

Document Front Sheet



NE-LCP Contractor/Supplier

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NE-LCP

REVIEW DOES NOT CONSTITUTE APPROVAL OF DESIGN DETAILS, CALCULATIONS, TEST METHODS OR MATERIAL DEVELOPED AND/OR SELECTED BY THE CONTRACTOR, NOR DOES IT RELIEVE THE CONTRACTOR FROM FULL COMPLIANCE WITH CONTRACTUAL OR OTHER OBLIGATIONS.

01 – REVIEWED AND ACCEPTED – NO COMMENTS
 02 – REVIEWED – INCORPORATE COMMENTS, REVISE AND RESUBMIT
 03 – REVIEWED - NOT ACCEPTED
 04 – INFORMATION ONLY
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Client Reference:

CH0031-001

Supply and Install Mechanical & Electrical Auxiliaries MF

Project Reference:

TC006

A1	07-Feb-18	Review	Simon Lambert, P. Tech  Project Controls	Julie Canuel, P.Eng  Project Controls	Tim Harrington, P.Eng  Project Manager
Rev.	Date	Issued for	Revised by	Checked by	Approval by

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1. Executive Summary

After a strong finish in 2017, Cahill-Ganotec has entered the 2018 New Year on the right foot. Aside from some early weather interruption for returning personnel, Contractor's start-up of site construction operations was executed without issue. A small site service crew were on site for facility / equipment start-up on January 4th, with direct construction crews back on task by January 5th.

Active construction activities included:

- Cable tray and support installations in various locations (EL -20, EL 6.5, EL 15.5, EL 25, EL 34).
- Cable tray grounding
- Masonry walls on EL 6.5 South Service Bay area – Compressor room / Wastewater room. Stairwell 2
- Electrical, telecoms rough-in (JBs and raceway) through Mezzanine 1.
- Duct work assembly and erection on elevations 6.5 and 15.5 (South Service Bay)
- Gypsum wall erection throughout Mezz 1 and Mezz 2. Stud framing and gypsum board installations.
- Piping system installations throughout dewatering gallery sump, EL 15.5 and EL 6.5. Support cantilevers erected at locations on Mezz 2 and EL 6.5.
- Construction support for elevator vendor TKE.

Contractor has mobilized 35T mobile crane to assist with material movement inside the powerhouse. Coordination remains a challenge but we continuously look for opportunities and windows to stock-pile material at work faces.

Mobilization update:

- Warehouse racking has been erected with storage / inventory area. Network communication has now been established at the warehouse location with management staff moved in to the offices at this location.
- Trailer set-up at the powerhouse continued through January 2018;
 - Management trailers are now occupied by Cahill-Ganotec HSE, superintendents, field engineers with networking established.
 - Additional lunchroom facilities and washcar facilities have been opened and now occupied. Construction power infrastructure in this trailer area continues with Cahill-Ganotec electrical crews battling the outdoor winter conditions.

January has been another successful period for procurement and engineering. Refer to Section 2 for notable achievements.

The content of this document outlines the achievements, activities, and challenges experienced during this reporting period.



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2. Significant Accomplishments

Contractor's noteworthy accomplishments achieved during this reporting period have been provided below for reference:

- Continuation of project team assignments including;
 - Site mobilization of project staff including Deputy Engineering Manager, Engineering Manager, Project Engineers / Students, and Procurement Lead.
 - Full time project assignments to date: 32 site staff, 8 off-site staff
- Mobilization progressed to 80.7% as of Feb 3rd 2018.
- Construction productivity continues to trend well; overall reported of 1.22 as of Jan 27th week ending.
- Workforce ramp up continues. Workforce has increased to 105 union workers deployed by the end of this period.
- Cable tray installations now active in several work areas.
- Early block work for walls at South Service Bay compressor / wastewater rooms is complete; stairwell 2 in progress.
- Key procurement package awards completed this month including wastewater and domestic water treatment systems, diesel fuel system, electric heat, shaft seal water system, etc.
- Procurement packages are nearing award including UPS systems, tagged field instruments, diesel generating unit, oil storage tanks.
- Onsite and offsite ITP development and approvals continue to progress well.
- Offsite quality surveillance of ductwork fabrication at Atlantica facilities in Nova Scotia. No significant findings and positive feedback received.
- 3rd party design:
 - Housekeeping pads and cable tray supports are nearing completion.
 - Fire detection visited site for area walkdown and layout plans are in progress.
 - Fire protection design is progressing well
 - Structural platform design for the electrical shaft are approved; fabrication to begin next period.
- Updated Control Schedule resubmitted – expecting Code 1 approval early next period. Project Execution Plan has been approved Code 1.
- No recordable safety incidents or hurts this period or to date on the project.
- First monthly mass safety meeting held with all Contractor management and trade personnel in attendance – Topic “Starting Strong”. Presentation was well received by all attendees.



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3. Challenges, Delays and Mitigation Measures

A summary of project challenges and delays identified and updated for this period has been provided below:

#	CHALLENGE / DELAY	MITIGATION MEASURE	UPDATE / RESOLUTION
1.	South Service Bay is currently fully occupied by Company Other Contractor which could prevent/delay Contractor materials movement and installation scope of work.	<ul style="list-style-type: none"> Issue has been communicated to Company. Continue to work with Company through SIMOPS and construction interface program. Material movement has been an early struggle. Access hatch being provided for Contractor between U3 and U4 GSUs 35T Crane mobilized and Contractor crane operator. 	Challenges continue. Material movement to Contractor work areas has been a struggle this period. More opportunities need to be given to Contractor to deliver and off-load material.
2.	ECN-0004 includes changes to electrical equipment and distribution. Will result in revisions necessary to supplier proposals and delay procurement.	<ul style="list-style-type: none"> Contractor reviewing changes within the package and have advised Company. Planning joint technical review sessions with Company / Engineers once shop drawings are released. 	<p>Technical review continues with the vendor to finalize package award which should be early next period. Joint shop drawing reviews will be planned for January 2017.</p> <p>Site queries required to address issues with available equipment (800A disconnect and inverter). To be addressed prior to package award.</p>
3.	Readiness of area handover for early work areas per Exhibit 9	<ul style="list-style-type: none"> Issue has been communicated to Company. Contractor is active in Company's interface process and SIMOPS coordination meetings. 	Ongoing. Dates for area access are changing and Contractor is doing its best to plan its work efficiently.
4.	New Construction Interface Procedure requires new requirements for area access and handover. Process rolled out after Exhibit 9 area access dates. Requested areas not yet transferred to Contractor. New HSE requirements being outlined to Contractor	<ul style="list-style-type: none"> Issue has been communicated to Company. Contractor to meet with Company to highlight concerns 	Company committed to revise interface process procedure to address concerns.
5.	Lighting parts spec is obsolete for various fixtures. Query to be issued for approval of fixture alternatives. Will delay vendor /	<ul style="list-style-type: none"> Issue has been communicated to Company. Site query with new fixture 	Company to review and respond to CHR. No approval yet.



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#	CHALLENGE / DELAY	MITIGATION MEASURE	UPDATE / RESOLUTION
	PO award and delivery.	<p>styles has been submitted and approved.</p> <ul style="list-style-type: none"> Contractor is submitted CHR to cover new fixtures. 	
6.	RFI-0039 Response: Anti-condensation heaters requested for all electrical and mechanical equipment cabinets / panels. Could result in scope / cost growth, equipment delays, certification issues.	<ul style="list-style-type: none"> Issue has been communicated to Company. Contractor has met with Company and Engineer to highlight concerns. 	<p>Contractor to draft a list of panels / equipment for Engineer consideration to eliminate heaters in temperature controlled environments.</p> <p>List being developed and prepared.</p>
7.	Cable tray installation on EL 15.5 delayed by fireproofing defect (by others)	<ul style="list-style-type: none"> FWO-0002 issued to Contractor to remediate some of the areas. CHR to follow for the remaining work areas. 	CHR submitted. Company requested updated version based on labour actuals to date and balance of remaining scope.
8.	Perimeter wall erection at SSB area EL 25 delayed due to restricted access.	<ul style="list-style-type: none"> Issue has been communicated to Company. Access has been requested through SIMOPS and interface meetings 	Technical challenge has been identified; Mezz floor section not yet complete to allow erection of walls. Site query has been issued and a letter to clarify path forward and risk on schedule milestone.
9.	Company mandating a Permit to Work process on site for all contractors. Potential risk for work production efficiency.	<ul style="list-style-type: none"> Contractor has raised concerns to Company implementing PTW this early in the project. 	<p>CLOSED:</p> <p>PTW now implemented and training provided. Contractor to monitor any impact on performance and schedule.</p>
10.	Company advised Contractor that it has suspended neutral funding for PLA labour until it is satisfied with payroll back-up	<ul style="list-style-type: none"> Contractor has raised significant concerns on impacts on cash flow. Sponsors have met to discuss the issue. Contractor exhausting significant resources to implement programming for new payroll report formats requested by Company. Contractor has recommended interim invoice back-up paperwork as a solution. 	Contractor and Company sponsors met to resolve. Follow-up meeting held with finance reps present to review and confirm invoice back-up. Neutral funding expected to resume in February 2018.
11.	Company and Contractor not aligned on definition of Disallowed Items for field modification work.	<ul style="list-style-type: none"> Contractor has issued a letter to clarify its position on the subject. 	Discussions continuing. Definition of Disallowed Items remains unclear and one of contention.
12.	Cable tray support designs have become more complex than originally anticipated and will	Issue communicated to Company. CHRs to follow to quantify issue.	Contractor to clarify.



