes with grout communication to prevent grout loss from casing collar and allow hole be grouted at the same time.

Bedrock Grouting.

T665.5 5m stage

- Packer was placed at the bottom of the casing.
- Prefilled 36 liters of Mix C grout to displace water and then after packer inflated, injected 350 liters of Mix C without celbex at pressure 0 to 0.3 bar.

- After 350 liters of Mix C injected, switched to Mix D.
- After Mix D started pressure building up slowly and reached Pmax when about 2000 liters of grout has been injected but flow rate goes up and pressure dropped a bit.
- When pressure past 4 bars flow rate goes up to about 10 l/ min with pressure starts decreasing.
- Maintain the pressure at 3.5 bars to stabilize the flow rate and when flow rate goes below 0.5 l/ min slowly pressure increased to Pmax.
- Waited for 5 minutes after flow rate came below 3 l/min at Pmax.
- The closing pressure was 4.2 bar at 0.4 l/min.
- Total 2213 liters of grout injected (Mix C without celbex = 350 L + Mix D = 1863 L)
- No grout communication in tertiary hole or grout leakage observed.
- Checked grout elevation after packer removed and found at 10.46 m (casing bottom = 10.66 m) about 0.2 m above the bottom of the casing.
- **Hole backfilled after confirming grout elevation inside the casing.**

T659.5 5m stage

- Packer was placed at the bottom of the casing.
- Prefilled 40 liters of Mix C grout to displace water and then after packer inflated, injected total of 326.7 liters of Mix C without celbex.
- After the grouting started pressure build up gradually and reached to Pmax in about 25 minutes and flow rate dropped below 3 l /min.
- Waited for 5 minutes after flow rate came below 3 l/min at Pmax.
- The closing pressure was 3.42 bar at 0.5 l/min.
- **Hole backfilled after grouting.**

T653.5 5m stage

- Packer was placed at the bottom of the casing.
- Prefilled 37 liters of Mix C grout to displace water and then after packer inflated, injected 350 liters of Mix C without celbex at pressure 0 to 0. 5 bar.
- After 350 liters of Mix C injected, switched to Mix D.
- Pressure started building up slowly after Mix D started and took about 45 minutes to reach Pmax at 6 l/min flow rate.
- Pressure and flow rate fluctuate a bit and after about 10 minutes flow rate dropped to below 3 l/ min.
- Waited for 5 minutes after flow rate came below 3 l/min at Pmax.
- The closing pressure was 3.91 bar at 1.2 l/min and a total of 497 liters of Mix D was injected at closure
- Total 847 liters of grout injected (Mix C without celbex = 350 L + Mix D = 497 L)
- **Hole backfilled after grouting.**

T647.5 5m stage

- Packer stuck at about 2 m above the bottom of the casing and then Packer inflated at about 2.5 m above the bottom of the casing.
- Hole depth was checked and hole was open to 16.85 m depth below ground surface. Possible chunk of ice stuck with casing wall and didn't let the packer pass.
- Started injection with Mix C without celbex.
- After the grouting started pressure build up gradually and reached to Pmax in about 15 minutes and flowrate dropped below 3 l /min.
- Waited for 5 minutes after flow rate came below 3 l/min at Pmax.
- The closing pressure was 3.37 bar at 0.9 l/min.
- Total 165.7 liters of mix C grout without celbex injected.
- **Hole backfilled after grouting.**

Grout Test

Mix C	Marsh Value = 56 sec.	S.G = 1.74	Temp. = 29.6 C	Bleeding = 1 %
Mix D	Marsh Value = n/a	S.G = 1.74	Temp. = 22.9 C	Bleeding = 0 %
Mix D	Marsh Value = n/a	S.G = 1.75	Temp. = 24.9 C	Bleeding =
Mix C	Marsh Value = >180 sec.	S.G = 1.78	Temp. = 20.1 C	Bleeding =
Mix C	Marsh Value = 106 sec.	S.G = 1.76	Temp. = 22.5 C	Bleeding = 1 %
Mix D	Marsh Value = n/a	S.G = 1.74	Temp. = 22.1 C	Bleeding = 0 %

Filtration Test

Grout filtration test was performed on Mix D
Initial grout volume = 452ml
Volume of water ejected = 138 ml
Time to eject water = 25 min
Filtration coefficient = 0.061 min^-1/2

SITE GUIDELINES (guidelines, memos, modification proposals, etc.)

No	Subject	Given to

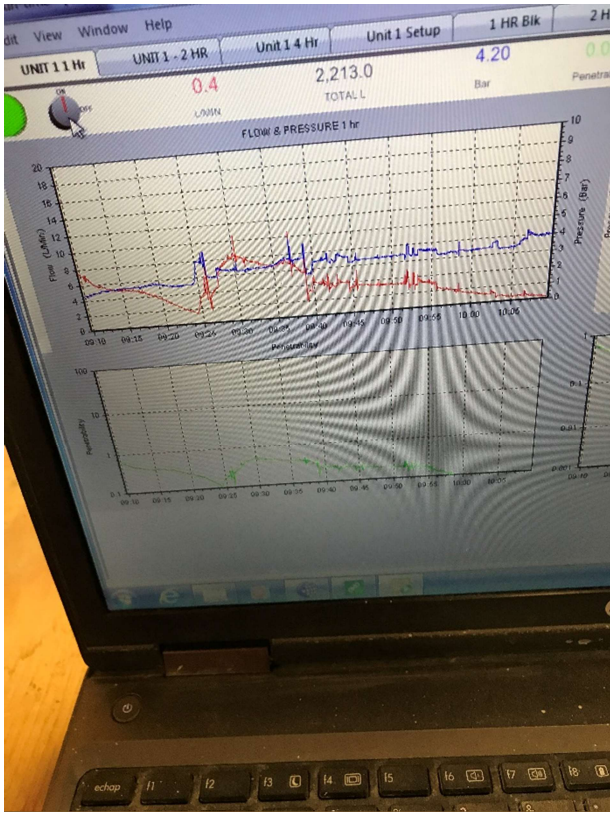
SPECIFIC ELEMENTS VERIFIED

Elements	Location, batch or other	Scope and comments
Grout Testing	Injection Unit	Marsh Funnel, Specific Gravity, Temperature, Bleed, Filtration test