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#	CHALLENGE / DELAY	MITIGATION MEASURE	UPDATE / RESOLUTION
	require more effort to complete; <ul style="list-style-type: none"> Beam connection point elevations vary at locations. Type 2 supports need to be constructed from reinforced 4 x 4 angle. Contractor will provide information to Company through change management process.		
13.	Company and Contractor structural engineers not yet aligned on tray support design assumptions / approach.	Meeting to be held between management and engineering groups to discuss / clarify. Structural design calcs to be resubmitted next period.	Contractor to issue new report for Company review.

4. Health and Safety

4.1 Safety Statistic

BUSINESS UNIT/PROJECT: Lower Churchill Project			WEEK ENDING: Jan 27 2018
LOCATION: Muskrat Falls (Not on site) / St. John's Office			CONTRACTOR: Cahill Ganotec
MANHOURS	Monthly	YEAR TO DATE	PROJECT TO DATE
	15,461	15,461	43,214
LEADING INDICATORS	Monthly	YEAR TO DATE	PROJECT TO DATE
High Potential Near Miss*	0	0	0
Near Miss Incidents	0	0	0
Orientations Completed	25	25	109
FLRA's Completed	592	592	1,418
TSAs Completed	1	1	11
Worksite Inspections	4	4	27



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LAGGING INDICATORS	Monthly	YEAR TO DATE	PROJECT TO DATE
First Aid Cases	0	0	0
Medical Aid Cases *	0	0	0
Modified Work Injury Cases *	0	0	0
Lost Time Incidents (LTI) *	0	0	0
Fatalities *	0	0	0
Modified Work Days	0	0	0
Lost Time Days	0	0	0
Medical Aid Frequency	0.00	0.00	0.00
Modified Work Injury Frequency	0.00	0.00	0.00
LTI Frequency	0.00	0.00	0.00
*Recordable Incident Frequency	0	0	0
Property/Equipment Damage	0	0	0
Vehicle Incidents	0	0	0
Safety Absolute Incidents	0	0	0
Security Incidents	0	0	0
Hours since LTI	43,214		

5. Project Progress and Schedule

5.1 Progress Update

- Contractor re-submitted CSBD, SDCP and CS to company on January 25th, incorporating Company’s Comments.
- Metal Stud Wall erection continued @ Elevation 25, continuing through Units 1-2. Metal Stud Wall Erection commenced @ Elevation 34.47, SSB.
- Gypsum paneling continued @ Elevation 25 in South Service bay
- Cable tray & supports continued @ Elevation 6.5 downstream of column A (Unit 1 through Unit 4). Cable tray supports continued @ Mezz 1 (El 25) between grid lines C-E, Lines 1-16. Cable Tray started @ Elevation -20.3 from Unit 1 trough Unit 4. Cable tray supports commenced at Mezz 2, SSB & U1.



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- Concealed conduit and boxes for electrical services started @ Elevation 25 between grid lines 1-7.
- Concrete block wall erection completed @ Elevation 6.5 for the compressor room, only North /South walls remain, which will be completed after equipment installed in rooms. Concrete block wall erection started @ Stairwell 2 on Elevation 6.5.
- Piping installation continued @ Elevations -20.3, 0.00, 6.5 and is progressing well. Piping started at El. 15.5 in the pipe rack, Units 1-4.
- Ducting continued assembly & installation@ Level 0 & 6.5. Ducting started on Elevation 15.5, with assembly & installation in the South Service Bay.

5.2 Progress Curves

See Attachment 1

5.3 Discipline Histograms

See Attachment 1

5.4 Commodity Reporting

See Attachment 2

5.5 Performance Reporting

See Attachment 8

5.6 Critical Path / Longest Path Analysis

See Attachment 3

5.7 P6 Control Schedule

See Attachment 4



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6. Quality Statistics

6.1 Quality Assurance / Quality Control Update

Key activities in progress for this period include:

- Inspection and Test Plan Submission for Electrical Equipment Installation:
 - Powerhouse Equipment - MFA-CG-SD-3340-QA-Q04-0002-01, Rev A1
 - Powerhouse Isolated Phase Bus - MFA-CG-SD-3340-QA-Q04-0003-01, Rev A1
 - Powerhouse Generator Circuit Breaker - MFA-CG-SD-7655-QA-Q04-0001-01, Rev A1
- Material Preservation and Storage Plan submitted for client review
- Started weekly Quality meetings with Company to discuss upcoming activities and close open issues
- Company acceptance of Contractor to self-perform onsite MPI and LPI
- LCP Supplier Surveillance:
 - Atlantica – No findings noted

Upcoming activities planned for next period include:

- Develop offsite surveillance plan
- Develop onsite housekeeping pad ITP
- Company acceptance of Architectural works completed to date
- Submission of Dossier Table of Contents (R04) for on and offsite works

6.2 Quality Statistics

Non-Conformance Reports summary.

This Period				To Date			
Total	Open	Closed	Void	Total	Open	Closed	Void
1	1	1	0	4	3	0	0

6.3 Testing and Hold Points

- N/A



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7. Engineering

7.1 Engineering Update

Engineering is ongoing for all packages except detection/leak. Housekeeping Pad Design Complete. Request for pricing is out for the Leak Detection/Fuel Monitoring panel.

Package	% Complete	Completion Date			
		Plan	Prev. Forecast	Curr. Forecast	Actual
Fire Protection	35%	01-03-2018	01-03-2018	26-03-2018	
Fire Detection	33%	01-03-2018	01-03-2018	15-03-2018	
EMCS (HVAC Control)	27%	01-04-2018	01-04-2018	28-09-2018	
ATS & Load Management	38%	01-05-2018	01-05-2018	01-05-2018	
Lighting Control Panels	70%	30-01-2018	30-01-2018	15-02-2018	
Mechanical Control Panels	19%	28-02-2018	28-02-2018	31-05-2018	
Structural Platforms	40%	01-03-2018	01-03-2018	10-03-2018	
Leak Detection	0%	30-03-2018	30-03-2018	01-05-2018	
Fuel Monitoring	0%	30-03-2018	30-03-2018	01-05-2018	
HouseKeeping Pads	100%	20-01-2018	20-01-2018	03-02-2018	
Temp Power	100%	25-09-2017	25-09-2017	15-10-2017	12-10-2017
HVAC Restraints	19%	25-09-2017	25-09-2017	31-03-2018	
Tray Supports	95%	15-10-2017	15-10-2017	19-02-2018	

7.2 Interface Management

All interfaces are now closed. See Details below:

CH0031-001 INTERFACE REGISTER					REQUEST		RESPONSE		
ITEM	INTERFACE NUMBER (TIC-CGP-MFL-###)	INTERFACE DESCRIPTION	INTERFACE TYPE	STATUS	REQUEST DATE	REQUESTING TECHNICAL CONTACT	RESPONSE DATE	DATE CLOSED	RESPONSE TECHNICAL CONTACT
0001	TIC-CGP-MFL-001	HVAC Unit Install-Portion of roof to remain open	Hard Interface	Closed	04-Aug-2017	J. Curlew	14-Aug-2017	14-Aug-2017	A. Mitchelmore
0002	TIC-CGP-MFL-002	Connections from ATS/Load Management System to Unit Hoist MCCs	Hard Interface	Closed	26-Oct-2017	J. Curlew	15-Dec-2017	20-Jan-2018	A. Mitchelmore
0003	TIC-CGP-MFL-003	Details for piping supplied by others for system 3448	Hard Interface	Closed	27-Oct-2017	J. Curlew	06-Dec-2017	20-Jan-2018	A. Mitchelmore



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7.3 Site Queries

The table below outlines the status of queries for this period. 3 queries are open now. Query #87, concerning the missing structure to complete the control room wall, is still open.