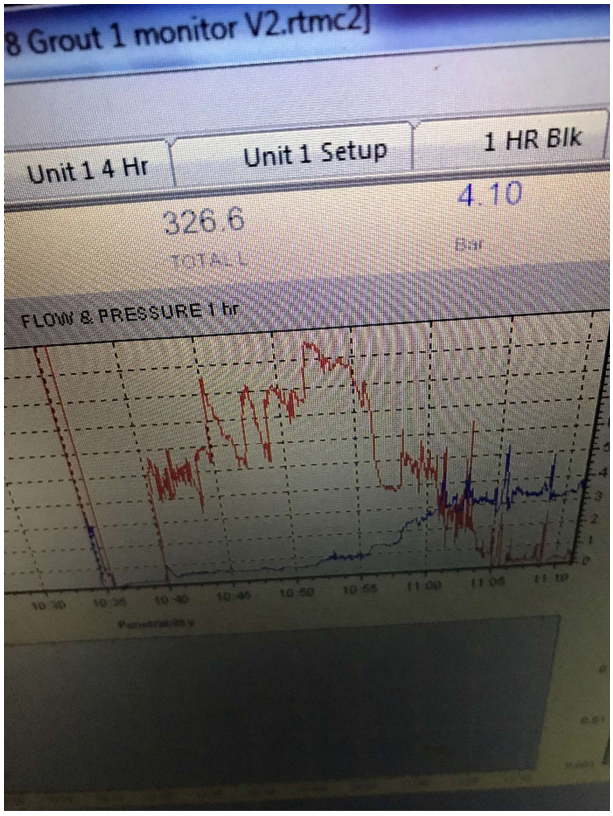
SAFE AND SAFETY REMARKS

- Dress up properly for extreme cold conditions

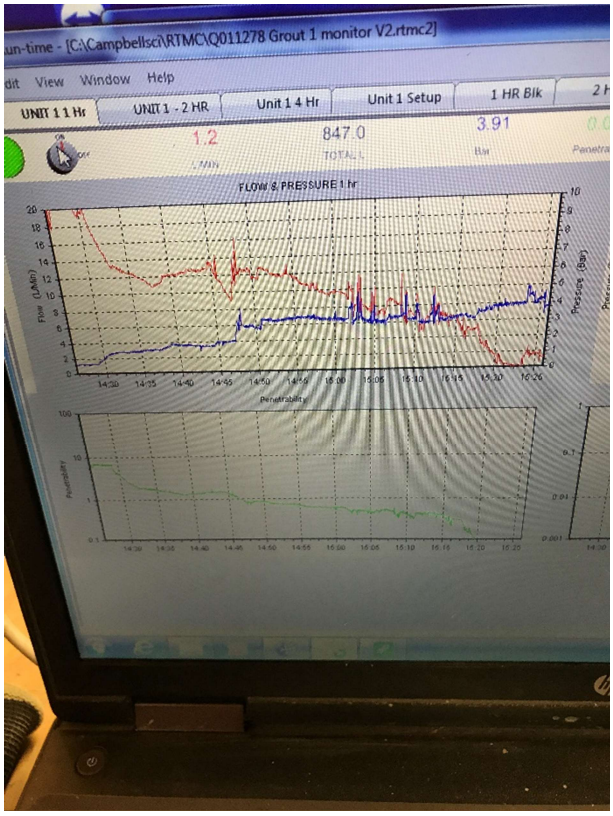
Issued by:	*Muhammad Saleem*	**16-01-2020**
	Signature	Date
Verified by:	*Tom Xue*	**16-01-2020**
	Signature	Date



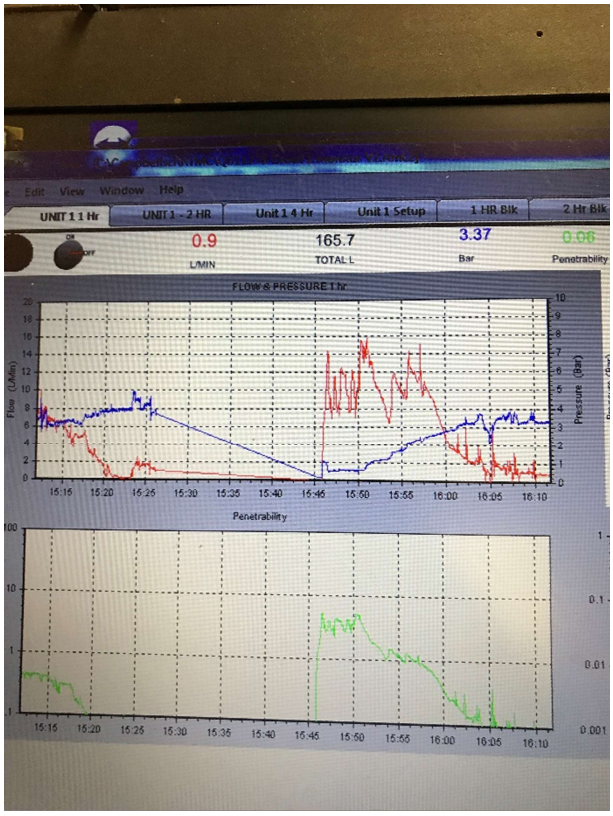
Screen shot of pressure and flow chart at T665.5



Screen shot of pressure and flow chart at T659.5



Screen shot of pressure and flow chart at T653.5



Screen shot of pressure and flow chart at T647.5

Performing Filtration test for Mix D

SNC·LAVALIN

DAILY FIELD REPORT
(Detailed)

20200117
Document number

Date	Time (Start/End)	Project No.	Prepared by
2020-01-17	6:30 am 6:30 pm	669034	Muhammad Saleem

Project	Client
Whale Tail Dike Remedial Drilling and Grouting Works	Agnico Eagle

Consultant	Contractor
SNC-Lavalin	TCG(KCG)

Weather: ☒Sunny ☒Cloudy ☐Rain ☐Storm ☐Snow ☐Glaze

Wind: ☐None ☐Light ☒Moderate ☐Strong, ☐ gusts Temperature: -24 °C

Comments: Blizzard like conditions in the afternoon

Appendix: ☐Yes ☒No Pictures ☒Yes ☐No Inspection report or other:

Picture in the folder:

ACTIVITIES (indicate if test forms were used)

SNC-Lavalin' Activities

- Attended daily construction meeting at the Contractor trailer.
- Discuss the water test results from yesterday and turbidity values fluctuate 6.2 in the morning and 15.8 in the afternoon.
- Reviewed GHD reports.
- Updated spread sheet and other QA related activities.
- Attended weekly meeting between AEM and SNC.

Work Method and Plan

- The holes where casing not plugged, packer will be placed half in the rock and half in the casing and then after refusal packer will be lifted to place inside the casing and continue grouting with adjusted pressure to grout ungrouted section and seal annular space between rock and casing.
- The holes where Tertiary holes were drilled without grouting Secondary holes. Tertiary holes will be grouted first by placing packer inside the adjacent secondary holes and secondary holes will be grouted after.

Bedrock Grouting.

T641.5 5m stage (This hole was completed while I was in the construction meeting)

- Packer was placed at the bottom of the casing.
- Prefilled 36 liters of Mix C grout to displace water and then after packer inflated, injected total of 111 liters of Mix C without celbex.
- After the grouting started pressure build up gradually and reached Pmax within 15 minutes and flow rate dropped gradually below 3 l /min after Pmax reached.
- Waited for 5 minutes after flow rate came below 3 l/min at Pmax.

- The closing pressure was 3.7 bar.
- **Hole backfilled after grouting.**

T634.5 5m stage

- Packer was placed at the bottom of the casing.
- Prefilled 36 liters of Mix C grout to displace water and then after packer inflated, injected total of 64.4 liters of Mix C without celbex.
- After the grouting started pressure build up quickly and reached Pmax within few minutes and flow rate dropped below 3 l /min.
- Waited for 5 minutes after flow rate came below 3 l/min at Pmax.
- The closing pressure was 3.49 bar at 0.2 l/min.
- **Hole backfilled after grouting.**

T725.5 5m stage

- Packer was placed half above and half below bottom of the causing due to casing was extended to reach bedrock and casing plug was not effective.
- Prefilled 37 liters of Mix C grout to displace water and then after packer inflated, injected total of 406 liters of Mix C without celbex.
- After about 250 liters of grout injected, pressure started building up and reached Pmax within five minutes and flow rate dropped to below 3 l /min.
- Grouting stopped after waiting for 5 minutes after flow rate came below 3 l/min at Pmax.
- 406 liters of grout injected at 3.25 bar at 0 l/min.
- Pulled packer up and inflated above the bottom of the casing.
- Resume grouting and injected another 66.3 liters of grout at 2.06 bar and stopped when flow rate reached 0 .0l/min.
- In total 472.2 liters mix C without celbex injected.

T719.5.

- At this location casing was not plugged, Packer was supposed to be placed half in the rock and half in the casing but due to miscalculation packer was fully placed in the rock. After about 520 liters of grout injected at just over 1 bar pressure bypass observed in the casing. When tried to pull the packer it stuck in the hole, tried with the loader but pipe came out from packer. Hole is backfilled with packer inside.
- The Adjacent holes grouted previously;
  - S722.5, pressure refusal and injected 585 liters grout
  - P716 .5, injected maximum volume and closed with celbex during re-grouting (1247 liters mix C with celbex)
  - T713.5 (hole on the other side of P716.5) has pressure refusal and only 161 liters of grout was injected.
- After reviewing the rock grouting data of the adjacent holes and discussion with Tom Xue (SNC designer), no replacement hole required at this location.
- Total 520 liters of Mix C without celbex injected at 1bar at 10 l/min prior to occur grout bypass

S686.5 5m stage

- This is test hole drilled on Jan 11, 2020 to see if hole was effectively grouted or not. Water was encountered at 14.2 m depth in the hole during drilling, so decided to re-grout this hole with Mix A.
- Prefilled 26 liters of Mix A grout to displace water and then after packer inflated, injected total of 61.7 liters of Mix A.
- After the grouting started pressure build up quickly and reached to Pmax in few minutes and flow rate dropped below 1 l /min gradually.
- Waited for 5 minutes after flow rate came below 1 l/min at Pmax.
- The closing pressure was 2.0 bar at 0.4 l/min.
- **Hole backfilled after grouting.**

Grout Test

Mix C	Marsh Value = 58 sec.	S.G = 1.73	Temp. = 32.8 C	Bleeding = 1.5 %
Mix C	Marsh Value = 86 sec.	S.G = 1.78	Temp. = 33.4 C	Bleeding =
Mix C	Marsh Value = 77 sec.	S.G = 1.76	Temp. = 27.3 C	Bleeding =
Mix A	Marsh Value = 32 sec.	S.G = 1.59	Temp. = 19.0 C	Bleeding = 2.5 %

SITE GUIDELINES (guidelines, memos, modification proposals, etc.)