CAHILL RFI NO.	Ref Sub Query	NALCOR Site Query #	TRANSMITTAL DATE	DISCIPLIN E	Prepared By	DESCRIPTION	REPLY REQUESTED	REPLY DATE
TC-006-RFI-G-0087	1	SQY-CH00310001-0087	08-Jan-18	ARCH	Curtis Doyle	North Wall South Service Bay Erection	15-Jan-18	
TC-006-RFI-G-0088	2	SQY-CH00310001-0088	08-Jan-18	PIPE	Perry Snook	Self-perform NDE	08-Jan-18	11-Jan-18
TC-006-RFI-G-0089	1	SQY-CH00310001-0089	08-Jan-18	ELEC	David Bartlett	800A DC Disconnect switch un available	15-Jan-18	16-Jan-18
TC-006-RFI-G-0090	1	SQY-CH00310001-0090	08-Jan-18	ELEC	Justin Curlew	Telecoms Panel - Fans	12-Jan-18	16-Jan-18
TC-006-RFI-G-0091	1	SQY-CH00310001-0091	12-Jan-18	ELEC	David Bartlett	Radiant Heating Panel - Breaker in consistencies	17-Jan-18	19-Jan-18
TC-006-RFI-G-0092	1	SQY-CH00310001-0092	14-Jan-18	MECH	Jennifer Careen	W	29-Jan-18	26-Jan-18
TC-006-RFI-G-0093	1	SQY-CH00310001-0093	14-Jan-18	MECH	Etienne Fortin	Nameplates	29-Jan-18	29-Jan-18
TC-006-RFI-G-0094	1	SQY-CH00310001-0094	19-Jan-18	PIPE	Daniel Parsons	Pipe spacing from walls and beams.	26-Jan-18	22-Jan-18
TC-006-RFI-G-0095	1	SQY-CH00310001-0095	19-Jan-18	ELEC	David Bartlett	Interlock Scheme for Esencial MCC	26-Jan-18	29-Jan-18
TC-006-RFI-G-0096	1	SQY-CH00310001-0096	19-Jan-18	ELEC	David Bartlett	Emergency lighting Inverter Cable Sizes	24-Jan-18	01-Feb-18
TC-006-RFI-G-0097	1	SQY-CH00310001-0097	20-Jan-18	ELEC	Justin Curlew	Cable Tray Grounding Intervals	04-Feb-18	26-Jan-18
TC-006-RFI-G-0098	1	SQY-CH00310001-0098	20-Jan-18	ELEC	Justin Curlew	Automatic Transfer System IRIG B Fibre Network	04-Feb-18	26-Jan-18
TC-006-RFI-G-0099	1	SQY-CH00310001-0099	21-Jan-18	ELEC	Justin Curlew	Cable Tray Elevation Mezzanine 1	04-Feb-18	29-Jan-18
TC-006-RFI-G-0100	1	SQY-CH00310001-0100	21-Jan-18	MECH	Etienne Fortin	Painting Requirements Piping System 3437	04-Feb-18	26-Jan-18
TC-006-RFI-G-0101	1	SQY-CH00310001-0101	22-Jan-18	MECH	Etienne Fortin	Confirmation of filtration rate	05-Feb-18	31-Jan-18
TC-006-RFI-G-0102	1	SQY-CH00310001-0102	23-Jan-18	PIPE	Daniel Parsons	VBA15 & VBA16	05-Feb-18	29-Jan-18
TC-006-RFI-G-0103	1	SQY-CH00310001-0103	24-Jan-18	ARCH	Jessica Foley	Fireproofing information	04-Feb-18	
TC-006-RFI-G-0104	1	SQY-CH00310001-0104	25-Jan-18	ELEC	Justin Curlew	Use of Hilti studs	26-Jan-18	26-Jan-18
TC-006-RFI-G-0105	1	SQY-CH00310001-0105	25-Jan-18	ELEC	Brandon Hynes	Tower Clamp Detail	08-Feb-18	01-Feb-18
TC-006-RFI-G-0106	1	SQY-CH00310001-0106	26-Jan-18	PIPE	Daniel Parsons	Modify Supports	08-Feb-18	



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7.4 ECN

There are 6 ECN's in the system. All ECN's are in various stages of the change process.

NALCOR Engineering Change Notice #	RECEPTION DATE	DISCIPLINE	DESCRIPTION	REPLY REQUESTED	REPLY DATE
ECN-CH0031001-0001	1-Sep-17	ARCH	Revised Architectural Technical Specification (cementitious fireproofing)	15-Sep-17	
ECN-CH0031001-0002	19-Sep-17	PIPE	Revised Mechanical Technical Specification (Ball Valve VBA10)	3-Oct-17	
ECN-CH0031001-0003	29-Sep-17	PIPE	Revised Isometric Drawing (Addition of Butterfly Valve - VBU01)	13-Oct-17	
ECN-CH0031001-0004	29-Sep-17	ELEC	Revised Electrical Drawing Submissions	13-Oct-17	
ECN-CH0031001-0005	20-Oct-17	ARCH	Elevator Masonry Walls - Architectural Drawing	3-Nov-17	
ECN-CH0031001-0006	2-Jan-18	PIPE	3443-3-SB12-5007 added to CH0031's scope	16-Jan-18	

7.5 Concessions

There are 28 Concessions in the system. 8 are open. See details in below table from last period. 3 recent concessions have been rejected.

CAHILL CON NO.	TRANSMITTAL DATE	DISCIPLINE	Prepared By	DESCRIPTION	REPLY REQUESTED	REPLY DATE
TC-006-CON-G-0018	14-Jan-18	Mechanical	Jennifer Careen	VBA09 Valve Replacement	24-Jan-18	
TC-006-CON-G-0019	14-Jan-18	Mechanical	Jennifer Careen	VCH02 Valve Replacement	24-Jan-18	
TC-006-CON-G-0020	18-Jan-18	Commissioning	Rachel Tobin	Normal and emergency functional performance testing – mechanical systems	1-Feb-18	1-Feb-18
TC-006-CON-G-0021	18-Jan-18	Electrical	Rachel Tobin	00A DC Disconnect Switch	1-Feb-18	1-Feb-18
TC-006-CON-G-0022	18-Jan-18	Electrical	Rachel Tobin	Cable numbering system	1-Feb-18	1-Feb-18
TC-006-CON-G-0023	18-Jan-18	Civil / Architectural	Rachel Tobin	Oversight for resilient tile flooring installations	1-Feb-18	
TC-006-CON-G-0024	18-Jan-18	Mechanical	Rachel Tobin	Pipe support and hanger manufacturer site visits	1-Feb-18	
TC-006-CON-G-0025	18-Jan-18	Electrical	Rachel Tobin	Anti-condensation heaters in small control stations	1-Feb-18	
TC-006-CON-G-0026	20-Jan-18	Mechanical	Etienne Fortin	Component Availability	27-Jan-18	
TC-006-CON-G-0027	24-Jan-18	Electrical	Brad Guy	Substitute the Valmatic Series 200 for the Valmatic Series 800.	1-Feb-18	
TC-006-CON-G-0028	26-Jan-18	Piping	Daniel Parsons	VCH15 Valve Replacement	3-Feb-18	



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7.6 SDRL Documents

The following documentation has been submitted for ongoing work scopes. Documentation being submitted to support construction scopes. 40 Datasheets (F01 and F03) with company. Full Summary below:

SDRL Code	QTY Submitted	With CG to incorporate comments	Remarks
A	34	13	4 with Company for review
B	15	2	13 are Code 1
D	23	5	3 with Company for review
E	32	32	All Code 3
F	54	4	40 with Company for review
G	1	0	With Company for review
H	2	2	
K	5	0	Code 1
M	2	0	Code 1
Q	15	3	2 with Company for review
R	1	0	Code 1

8. Change Request Status

Change Orders

CHO-CH0031001-0001 – Draft Tube Temporary Shelter. Change Order was cancelled by Company.

CHO-CH0031001-0002 – Revision to Architectural Specification – Cementitious Fireproofing. Change Order CHO-CH0031001-0002 was issued for -\$140,000 and was executed on December 7, 2017.

CHO-CH0031001-0003 – ECN-0002 & ECN-0003 Additional Valves. Change Order not executed and is pending resolution of the Site Installation/Staff costs issue.

CHO-CH0031001-0004 – ECN-0005 Elevator Masonry Walls. Change Order not executed and is pending resolution of the Site Installation/Staff costs issue.

CHO-CH0031001-0005 – Temporary Guardrails and TKE Support. Change Order not executed and is pending resolution of the Site Installation/Staff costs issue.



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Change Requests

CHR-CH0031001-0001 – Draft Tube Temporary Shelter. Change Request CHR-CH0031001-0001 has been cancelled by Company.

CHR-CH0031001-0002 – Structural Member Enclosures. Change Request CHR-CH0031001-0002 has been cancelled by Company.

CHR-CH0031001-0003 – Revision to Architectural Specification – Cementitious Fireproofing. Change Request CHR-CH0031001-0003 was valued at -\$140,000. Change Order CHO-CH0031001-0002 was issued for same value and was executed on December 7, 2017.

CHR-CH0031001-0004 – Temporary Power Supply to Powerhouse Elevator Machine Room. Change Request CHR-CH0031001-0004 has been cancelled by Company.

CHR-CH0031001-0005 – Relocation of Site Trailers near Powerhouse. Rejected by Company. Contractor resubmitted this Change Request on January 12, 2017 valued at \$190,444.83. Awaiting Company response.

CHR-CH0031001-0006 – ECN-0002 & ECN-0003 Additional Valves. Company issued Change Order CHO-CH0031001-0003 at a value of \$1,266.69. CO not executed and is pending resolution of the Site Installation/Staff costs issue.

CHR-CH0031001-0007 – ECN-0004 Revised Electrical Drawings. Contractor provided a Change Request Response proposal for the majority of the work in Change Request on ECN 0004 on November 16, 2017. Contractor will submit a subsequent revision to the Change Request Response upon receipt of the outstanding information. Company rejected the initial submission citing lack of detailed information.

CHR-CH0031001-0008 – ECN-0005 Elevator Masonry Wall. Company issued Change Order CHO-CH0031001-0004 approving \$76,863.18 of the requested \$102,479.67. Company omitted Site Installation, and Staff Labour costs. CO not executed.

CHR-CH0031001-0009 – Schedule 9 Update and Associated Delays. Change Request CHR-CH0031001-0009 has been submitted to Company. Company rejected Change Request via letter 66.