No	Subject	Given to

SPECIFIC ELEMENTS VERIFIED

Elements	Location, batch or other	Scope and comments
Grout Testing	Injection Unit	Marsh Funnel, Specific Gravity, Temperature, Bleed,

SAFE AND SAFETY REMARKS

- Dress up properly for extreme cold conditions

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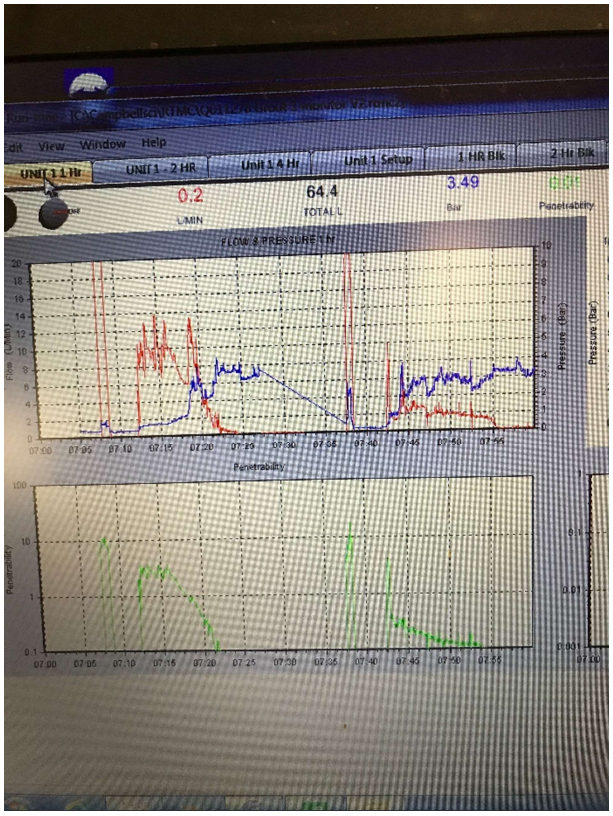
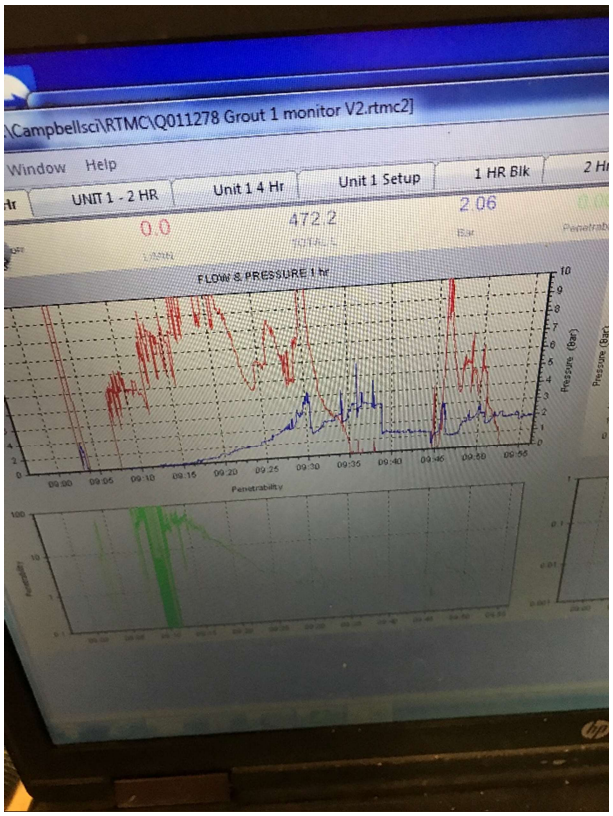
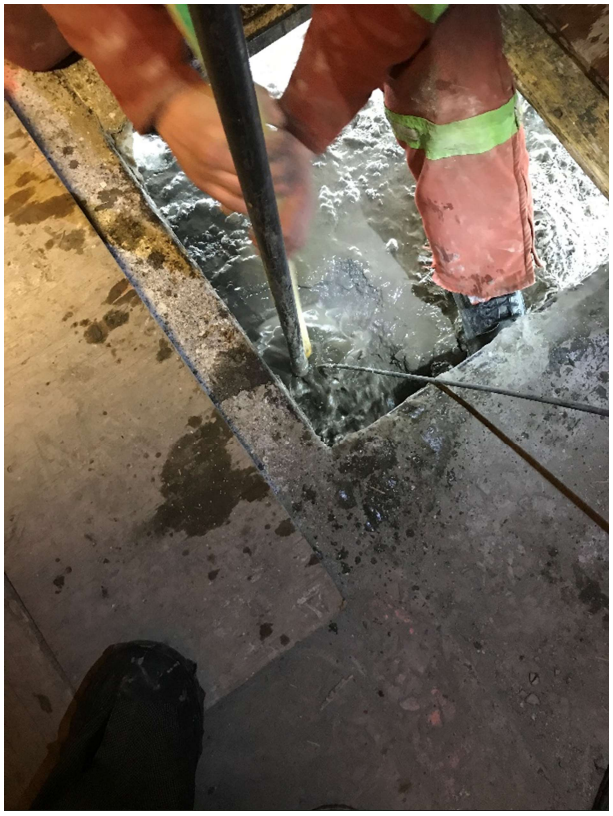
	Signature	Date
Verified by:	*Tom Xue*	**17-01-2020**
	Signature	Date



Screen shot of pressure and flow chart at T741.5 and T735.5 from left to right

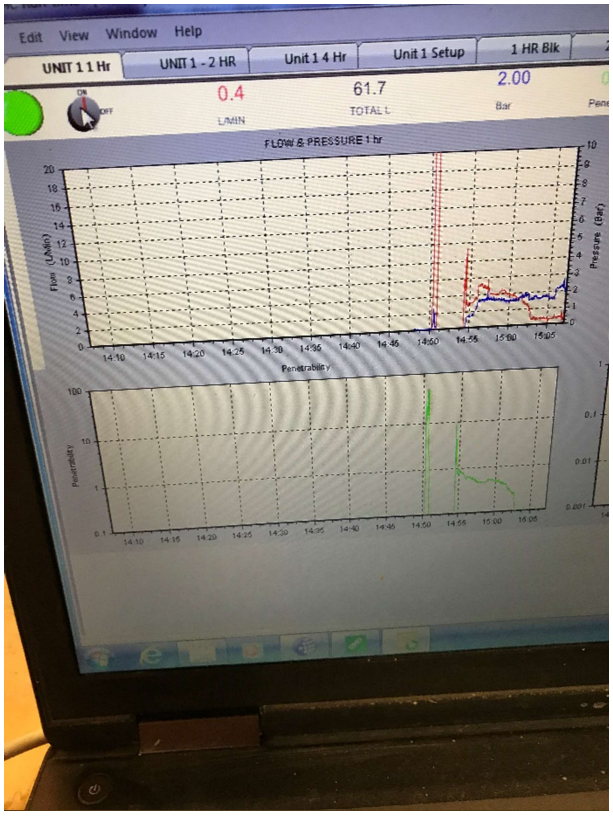


Screen shot of pressure and flow chart at T725.5



Grout bypass at T719.5

Pipe came out from packer during pulling with loader while packer still inside the hole at T719.5



Screen shot of pressure and flow chart at S686.5

SNC·LAVALIN

DAILY FIELD REPORT
(Detailed)

20200118
Document number

2020-01-18	6:30 am 6:30 pm	669034	Muhammad Saleem
Date	Time (Start/End)	Project No.	Prepared by

Whale Tail Dike Remedial Drilling and Grouting Works	Agnico Eagle
Project	Client

SNC-Lavalin	TCG(KCG)
Consultant	Contractor

Weather: ☐Sunny ☒Cloudy ☐Rain ☐Storm ☐Snow ☐Glaze

Wind: ☐None ☐Light ☒Moderate ☒Strong, ☒ gusts Temperature: -19 °C

Comments: Blizzard warning

Appendix: ☐Yes ☒No Pictures ☒Yes ☐No Inspection report or other:

Picture in the folder:

ACTIVITIES (indicate if test forms were used)

SNC-Lavalin' Activities

- Did not attended daily construction meeting due to grouting tertiary holes where secondary holes has not been grouted yet.
- Reviewed GHD reports.
- Updated spread sheet and other QA related activities.

Work Method and Plan

- The holes where Tertiary holes were drilled without grouting Secondary holes. Tertiary holes will be grouted first by placing packer inside the adjacent secondary holes and secondary holes will be grouted after.

Bedrock Grouting.

T629.5 5m stage

- Packer was placed at the bottom of the casing.
- Another packer was placed at the bottom of the casing of adjacent secondary hole S626.5 to avoid grout loss if communication happened during tertiary hole.
- Prefilled 34 liters of Mix C grout to displace water and then after packer inflated, injected total of 531.9 liters of Mix C without celbex.
- After about 200 liters of grout injected pressure started building up gradually and reached Pmax within 15 minutes and flow rate dropped gradually below 3 l /min after Pmax reached.
- Some pressure fluctuation observed up to 5 bar.
- Waited for 5 minutes after flow rate came below 3 l/min at Pmax.
- The closing pressure was 3.62 bar at 0.0 l/min
- **Hole backfilled after grouting.**

T623.5 5m stage

- Packer was placed at the bottom of the casing.
- Another packer was placed at the bottom of the casing of adjacent secondary hole S626.5 to avoid grout loss if communication happened during tertiary hole.
- Prefilled 36 liters of Mix C grout to displace water and then after packer inflated, injected total of 261.6 liters of Mix C without celbex.
- After the grouting started pressure build up gradually and reached Pmax within 15 minutes and flow rate dropped gradually below 3 l /min after Pmax reached.
- Waited for 5 minutes after flow rate came below 3 l/min at Pmax.
- The closing pressure was 3.61 bar at 0.0 l/min
- **Hole backfilled after grouting.**

Note:- No grout communication observed in S626.5 during injecting T623.5 and T629.5. Depth was measured in S626.5 after grouting completed in both adjacent tertiary hole and hole was open to the bottom.

Grout Test

Mix C	Marsh Value = 50 sec.	S.G = 1.76 Temp. = 28.9 C	Bleeding = 1 %
Mix C	Marsh Value = 86 sec.	S.G = 1.79 Temp. = 27.2 C	Bleeding =

Work stopped at 11 am due to Blizzard warning and no grouting after lunch.