CHR-CH0031001-0010 – Exhibit 11 Revisions. Change Request CHR-CH0031001-0010 submitted by Contractor on November 2, 2017. Company has denied Change Request citing lack of detailed information. Contractor to revise and resubmit.

CHR-CH0031001-0011 – Unit 4 Tailrace Deck Hatch – Temporary Guardrails. Company issued Change Order CHO-CH0031001-0005 approving \$10,740.32 of the requested \$12,278.05. Company omitted Site Installation, Staff Labour and Travel Estimate for Trades Labour. CO not executed.

CHR-CH0031001-0012 – Elevator Temporary Services. Change Request CHR-CH0031001-0012 has been submitted to Company. Budgetary price has been proposed. Awaiting Company response.



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CHR-CH0031001-0013 – Installation of Powerhouse Elevator. Change Request CHR-CH0031001-0013 has been cancelled by Company.

CHR-CH0031001-0014 – Powerhouse Emergency Lighting. Change Request CHR-CH0031001-0014 has been cancelled by Company.

CHR-CH0031001-0015 – Light Fixture Quantity Variations. Change Request CHR-CH0031001-0015 has been submitted to Company. Company rejected initial submission. Contractor has revised and resubmitted.

CHR-CH0031001-0016 – Force Majeure Event – Closure of Goose Bay Airport. Change Request CHR-CH0031001-0016 has been submitted to Company. Company has rejected all costs other than the airline charter cost. Contractor has resubmitted and requested Company to reconsider.

CHR-CH0031001-0017 – Removal of Existing Fireproofing (Site Installation and Staff Labour omitted here to expedite approval). Change Request CHR-CH0031001-0017 has been submitted to Company. Company verbally advised that estimated manhours to complete the scope appeared high and requested that Contractor revisit the estimate.

CHR-CH0031001-0018 – Removal of existing fireproofing (Site Installation and Staff Labour only). This Change Request covers the components previously omitted from CHR-CH0031001-0017. Change Request CHR-CH0031001-0018 has been submitted to Company. Contractor to revisit pending review of CHR-Ch0031001-0017.

CHR-CH0031001-0019 – Update to Change Order form found in Exhibit 3, Appendix B. Company rejected this submission via letter 110. Contractor has proposed other alternatives to progress the issue. Awaiting Company response.

CHR-CH0031001-0020 – Exhibit 11 Updated Forms – SQY, CON and Work Permit. Company has issued Change Request as void.

CHR-CH0031001-0021 – Airline Charter on December 22, 2017. Company has approved Change Request. Company to issue Change Order.

CHR-CH0031001-0022 – Not used

CHR-CH0031001-0023– Light Fixture Quantity Variations (Site Installation and Staff Labour omitted here to expedite approval). This is a resubmission of Change Request CHR-CH0031001-0015. Awaiting company response.

CHR-CH0031001-0024 – Light Fixture Quantity Variations (Site Installation and Staff Labour only). This Change Request covers the components previously omitted from CHR-CH0031001-0023. Change Request CHR-CH0031001-0024 has been submitted to Company. Awaiting company response.



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Field Work Orders

FWO-CH0031001-0001 – General construction support for elevator installation contractor (CH0034). Change Request CHR-CH0031001-0012 has been submitted to Company to cover this scope. Awaiting Company response.

FWO-CH0031001-0002 – Removal of existing fireproofing from 28 support locations. Change Requests CHR-CH0031001-0017 & 0018 have been submitted to Company to cover this scope.

FWO-CH0031001-0003 – Supply and installation of infrastructure to provide permanent power to the enclosed staircase at powerhouse access road. FWO value = \$20,000.

9. Procurement Status

9.1 Award Status of Subcontractor or Supplies

9.1.1 Current EOI's

- None

9.1.2 Current RFP's

- None

Under Technical Review

- E5206 UPS Systems and Batteries
- M5600A DOUBLE WALL DAY TANK
- M5600 Diesel Electric Generating Unit
- M5600A CONCRETE ENCASED STEEL ABOVE GROUND TANK
- M5604 Eyewash System and Heaters
- M5607 Waste Water Treatment
- M5608 Diesel Fuel Oil System
- M5609 Hoist in Dewatering Gallery
- M5610 MOBILE PUMP-FILTERING UNIT
- L5103 Oil Storage Tanks
- J5601 Tagged Field Instruments



Doc. Name:	MONTHLY PROGRESS REPORT (JANUARY 2018)
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9.1.3 Package Awards

Main package awarded last month are listed below. See attachment #6 for procurement tracking sheet.

- M5600A CONCRETE ENCASED STEEL ABOVE GROUND TANK
- M5607 Waste Water Treatment
- M5608 Diesel Fuel Oil System
- E5210 Electric Heat
- J5605 Generator Room Leak Detection System
- J5606 Fuel Storage Tank Electrical Monitoring System
- M5603 Water Heaters
- M5606 Domestic Water Treatment System
- M5611 Shaft Seal Water System

10. Environmental and Regulatory

10.1 Status

Environmental plan has been approved on October 6.

10.2 Environmental Reporting

	MOE Reportable Spill											
	Total Spills - On Land (Liters)			On Land (Liters)			Total Spills - In Water (Liters)			Total Sediment Spills (Liters)		
	≤ 10	≥ 10	≥ 100	≤ 10	≥ 10	> 100	≤ 10	≥ 10	≥ 100	≤ 10	≥ 10	≥ 100
Period	0	0	-	-	-	0	-	-	-	-	-	-
Cumulative to-date	0	0	-	-	-	0	-	-	-	-	-	-



Doc. Name:	MONTHLY PROGRESS REPORT (JANUARY 2018)
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10.3 Permits

10.3.1 Key upcoming permit

Full list of permits outlined in the below table.

PERMIT #	DOCUMENT TITLE	Date Requested	STATUS	Date Approved
BAB 3960-11	Fisheries Act	Dec. 23/ 17	Approved	Dec. 23/ 17
EA-30023 AAC	Building Accessibility Design Registration / Exemption Registration - Temporary Admin Trailer Complex	Sept. 15/17	Approved	Sept. 06 /17
EA-30023 AAE	Building Accessibility Design Registration / Exemption Registration - Temporary Lunch Trailer Complex	Oct. 15/17	Approved	Oct. 20/17
EA-30023 AAI/AAJ/AAK/AAL	Building Accessibility Design Registration / Exemption Registration - Temporary Office Trailers E2 Area	Nov. 30/ 17	Approved	Dec. 10/17
EA-30023 AAM/AAN/AAO/AAP	Building Accessibility Design Registration / Exemption Registration - Temporary Lunch/office Trailer-Warehouse Area	Nov. 20/ 17	Approved	Dec. 10/17
EA-30023 AAQ	Building Accessibility Design Registration / Exemption Registration - Powerhouse washcart #2	Jan. 20/ 17	Approved	Dec. 20 2017
EA-30023 AAR	Building Accessibility Design Registration / Exemption Registration - Powerhouse washcart #1	Jan. 20/ 17	Approved	Dec. 20 2017
EA30023HI	Building Accessibility Design Registration / Exemption Registration - Astaldi warehouse	Oct. 15th	Approved	Oct. 30/17
PE-2017 107596 00	Electrical Permit - Admin Area	Sept. 15/17	Approved	Sept. 08/17
PE-2017 107602 00	Electrical Permit - Powerhouse Area	Sept. 15/17	Approved	Sept. 12/17
PP03799.0 and.0A	Design Registration of Pressure Piping System- low pressure compressed air 3441-Piping	Nov. 20/ 17	Approved	Nov. 21/17
PP03804.0	Design Registration of Pressure Piping System- high pressure compressed air 3442 - Piping	Jan. 18/18	Approved	Dec. 31/17
PP03805.0	Design Registration of Pressure Piping System- air brake system - Piping	Jan. 18/18	Approved	Dec. 31/17
TBD	Elevator Permit	Feb. 28/ 18	Not Submitted	TBD
TBD	GAP Registration - Double Wall Daytank 3437-TK-6002	Mar. 30/18	Not Submitted	TBD
TBD	GAP Registration - Above Ground Storage Tank 3437-TK-6001	Mar. 30/18	Not Submitted	TBD
TBD	GAP Registration - Oil Storage Tank 3446-TK-6000	Mar. 30/18	Not Submitted	TBD
TBD	GAP Registration - Oil Storage Tank 3446-TK-6001	Mar. 30/18	Not Submitted	TBD
TBD	GAP Registration - Oil Water Seperator 3441-OWS-5000	Mar. 30/18	Not Submitted	TBD
TBD	GAP Registration - Oil Water Seperator 3442-OWS-5000	Mar. 30/18	Not Submitted	TBD
TBD	GAP Registration - Oil Water Seperator 344A-OWS-5000	Mar. 30/18	Not Submitted	TBD
TBD	Design Registration of Pressure Piping System- low pressure compressed air 3441 - Equipment	Apr. 30/18	Not Submitted	TBD
TBD	Design Registration of Pressure Piping System- high pressure compressed air 3442 - Equipment	Apr. 30/18	Not Submitted	TBD
TBD	Design Registration of Pressure Piping System- air brake system - Equipment	Apr. 30/18	Not Submitted	TBD
TBD	Diesel Generator Registration Form	June 30/18	Not Submitted	TBD

Exhibit P-02348 Pages 23 to 110
have been fully redacted and
replaced with this page.