SITE GUIDELINES (guidelines, memos, modification proposals, etc.)

No	Subject	Given to

SPECIFIC ELEMENTS VERIFIED

Elements	Location, batch or other	Scope and comments
Grout Testing	Injection Unit	Marsh Funnel, Specific Gravity, Temperature, Bleed,

SAFE AND SAFETY REMARKS

- Dress up properly for extreme cold conditions

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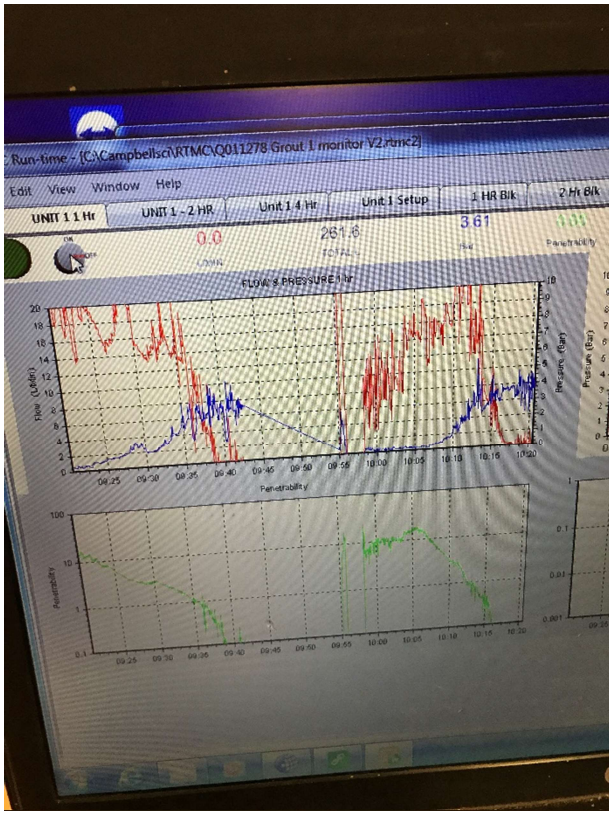
	Signature	Date
Verified by:	*Tom Xue*	**18-01-2020**
	Signature	Date



Screen shot of pressure and flow chart at T629.5 and T623.5 from left to right

Packer placed at S626.5 while injecting at T629.5

SNC·LAVALIN

DAILY FIELD REPORT
(Detailed)

20200119
Document number

Date	Time (Start/End)	Project No.	Prepared by
2020-01-19	6:30 am 6:30 pm	669034	Muhammad Saleem

Project	Client
Whale Tail Dike Remedial Drilling and Grouting Works	Agnico Eagle

Consultant	Contractor
SNC-Lavalin	TCG(KCG)

Weather: ☐Sunny ☒Cloudy ☐Rain ☐Storm ☐Snow ☐Glaze

Wind: ☐None ☐Light ☒Moderate ☒Strong, ☒ gusts Temperature: -20 °C

Comments: Blizzard warning

Appendix: ☐Yes ☒No Pictures ☒Yes ☐No Inspection report or other:

Picture in the folder:

ACTIVITIES (indicate if test forms were used)

SNC-Lavalin' Activities

- Attended daily construction meeting at the Contractor trailer.
- Reviewed GHD reports.
- Updated spread sheet and other QA related activities.
- Working on weekly report.

Driller cleaned three casings (S554.5. P448.5 and T533.5) for casing plug today afternoon after the weather improved.

No drilling and grouting activities due to Blizzard warning.

SITE GUIDELINES (guidelines, memos, modification proposals, etc.)

No	Subject	Given to

SPECIFIC ELEMENTS VERIFIED

Elements	Location, batch or other	Scope and comments

SAFE AND SAFETY REMARKS

- Dress up properly for extreme cold conditions

Issued by: *Muhammad Saleem* — Signature — **19-01-2020** — Date

Verified by: *Tom Xue* — Signature — **19-01-2020** — Date

SNC·LAVALIN

DAILY FIELD REPORT
(Detailed)

20200120
Document number

Date	Time (Start/End)	Project No.	Prepared by
2020-01-20	6:30 am 6:30 pm	669034	Muhammad Saleem

Project	Client
Whale Tail Dike Remedial Drilling and Grouting Works	Agnico Eagle

Consultant	Contractor
SNC-Lavalin	TCG(KCG)

Weather: ☒Sunny ☒Cloudy ☐Rain ☐Storm ☐Snow ☐Glaze

Wind: ☐None ☒Light ☐Moderate ☐Strong, ☐ gusts Temperature: -24 °C

Comments: Blizzard like conditions in the afternoon

Appendix: ☐Yes ☒No Pictures ☒Yes ☐No Inspection report or other:

Picture in the folder:

ACTIVITIES (indicate if test forms were used)

SNC-Lavalin' Activities

- Attended daily construction meeting at the Contractor trailer.
- Reviewed GHD reports.
- Updated spread sheet and other QA related activities.
- Completed and issued weekly report.

Work Method and Plan

- KCG plan is to complete grouting for S626.5 and then complete casing plug for those holes that were not plugged initially because needed cleaning.

Bedrock Grouting.

T626.5 2nd stage

- Packer was placed at the bottom of the casing.
- Prefilled 36 liters of Mix C grout to displace water and then after packer inflated, injected 350 liters of Mix C without celbex at pressure 0 to 0.3 bar.
- After 630 liters of Mix C injected, switched to Mix D.
- After Mix D started pressure building up slowly but stayed between 2.5 to 3 bar at 10 to 15 l/min flowrate.
- After Vmax reached reduced the flowrate to 5 l/ min and keep continue injecting some extra grout to see if pressure build up.
- At 5 liter per minute flowrate pressure stayed between 1 to 2 bars
- The closing pressure was 1.23 bar at 4.6 l/min flow rate.
- Total 1513 liters of grout injected (Mix C without celbex = 630 L + Mix D = 883 L)
- No grout communication or leakage observed.

- Checked grout elevation after about 4 hours and found at 11.94 m (casing bottom = 12.08 m) about 0.14 m above the bottom of the casing.

Hole will be backfilled tomorrow.

Casing Plug

6 casings plugged today using Mix C without Celbex.
Packer placed at about 2 m above the bottom of the casing and 15 liters grout injected prior to inflate packer.

T593.5 injected 18.3 liters grout @ 2.02 bar
T569.5 injected 197.0 liters grout @ 0.4 bar (reached maximum volume)
P560.5 injected 174.4 liters grout @ 0.0 bar (reached maximum volume)
S554.5 injected 22.7 liters grout @ 1.98 bar
P548.5 injected 173.1 liters grout @ 1.05 bar (reached maximum volume)
T533.5 injected 18.8 liters grout @ 1.69 bar

Waited for 5 minutes after flow rate reached below 1 l/min at Pmax. Otherwise stop injection when maximum volume reached at low pressure.

Grout Test

Mix C	Marsh Value = 77 sec.	S.G = 1.75 Temp. = 19.8 C	Bleeding = 1%
Mix D	Marsh Value = n/a.	S.G = 1.75 Temp. = 16.0 C	Bleeding = 0%
Mix C	Marsh Value = 60 sec.	S.G = 1.75 Temp. = 19.5 C	Bleeding =
Mix C	Marsh Value = 48 sec.	S.G = 1.76 Temp. = 21.8 C	Bleeding = 1%

SITE GUIDELINES (guidelines, memos, modification proposals, etc.)

No	Subject	Given to

SPECIFIC ELEMENTS VERIFIED

Elements	Location, batch or other	Scope and comments
Grout Testing	Injection Unit	Marsh Funnel, Specific Gravity, Temperature, Bleed,

SAFE AND SAFETY REMARKS

- Dress up properly for extreme cold conditions

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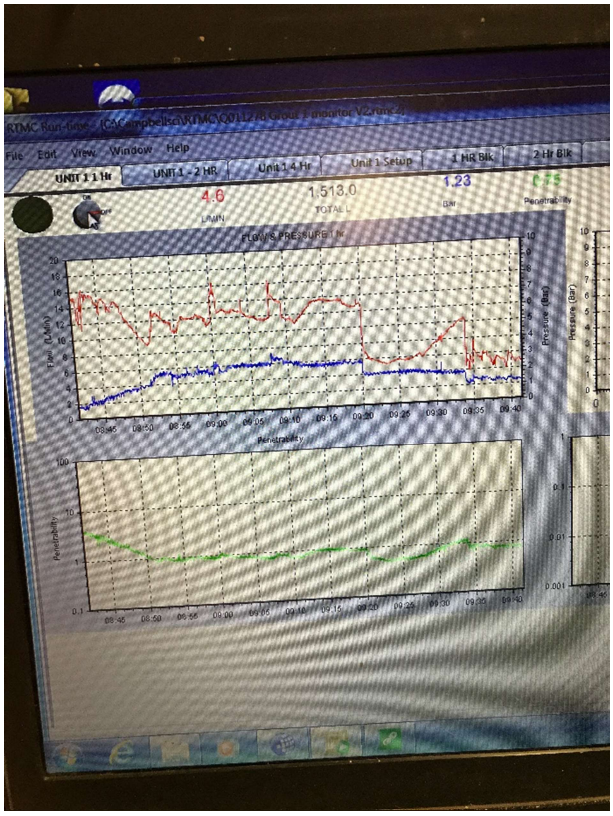
	Signature	Date
Verified by:	*Tom Xue*	**20-01-2020**
	Signature	Date



Screen shot of pressure and flow chart at S626.5

SNC·LAVALIN

DAILY FIELD REPORT
(Detailed)

20200121
Document number

2020-01-21	6:30 am 6:30 pm	669034	Muhammad Saleem
Date	Time (Start/End)	Project No.	Prepared by

Whale Tail Dike Remedial Drilling and Grouting Works	Agnico Eagle
Project	Client

SNC-Lavalin	TCG(KCG)
Consultant	Contractor

Weather: ☒Sunny ☒Cloudy ☐Rain ☐Storm ☐Snow ☐Glaze

Wind: ☐None ☒Light ☐Moderate ☐Strong, ☐ gusts Temperature: -32 °C

Comments: Blizzard like conditions in the afternoon

Appendix: ☐Yes ☒No Pictures ☒Yes ☐No Inspection report or other:

Picture in the folder:

ACTIVITIES (indicate if test forms were used)

SNC-Lavalin' Activities

- Attended daily construction meeting at the Contractor trailer.
- Reviewed GHD reports.
- Updated spread sheet and other QA related activities.

Work Method and Plan

- KCG plan is to complete grouting for S614.5, T611.5, T617.5 and S602.5 and drilling primary holes those plugged yesterday.
- The holes where Tertiary holes were drilled without grouting Secondary holes. Tertiary holes will be grouted first by placing packer inside the adjacent secondary holes and secondary holes will be grouted after.