Discipline	POP No.	Long Lead	Description	Site Need Date	EOI Posted Date Forecast (Green = Actual)	RFP Release Date Original Forecast	RFP Release Date Current Forecast	RFP Release Date Actual	Purchase Order Issue Date Planned	Purchase Order Issue Date Forecast	Purchase Order Issue Date Actual	Date of 1st Material Received Planned	Date of 1st Material Received Forecast	Date of 1st Material Received Actual	Variance Site Need vs Forcast Del Date (DAYS)
Piping	L5101		CHECK VALVES	28-Feb-18	31-Aug-17	14-Sep-17	20-Oct-17	13-Oct-17	14-Nov-17	10-Nov-17	10-Nov-17	30-Jan-18	15-Jan-18	15-Jan-18	Onsite
Piping	L5101		ANTI-SYPHON VALVES	28-Feb-18	31-Aug-17	14-Sep-17	20-Oct-17	13-Oct-17	14-Nov-17	10-Nov-17	10-Nov-17	30-Jan-18	15-Jan-18	15-Jan-18	Onsite
Piping	L5101		BACKFLOW PREVENTER	28-Feb-18	31-Aug-17	14-Sep-17	20-Oct-17	13-Oct-17	14-Nov-17	10-Nov-17	10-Nov-17	30-Jan-18	15-Jan-18	15-Jan-18	Onsite
Piping	L5103		Oil Storage Tanks	1-Oct-18	31-Jul-17	1-Dec-17	5-Dec-17	5-Dec-17	19-Jan-18	9-Feb-18		3-Aug-18	28-Jul-18		65
Piping	L5110		Misc Piping Materials And Accessories	1-Nov-17	11-Oct-17	25-Oct-17	17-Nov-17	Direct Purchase	8-Dec-17	8-Dec-17	25-Oct-17	9-Feb-18	24-Nov-17	24-Nov-17	Onsite
Piping	SC006		Service Water System	28-Feb-18	Internal	N/A	N/A	N/A			5-Oct-17		1-Dec-17	29-Nov-17	Onsite
Piping	SC006		Shaft Seal Water System	28-Feb-18	Internal	N/A	N/A	N/A			5-Oct-17		1-Dec-17	29-Nov-17	Onsite
Piping	SC006		Dewatering System	28-Feb-18	Internal	N/A	N/A	N/A			5-Oct-17		1-Dec-17	29-Nov-17	Onsite
Piping	SC006		Drainage System	28-Feb-18	Internal	N/A	N/A	N/A			5-Oct-17		1-Dec-17	29-Nov-17	Onsite
Piping	SC006		Oil Water Drainage	28-Feb-18	Internal	N/A	N/A	N/A			5-Oct-17		1-Dec-17	29-Nov-17	Onsite
Piping	SC006		Domestic Water System	28-Feb-18	Internal	N/A	N/A	N/A			5-Oct-17		1-Dec-17	29-Nov-17	Onsite
Piping	SC006		Wastewater System	28-Feb-18	Internal	N/A	N/A	N/A			5-Oct-17		1-Dec-17	29-Nov-17	Onsite
Piping	SC006		Lubricating/Hydraulic Oil System	28-Feb-18	Internal	N/A	N/A	N/A			5-Oct-17		1-Dec-17	29-Nov-17	Onsite
Piping	SC006		Low Pressure Compressed Air System	28-Feb-18	Internal	N/A	N/A	N/A			5-Oct-17		1-Dec-17	29-Nov-17	Onsite
Piping	SC006		Hi Pressure Compressed Air System	28-Feb-18	Internal	N/A	N/A	N/A			5-Oct-17		1-Dec-17	29-Nov-17	Onsite
Piping	SC006		Raw and Cooling Water Systems	28-Feb-18	Internal	N/A	N/A	N/A			5-Oct-17		1-Dec-17	29-Nov-17	Onsite
Risk and Loss	SC004	x	Powerhouse Fire Detection System –including the design, fabrication, supply, installation (where specialists are required), programming, testing, warranty and performance guarantee of the fire detection system.	1-May-18	11-Aug-17	25-Aug-17	24-Oct-17	24-Oct-17	3-Nov-17	21-Nov-17	23-Nov-17	13-Apr-18	30-Apr-18		1
Risk and Loss	SC005	x	FLOW METER	1-May-18	11-Aug-17	25-Aug-17	15-Sep-17	15-Sep-17	27-Oct-17	6-Nov-17	6-Nov-17	16-Feb-18	2-Apr-18		29
Risk and Loss	SC005	x	FIRE PUMP	1-May-18	11-Aug-17	25-Aug-17	15-Sep-17	15-Sep-17	27-Oct-17	6-Nov-17	6-Nov-17	16-Feb-18	2-Apr-18		29
Risk and Loss	SC005	x	JOCKEY PUMP	1-May-18	11-Aug-17	25-Aug-17	15-Sep-17	15-Sep-17	27-Oct-17	6-Nov-17	6-Nov-17	16-Feb-18	2-Apr-18		29
Risk and Loss	SC005	x	JOCKEY PUMP CONTROLLER	1-May-18	11-Aug-17	25-Aug-17	15-Sep-17	15-Sep-17	27-Oct-17	6-Nov-17	6-Nov-17	16-Feb-18	2-Apr-18		29
Risk and Loss	SC005	x	Hydropneumatic Tank	1-May-18	11-Aug-17	25-Aug-17	15-Sep-17	15-Sep-17	27-Oct-17	6-Nov-17	6-Nov-17	16-Feb-18	2-Apr-18		29
Risk and Loss	SC005	x	Powerhouse Fire Protection System – The work of this contract includes the design, fabrication, supply, installation (where specialists are required), programming, testing, warranty and performance guarantee of the fire protection system.	1-May-18	11-Aug-17	25-Aug-17	15-Sep-17	15-Sep-17	19-Oct-17	6-Nov-17	6-Nov-17	16-Feb-18	30-Apr-18		1
Risk and Loss	SC005	x	INERGEN SYSTEM	1-May-18	11-Aug-17	25-Aug-17	15-Sep-17	15-Sep-17	27-Oct-17	6-Nov-17	6-Nov-17	16-Feb-18	2-Apr-18		29
Risk and Loss	SC005	x	DELUGE VALVE CABINET	1-May-18	11-Aug-17	25-Aug-17	15-Sep-17	15-Sep-17	27-Oct-17	6-Nov-17	6-Nov-17	16-Feb-18	2-Apr-18		29
Structural	SC011		Vibration and Seismic Control	3-Oct-17	26-Jul-17	9-Aug-17	11-Aug-17	11-Aug-17	31-Aug-17	31-Aug-17	1-Sep-17	5-Oct-17	13-Oct-17	22-Sep-17	Onsite
Structural	SC011		Cable Tray Structural supports	6-Nov-17	26-Jul-17	9-Aug-17	11-Aug-17	11-Aug-17	31-Aug-17	31-Aug-17	1-Sep-17	26-Oct-17	27-Oct-17	22-Sep-17	Onsite
Structural	SC011		Maintenance Access Electrical Shaft Platforms		26-Jul-17	9-Aug-17	11-Aug-17	11-Aug-17	8-Sep-17	8-Sep-17	1-Sep-17				
Structural	SC011		Maintenance Access Mechanical Shaft Platforms		26-Jul-17	9-Aug-17	11-Aug-17	11-Aug-17	8-Sep-17	8-Sep-17	1-Sep-17				
Structural	SC014		NDE												
Structural	SC015		Design of House keeping pads, Mech, Elec, HVAC		Direct Purchase			3-Nov-17		28-Nov-17	28-Nov-17				Onsite
Telecoms	SC009	x	Telecoms Panels		Internal	N/A	N/A	N/A			5-Oct-17				0



Project Risk Management Register	
Risk Register	MFA-CG-SD-3440-RI-A04-0002-01
Rev:	Date:
Client:	Muskrat Falls Corporation ("Company")
Project Name:	Supply and Install Mechanical & Electrical Auxiliaries MF
Contract Number / Project Ref	CH0031-001 / TC0006
Project Manager / Deputy:	Tim Harrington, P.Eng / Charles Lavigne
Project Sponsors:	Cahill - John J Henley, Ganotec - Mike Buckle
Risk Management Team:	Tim Harrington, Charles Lavigne, Laurie Hildebrand, Brad Burse

Category Legend	
ENG	Engineering
PRO	Procurement
HSE	Health, Safety & Environment
QUA	Quality
SCH	Schedule
CON	Construction
MC&C	Mechanical Completion & Commissioning
COM	Commercial

Likelihood	Consequences				
	Very Low	Low	Moderate	High	
Highly Unlikely	Level 1	Level 2	Level 3	Level 4	
Unlikely	Level 2	Level 3	Level 4	Level 5	
Likely	Level 3	Level 4	Level 5	Level 6	
Highly Likely	Level 4	Level 5	Level 6	Level 7	