Bedrock Drilling.

- Total 4 primary holes (P548.5, P560.5, P464.5 and P452.5) drilled today.
- All holes drilled into rock for 5 m grout length.
- Water loss observed in P452.5 at 14.8 m below ground surface (0.8 m above bottom of the hole).
- All holes stayed open to the bottom of the hole.

Bedrock Grouting.

T617.5 5m stage

- Packer was placed at the bottom of the casing.
- Another packer was placed at the bottom of the casing of adjacent secondary hole S614.5 to avoid grout loss if communication happened during grouting tertiary hole.

- Prefilled 33 liters of Mix C grout to displace water and then after packer inflated, injected total of 60.6 liters of Mix C without celbex.
- After the grouting started pressure build up quickly and reached to Pmax within 5 minutes and flow rate dropped simultaneously below 3 l /min after Pmax reached.
- Waited for 5 minutes after flow rate came below 3 l/min at Pmax.
- The closing pressure was 3.14 bar at 0.0 l/min
- No communication observed in adjacent holes.
- **Hole backfilled after grouting.**

T611.5 5m stage

- Packer was placed at the bottom of the casing.
- Another packer was placed at the bottom of the casing of adjacent secondary hole S614.5 to avoid grout loss if communication happened during grouting tertiary hole.
- Prefilled 32 liters of Mix C grout to displace water and then after packer inflated, injected total of 47.7 liters of Mix C without celbex.
- After the grouting started pressure build up quickly and reached Pmax within 5 minutes and flow rate dropped simultaneously below 3 l /min after Pmax reached.
- Waited for 5 minutes after flow rate came below 3 l/min at Pmax.
- The closing pressure was 3.5 bar at 1.3 l/min
- No grout communication observed in adjacent holes.
- **Hole backfilled after grouting.**

S614.5 2nd stage

- Due to very low grout take on adjacent tertiary holes, secondary hole grouted right after tertiary holes.
- Packer was placed at the bottom of the casing.
- Prefilled 20 liters of Mix C grout to displace water and then after packer inflated, injected total of 69.7 liters of Mix C without celbex.
- After the grouting started pressure build up quickly and reached Pmax within 5 minutes and flow rate dropped simultaneously below 3 l /min after Pmax reached.
- Waited for 5 minutes after flow rate came below 3 l/min at Pmax.
- The closing pressure was 4.01 bar at 0.0 l/min
- **Hole backfilled after grouting.**

S602.5 5 m stage

- Casing was not embedded into bedrock at this hole and driller encountered bedrock 2 m below the bottom of the casing.
- Checked the depth and hole was open to 19.5 m with water at 6.7 m below ground surface.
- As the hole stayed open, (KCG) decided to grout this if it works otherwise will extend the casing.
- Packer was placed at the bottom of the casing.
- Prefilled 46 liters of Mix C grout to displace water and then after packer inflated, injected 390 liters of Mix C without celbex at pressure 0 bar.
- After 390 liters of Mix C injected, switched to Mix D.
- After Mix D started pressure building up slowly but stayed about 0.3 bar at 20 l/min flow rate.
- Flow rate reduced to 10 l/min and slowly pressure build up to 0.5 bar.
- After 914 liters of grout injected stopped grouting for 2 hours.
- After grouting resumed, continue injection with mix D and pressure build up slowly to Pmax at 15 l/min.
- After about half an hour flow rate stabilized at 4 l/min at 4.5 bar. Waited for 15 minutes at this flow rate and pressure and then grouting stopped because having a doubt that grout might be leaking into fine filter.
- The closing pressure was 4.5 bar at 4.1 l/min flow rate.
- Total 1323 liters of grout injected (Mix C without celbex = 390 L + Mix D = 933.8 L)

- No grout communication or leakage observed.

Grout depth will be checked tomorrow prior to backfill this hole.

P584.5 5m stage

- Packer was placed at the bottom of the casing.
- Prefilled 36 liters of Mix C grout to displace water and then after packer inflated, injected total of 167.8 liters of Mix C without celbex.
- After the grouting started pressure build up gradually and reached Pmax within 10 minutes and flow rate dropped simultaneously below 3 l /min after Pmax reached.
- Some fluctuation in pressure observed between 3 to 5 bar at flow rate of less than 1 l/min.
- Waited for 5 minutes after pressure stabilized at flow rate below 3 l/min at Pmax.
- The closing pressure was 3.9 bar at 0.0 l/min
- **Hole backfilled after grouting.**

Grout Test

Mix C	Marsh Value = 88 sec.	S.G = 1.8 0 Temp. = 29.5 C	Bleeding = 1%
Mix C	Marsh Value = 67 sec.	S.G = 1.79 Temp. = 28.4 C	Bleeding =
Mix D	Marsh Value = n/a.	S.G = 1.72 Temp. = 29.4 C	Bleeding = 0%
Mix C	Marsh Value = 51 sec.	S.G = 1.72 Temp. = 15.9 C	Bleeding = 1%
Mix C	Marsh Value = 74 sec.	S.G = 1.76 Temp. = 15.9 C	Bleeding =

SITE GUIDELINES (guidelines, memos, modification proposals, etc.)

No	Subject	Given to

SPECIFIC ELEMENTS VERIFIED

Elements	Location, batch or other	Scope and comments
Grout Testing	Injection Unit	Marsh Funnel, Specific Gravity, Temperature, Bleed,

SAFE AND SAFETY REMARKS

- Dress up properly for extreme cold conditions

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	Signature	Date
Verified by:	*Tom Xue*	**21-01-2020**
	Signature	Date