Legend	
Requires Input Information	
Automatically Formulated	

No.	Cat.	Risk Definition	Description of Consequences	Initial Assessment				Mitigation/Safeguard	Comments	Status	Date Resolved	Revised Assessment				Residual Action		
				Likelihood	Consequence	Risk Level	Response					Likelihood	Consequence	Risk Level	Response	Risk Owner	Action Plan	Date Action Req'd
1	COM	If the Neutral Funding forecast isn't accurate, then there is the risk that Contractor could be cash negative.	Contractor would be Cash Negative.	Unlikely	Low	Level 3	Monitor	Progress will be managed on a weekly basis with input from ops. Schedule accuracy, manage actual percentage progress to get an accurate forecast for the upcoming month. Regularly reassess area accessibility and upcoming work fronts.	Monitoring effort continues. Workforce forecast for 2017 has changed and neutral funding requests will need to be adjusted. No issues to date.	Open						Tim Harrington	Project Controls and Finance team have been advised. Upcoming neutral funding invoices to be adjusted to account for new labour forecasts.	
2	COM	If quantity variations are not tracked accurately, then Contractor may not be paid for all quantities installed.	Not being paid for the quantity installed.	Unlikely	Moderate	Level 4	Plan for action	Proper quantity tracking, train staff and craft on systems at time of mobilization and regularly through the project. Contractor will perform a full take off and track revised take off quantities in ops. Quantities will be tracked at time of material purchase. Full time quantity surveyor will be at Site.	Ongoing. Company and Contractor agree to update quantities in Schedule A every 3 months.	Open						Julie Canuel	> Quantity Surveyor mobilized. > Tracking of quantities during procurement ongoing. > Quantity reconciliation has started for various disciplines.	
3	COM	If there is a Protest, it could result in a Site Shutdown	If there is a protest there is a risk of productivity loss and schedule delay.	Likely	Low	Level 4	Plan for action	Notify the Company of delays. Work with Company and follow security plans in the event of an incident and evacuate as needed. Minimize cost impacts by Contractor working with Company to delay arrival of new workers. Secure equipment when needed.	Ongoing. No issue this period.	Open		Very Unlikely	Moderate	Level 2	No action required	Tim Harrington	Work with Company to minimize impacts and evacuate the site if needed. Ensure any incoming workers have a delayed arrival.	
4	CON	If Critical and Heavy Lift plans are not in place, then it could result in schedule delays.	If there are no Accepted lift plans then Contractor will be unable to install equipment and result in potential delay to the schedule	Likely	Low	Level 4	Plan for action	Ensure all lift plans are in place before equipment arrives. Ensure all gear and certifications are in place prior to lift. Add activities for these lifts in the Schedule. Utilize a qualified third party to assist with preparation/review.	Ongoing. No issue this period. Contractor is reviewing vendors for engineering services.	Open						Robert Mercer Mike Moriarty		
5	CON	Concern that clashes may occur when routing small bore and PVC piping in the field as not all small bore piping has isometrics.	Potential clashes in the field for small bore and PVC as they are field run, resulting in schedule delay and cost impacts.	Likely	Low	Level 4	Plan for action	Validate isometrics that are developed. Utilize 3D model for reference purposes. Model shots are included in work packs for reference.	Ongoing. No issue this period.	Open						Etienne Fortin		
6	CON	If there is a labour shortage then Contractor may not be able to achieve the required craft levels to meet schedule.	Cost, schedule and productivity impacts.	Highly Unlikely	Moderate	Level 3	Monitor	Follow labour collective agreement and explore outside labour if required. Measure the impact on the project and notify Company to minimize potential impacts.	Ongoing. No issue this period.	Open		Highly Unlikely	Low	Level 2	No action required	Carol Ann Molloy	Labour relations manager in place. No hiring issues reported to date.	



Project Risk Management Register	
Risk Register	MFA-CG-SD-3440-RI-A04-0002-01
Rev:	Date:
Client:	Muskrat Falls Corporation ("Company")
Project Name:	Supply and Install Mechanical & Electrical Auxiliaries MF
Contract Number / Project Ref	CH0031-001 / TC0006
Project Manager / Deputy:	Tim Harrington, P.Eng / Charles Lavigne
Project Sponsors:	Cahill - John J Henley, Ganotec - Mike Buckle
Risk Management Team:	Tim Harrington, Charles Lavigne, Laurie Hildebrand, Brad Burse

Category Legend	
ENG	Engineering
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HSE	Health, Safety & Environment
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SCH	Schedule
CON	Construction
MC&C	Mechanical Completion & Commissioning
COM	Commercial

Likelihood	Consequences				
	Very Low	Low	Moderate	High	
Highly Unlikely	Level 1	Level 2	Level 3	Level 4	Level 5
Unlikely	Level 2	Level 3	Level 4	Level 5	Level 6
Likely	Level 3	Level 4	Level 5	Level 6	Level 7
Highly Likely	Level 4	Level 5	Level 6	Level 7	

Legend	
Requires Input Information	
Automatically Formulated	

No.	Cat.	Risk Definition	Description of Consequences	Initial Assessment				Mitigation/Safeguard	Comments	Status	Date Resolved	Revised Assessment				Residual Action		
				Likelihood	Consequence	Risk Level	Response					Likelihood	Consequence	Risk Level	Response	Risk Owner	Action Plan	Date Action Req'd
7	CON	Coordination of the Overhead Crane for schedule critical lifts to avoid delays	Potential for delays if crane is not available when required.	Unlikely	High	Level 5	Plan for action	Contractor will define critical lifts in execution plan and schedule. Contractor will work with Company counterparts and other contractors to coordinate usage. Critical lifts are included in the schedule and Contractor will notify Company when schedule critical lifts are upcoming. Company to coordinate with other contractors to ensure crane availability when needed. Coordinate upcoming lifts through SIMOPS and raise at Interface meetings.	> No OH crane lifts needed to date. Request Company to assist and reinforce/manage usage priority.	Open						Robert Mercer Mike Moriarty		
8	CON	Congested Area - Interface with other Company contractors which could impact Contractor Work and Schedule.	Potential for delays, reduced productivity.	Likely	High	Level 6	Immediate action	Company to coordinate between Contractor and other Company contractors to ensure maximum efficiency. Contractor to attend coordination meetings, and update schedule for proper notice to Company and planning. Contractor will work with Company counterparts and other contractors to coordinate work on a daily basis. Review possibility of moving materials on Night shift or an off shift. Contractor is regularly attending SIMOPS meetings and construction interface meetings.	Issues encountered when trying to move first material deliveries into the Powerhouse due to congestion in SSB. This issue remains a risk. Company to ensure Contractor has access when required.	Open						Robert Mercer Mike Moriarty		
9	CON	Installation of HVAC unit via north service bay in accordance with current schedule may impact other contractors	Increased installation costs. Potential interruption for other contractors.	Unlikely	High	Level 5	Plan for action	Contractor requested Company to provide another solution as access through the roof was denied.	Discussions ongoing. No solution confirmed. Contractor submitted proposal to Company. Company to advise if new proposal is acceptable.	Open		Unlikely	Low	Level 3	Monitor	Robert Mercer Mike Moriarty	Company confirmed that Contractor to use North Service Bay (NSB) and South Service Bay (SSB) for installation of the units.	
10	CON	If the masonry wall in the south service bay is performed as scheduled, there may be a safety risk in working around energized cables. Request early installation.	Safety risk for performing wall erection due to interface with live cables. Increase installation costs. Potential damage to cables. Safety risk for workers as working around live cables. Productivity impacts.	Unlikely	Moderate	Level 4	Plan for action	Contractor requested Company allow for early erection of masonry wall. If early erection refused, Contractor to install mechanical protection around cable trays and wire.	Masonry walls expected to be deferred to a later date. Utility system installations will start without walls in place. Site Query was submitted and Company is still looking at opportunities for access.	Open		Likely	Moderate	Level 5	Plan for action	Robert Mercer Mike Moriarty	Need to look for future opportunities for wall installation prior to cable energization. More detailed risk and hazard assessments will be required for energized areas and LOTO.	
11	CON	If oil tanks are placed late (NSB) there is a potential for schedule delay and interruption to other contractors.	Increased installation costs. Potential interruption for other contractors.	Unlikely	Low	Level 3	Monitor	Contractor requested Company allow for early installation. Company stated tanks are not required for commissioning of Unit 1.	Company has stated that installation of oil tanks and construction of room to be deferred until air handling unit installation is complete.	Open						Robert Mercer Mike Moriarty	Contractor met with Company to discuss execution. Company will need to defer erection of oil rooms (by others) until movement strategy for tanks is confirmed.	
12	CON	Lack of lay down space for staging materials near the power house may result in reduced productivity.	Additional transportation from Company lay down to the power house.	Likely	Low	Level 4	Plan for action	Contractor to plan delivery of materials when required for installation to minimize lay down space required and use available space in the warehouse. Store at vendor locations where possible.	Permit request submitted for additional laydown space outside the North Service Bay.	Closed	01-Dec-2017					Robert Mercer Mike Moriarty Frank Collins	> Secured warehouse closer to the building from Astaldi with additional laydown space. > Requested additional laydown space by permit.	



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13	CON	Limited lay down for Contractor storage.	Insufficient space to store material.	Highly Unlikely	Low	Level 2	No action required	Contractor to plan delivery of materials when required for installation to minimize lay down space required. Contractor is investigating other space available with other contractors.	Contractor secured additional laydown space via permit.	Closed						Robert Mercer Mike Moriarty Frank Collins	> Secured warehouse closer to the building from Astaldi with additional laydown space. > Requested additional laydown space by permit.	
14	CON	Lunch facility not in place in close proximity to the Power House	Reduced productivity	Highly Likely	Low	Level 5	Plan for action	Contractor to provide temporary lunch facility at Contractor Administration Complex. Teamster to drive craft labour between work area and lunch trailer. Contractor exploring other options with Company Other Contractors for temporary lunch room facilities closer to the Power House.	Final area for contractor trailers near PH not finalized yet. Land use permit with Company for approval. New area will be spread out over three locations. Update: Permit for land use approved by Company.	Closed	28-Nov-2017					Robert Mercer	Contractor and Company working collectively to find space in closer proximity to the building. Permit for land use has been approved and trailer mob is in progress.	
15	CON	If there is a delayed construction start date due to late turnover of areas, there may be impacts to schedule.	Schedule impact, cost impacts, reduced productivity	Highly Likely	Moderate	Level 6	Immediate action	Contractor to Notify Company. Contractor to work with Company on Control Schedule and revise Milestones if needed. Contractor to propose options to allow start of Work on early scope with minimal risk where possible. Contractor to work with Company on acceleration or additional resources if needed to reduce schedule impacts and maintain the Completion date. Update schedule for planning purposes.	Ongoing - Contractor requesting work areas through Company's new interface process. Several interfaces turnovers in progress.	Open		Likely	Low	Level 4	Plan for action	Robert Mercer	Contractor working to gain early access to areas through SIMOPS.	
16	CON	If no clarity on the interface procedure/process & interface dates, there may be schedule impacts/delays.	> Schedule impact, cost impacts, reduced productivity. > Safety liability / responsibility confusion	Highly Likely	Moderate	Level 6	Immediate action	Contractor to Notify Company. Contractor to work with Company to submit the required documentation in advance. Contractor to work with Company and Company Other Contractors to firm up the interface date and reduce the need of having multiple Contractors working in the same area.	Contractor has presented comments to Company regarding the new interface process. Meeting was held to work through issues identified.	Open		Likely	Moderate	Level 5	Plan for action	Tim Harrington	Contractor working to gain early access to areas through SIMOPS and participate at the weekly Interface Management Meeting. Safety concerns need to be addressed. Company committed to revising the safety language in the document.	
17	ENG	Timeliness of document review cycle from Company	Unable to deliver docs in time to ensure equipment delivery and schedule is met.	Likely	Moderate	Level 5	Plan for action	Where necessary to progress work, try to lower 3 week review cycle. Work with Company counterparts to meet reduced requested timeline. Contractor will review documents to ensure quality and compliance with Contract requirements. Schedule submission of documents where possible for sufficient review time.	Ongoing.	Open						Justin Curlew	Working with Company to expedite document reviews. All agree that 21 day timelines can be improved for most situations.	



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18	ENG	Design interface with different packages, especially controls, load transfer pkg and fire protection/detection	Unable to complete packages and deliver on time.	Likely	Moderate	Level 5	Plan for action	Engage suppliers early to ensure they have all of the proper information for timely completion of packages. Ensure documents/drawings are transmitted in line with schedule requirements. Vendor's with design scope will be required to perform clash analysis. Contractor to provide drawings and all required information. Perform design reviews on key packages and identify interfaces between packages. Have vendors in for site visits where necessary. Include LDs and performance guarantees in vendor contracts to provide performance certainty.	Ongoing. No issue this period.	Open						Justin Curlew	Information being provided to design vendors. Troy Life Safety have been awarded Fire Protection system package and have been provided with all drawings needed to perform interdisciplinary clash checking.	
19	ENG	If Redline Procedure not followed, could result in schedule delays or backlog at the end of the project.	Changes missed or not documented in a timely fashion.	Likely	Low	Level 4	Plan for action	Contractor implemented its redline procedures and rolled it out to the project team, to be updated as needed, which will be applied throughout the project. All personnel involved in developing redline drawings will be trained on Contractor's procedure. Coordinate with Company counterparts to review and agree on the process.	Ongoing. No issue this period.	Open						Justin Curlew		
20	ENG	If Seismic Design is not completed prior to installation then there may be schedule impacts.	Without design complete will be difficult to install and complete services.	Unlikely	Moderate	Level 4	Plan for action	Contractor started Seismic design early. Seismic design includes where and how to install seismic supports.	Ongoing.	Open	Highly Unlikely	Moderate	Level 3	Monitor	Justin Curlew	Design vendors have been engaged. Tray support design is complete, HVAC support design has started.		
21	ENG	Clash checking (all disciplines) required to avoid potential clashes during installation.	Potential of clash between services. Re-Design & Re-installation would be required.	Likely	Moderate	Level 5	Plan for action	Ensure vendors have all required information and provide appropriate documentation ie to be included in RFP packages. Revision control of documents and supply to vendors. Vendor's with design scope will be required to perform clash analysis. Fire protection piping will be monitored by procurement and engineering, with regular follow up to ensure the vendor has all layouts for the plant to ensure proper routing. Company and Contractor engineering groups to perform design review and address potential clashes early on in the process.	Ongoing.	Open					Justin Curlew	Fire protection vendor has been engaged but design has started.		



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22	ENG	If there are unapproved vendor data sheet work may be delayed causing schedule impacts and increased costs.	Contractor procuring and installing material at risk without Company approved vendor documents. Potential additional work to address issues.	Highly Likely	Low	Level 5	Plan for action	Contractor to assume risk for off the shelf bulk items to prevent schedule delay. Where necessary to progress work, try to lower 3 week review cycle. Work with Company counterparts to meet reduced requested timeline. Contractor will review documents to ensure quality and compliance with Contract requirements. Schedule submission of documents where possible for sufficient review time. Provide Company with a list of critical items for review. Engage vendor for reviews early. Request Company perform batch reviews where possible.	Contractor working with Company to expedite review of documents.	Open		Likely	Low	Level 4	Plan for action	Justin Curlew	Process is ongoing. Have engaged Company for expedited reviews on early bulk materials. Meeting held with Design Consultant to discuss ways to reduce documentation reviews for low risk items (i.e. spec compliant).	
23	HSE	If there is no Emergency Rescue Plan / Team developed and in place, then this puts workers at risk.	Workers at risk.	Likely	High	Level 6	Immediate action	Emergency response plan developed and communicated to all Site Personnel. Develop and train emergency response team. Hire people with previous experience and training. Separate job specific emergency response plans will be developed for the following: Fall Protection Plan, Working at heights, Confined Space. Site has ERT for fire response/medical.	Ongoing.	Open		Unlikely	High	Level 5	Plan for action	Chris Kieley	Emergency response plan has been completed for all early work areas. Emergency equipment is on site and mock rescue exercises are being performed to simulate emergency scenarios. May need further attention for upcoming work areas. Company to provide supplemental emergency response support.	
24	HSE	Confined space work can pose safety risk.	Workers at risk.	Likely	High	Level 6	Immediate action	Emergency response plan developed and communicated. JHA will be completed and entry permits obtained. Develop and train team so that all employees at Site have been trained on the safety procedure. Hiring people with previous experience and training. Contractor has access to confined space equipment on Site for use if /where required.		Closed		Highly Unlikely	High	Level 4	Plan for action	Chris Kieley	Equipment has been sourced and is in place. Contractor crew has personnel with confined space training.	
25	HSE	If permits are not in place there will be delays in the applicable activity. If there is a delay in the submission/approval of permits, this will impact schedule.	Timeline for approval of permit may result in delays.	Unlikely	Moderate	Level 4	Plan for action	Early establishment of permit projections (A08 document in SDR) to be submitted September 29, 2017. Permit requirements included in the schedule which is reviewed and updated weekly. Assign permit responsibility and communication with regulatory representatives in the specific discipline and Company. Critical permits will be submitted to Company for urgent approval. Permit responsibility assigned to Justin Curlew. Other internal permits will be relayed through HSE for the project including internal isolation permit, confined space permit, and hot work.	Ongoing.	Open		Unlikely	Low	Level 3	Monitor	Justin Curlew Perry Snook	Most site infrastructure are in place. Permits for permanent works are already being looked at.	



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26	HSE	Winter Temperature and weather may pose additional risks to workers.	Workers in outdoor environment are at greater risk for slips/falls than during other seasons. Also at risk for frostbite.	Likely	Low	Level 4	Plan for action	Reassign external work inside when necessary. Ensure workers are equipped with warm weather PPE. Follow SWI for work in inclement weather, cold stress and work execution SWI. Ensure areas provided which required Company heat and light as suitable prior to commencing work. Snow removal equipment and PPE is on site. Material preservation plans put in place, follow vendor recommendations.	Ongoing.	Open		Unlikely	Low	Level 3	Monitor	Chris Kieley	PPE for winter weather work was procured along with snow removal equipment, all now on site.	
27	HSE	Spill & Waste Management	Environmental risk. Workers at risk.	Unlikely	Moderate	Level 4	Plan for action	Clearly defined waste management and spill response. Hazardous material storage and training. All employees will receive Environmental Awareness training at orientation session. Equipment for spill and waste management to be available on site. Confirm hazardous waste removal vendor is properly certified.	Ongoing.	Open		Highly Unlikely	Moderate	Level 3	Monitor	Chris Kieley	Waste management agreement is in place with vendor; containment equipment is on site. Spill response equipment also on site.	
28	MC&C	If there is a high volume of check sheets/completions paperwork and requirements, there may be delays or productivity impacts.	Delays in schedule, reduced productivity.	Likely	Low	Level 4	Plan for action	Proper planning and scheduling. Coordinate with Company to gain alignment, ensure plan is communicated early and effectively, avoid duplicate reporting and redundant data. Utilization of electronic check sheets in PCS system if practical.	No update this period.	Open						Jeremie Bertin	Electronic check sheets are being utilized and already in early development.	
29	MC&C	If there are issues/complications with using Company completion platform (PCS) it may result in inefficiencies with the completions program.	Inefficiency, learning curve	Unlikely	Low	Level 3	Monitor	Proper training of staff and setting an agreement with Company early to create efficient structure. Company to provide training to Contractor.	Ongoing.	Open						Jeremie Bertin	First training sessions have been completed. PCS population is in progress.	
30	MC&C	If the third party experts required for specialized equipment are not available there may be delays.	Third party not available when required resulting in delays.	Likely	Moderate	Level 5	Plan for action	Proper planning and scheduling. Include notification requirements in subcontract related to delay.	No update this period.	Open						Jeremie Bertin		
31	MC&C	By using temporary supply (electrical or water) during commissioning activities, testing may need to be redone with permanent supply.	Requirement to redo tests with permanent supply which leads to inefficiency and potential delays.	Highly Likely	Low	Level 5	Plan for action	Proper training of staff and development of equipment specific energization procedures.	No update this period.	Open						Jeremie Bertin		
32	MC&C	Delays in reception of regulatory approvals (pressure piping, fire protection, diesel tank and piping).	Delays in schedule, impact on major milestones.	Unlikely	High	Level 5	Plan for action	Proper planning, training, and scheduling to ensure documentation and authorization are requested on time. Tracking authorization response time and any delays after submittal.	No update this period.	Open						Jeremie Bertin / Perry Snook		



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33	PRO	Product Loss / Damage in Transit	Project Delay / Additional Cost	Likely	Moderate	Level 5	Plan for action	OSD reports. Inspections will be performed on all materials at delivery to Site. Perform pre-shipment inspection if/when required. Purchase agreement to include provisions to address shipping risk, including insurance, packaging requirements and timely replacement in the event of damage.	Ongoing. Purchase agreements are being issued with necessary protection.	Open						Frank Collins	
34	PRO	If Equipment not properly preserved may result in damage.	Potential damage / Additional Cost	Unlikely	Moderate	Level 4	Plan for action	Develop preventative maintenance plan and communicate to responsible personnel. Ensure preservation requirements provided by vendors. Coordinate delivery schedule with Site installation to minimize preservation required at Site. Contractor to use preservation module within Company provided PCS system (ex. notices will be set up in the system for maintenance / preservation inspections).	No update this period.	Open						Frank Collins	
35	PRO	Late Delivery of Critical Equipment	Project Delay / Additional Cost	Likely	Moderate	Level 5	Plan for action	Ensure delivery dates are tied to critical defined milestones and monitored in the control schedule with milestones and need dates. Early procurement of critical items. Design review on critical equipment expedited where possible. Progress reports and tracking inspections on these items will be done by the procurement team.	Ongoing.	Open						Frank Collins/Bill Atkinson	Long lead packages have been identified, and RFPs issued. Package awards ongoing. ECN-0004 has delayed package award for distribution package. Working with vendor to confirm if delivery date will impact the schedule. Vendor package awards are being issued with delivery sureties and penalties for late delivery.
36	PRO	If Bulks/Consumables are not readily available off the shelf it may result in delays.	Off the shelf bulk items not readily available. Will stall work fronts without having proper quantities on-site.	Likely	Low	Level 4	Plan for action	During planning phase form a complete list of all mechanical, electrical and mounting items required. Engage vendors to have items readily available at nearest facility. Set up secure stations for PPE distribution. Inventory management at Site. Leverage existing corporate supplies and asset inventory. Obtain pricing for all potential bulks and consumables which may be needed over the course of the job to ensure quick turnaround for purchasing additional items.	Efforts ongoing. Bulk material orders in process and deliveries being received on site.	Open						Frank Collins	
37	PRO	Management of Warehouse space. If there is limited space available, then deliveries may need to be delayed.	Limitation for on-site storage may lead to productivity or schedule impacts.	Likely	Low	Level 4	Plan for action	Timing material delivery close to installation to minimize Site storage. Negotiate off-site storage with vendors where possible. Add additional on-site storage if required.	Ongoing.	Open						Frank Collins	



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38	PRO	If there are not qualified Innu Business Group as the first option for supply or work package, Contractor may not meet Project Benefits Guidelines.	Capability of interested Innu Businesses to perform scope of Work in accordance with Project specifications. Potential to not meet project Benefit Guidelines. May cause public relations issue.	Unlikely	Low	Level 3	Monitor	Met with Innu business group up front and outline available packages. Issue EOI early to identify potential Innu businesses that can meet supply requirements. Transfer information on various packages, post packages on bids.ca and provide any updates. Continue to communicate with the Innu Business Group.	No issues to report this period.	Open						Frank Collins		
39	QUA	If there are issues with the welding of the IPB, it may result in potential additional work.	Additional cost, schedule impact	Unlikely	Moderate	Level 4	Plan for action	Contractor to communicate with Company when work is to be performed to ensure manufacturer representative to be onsite for erection of IPB. IPB manufacturer to provide welding procedures well in advance of work start. Training on IPB prior to installation. Leverage existing qualified welders. Coordinate with Company and Company's other contractors as needed.	No update this period.	Open						Perry Snook		
40	QUA	If welding inspections are not performed at required frequencies, then Contractor may not discover welding deficiencies or meet project inspection requirements.	Additional cost, schedule impact	Unlikely	Moderate	Level 4	Plan for action	Ensure qualified workers perform the tasks. Regular monitoring of ongoing work by supervisor and quality group. Prepare documentation, plan, weld map, ITPs etc. in advance of inspection.	No update this period.	Open						Perry Snook		
41	QUA	If Off-site QA inspections are not performed, it may result in the delivery of non-compliant products.	Receiving non-compliant product. Delays.	Unlikely	Moderate	Level 4	Plan for action	Leveraging internal affiliates for fabrication of pipe, HVAC, controls and structural fabrication. Establishing vendor inspection/audit and FAT where appropriate. Off site inspections requirements are listed in the quality plan.	First offsite audits performed this period at Mugafab and Atlantica. No immediate concerns were identified.	Open						Perry Snook	Offsite fabrication ITPs have been approved. Mugafab and Atlantica have been meeting with project quality to set expectations.	
42	SCH	Certain night shift work may experience reduced productivity, less supervision.	Loss of productivity, safety	Unlikely	Moderate	Level 4	Plan for action	Proper supervision and turnover from day shift to night shift. Concentrate critical activities during day shift (where possible) where there is additional supervision available. Night shift safety coverage will be required. Appropriate temporary lighting will be provided.	No update this period. Night shift planned for the New Year.	Open						Stephane Lacasse		
43	SCH	Areas not turned over exactly when and where they are supposed to be, or in the condition stated.	Change of plan/sequence, reduced productivity	Likely	High	Level 6	Immediate action	Company to give notice in advance of any change to dates or potential delay. Contractor to notify Company in advance on critical dates and take action accordingly if there is a change.	Ongoing. Working through area handover / interface process	Closed	18-Dec-2017					Stephane Lacasse	New interface process between site contractors to coordinate work areas. Contractor being integrated into the process. Closed as this risk is already identified above in #15.	



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Risk Management Team:	Tim Harrington, Charles Lavigne, Laurie Hildebrand, Brad Burse

Category Legend	
ENG	Engineering
PRO	Procurement
HSE	Health, Safety & Environment
QUA	Quality
SCH	Schedule
CON	Construction
MC&C	Mechanical Completion & Commissioning
COM	Commercial

Likelihood	Consequences				
	Very Low	Low	Moderate	High	
Highly Unlikely	Level 1	Level 2	Level 3	Level 4	Level 5
Unlikely	Level 2	Level 3	Level 4	Level 5	Level 6
Likely	Level 3	Level 4	Level 5	Level 6	Level 7
Highly Likely	Level 4	Level 5	Level 6	Level 7	

Legend	
Requires Input Information	
Automatically Formulated	

No.	Cat.	Risk Definition	Description of Consequences	Initial Assessment				Mitigation/Safeguard	Comments	Status	Date Resolved	Revised Assessment				Residual Action		
				Likelihood	Consequence	Risk Level	Response					Likelihood	Consequence	Risk Level	Response	Risk Owner	Action Plan	Date Action Req'd
44	SCH	Transfer of area to Contractor	Multiple contractors working in the same area, reduced productivity, potential damage, safety	Likely	Moderate	Level 5	Plan for action	Establish proper transfer of area procedure with Company and other contractors. Attend regular coordination meetings. Company to establish a formal documented handover process for work areas, including walk down of areas.		Closed	28-Nov-2017					Stephane Lacasse	Duplicate of item above.	
45	SCH	Approval of labour productivity management plan, health and safety plan and C-SEPP prior to start of permanent work.	Delayed start date for permanent work.	Unlikely	High	Level 5	Plan for action	Prioritize these documents for submission to Company. Informal submissions recommended by Company for streamlined approvals.	Complete. All three documents approved Code 1/2 in time for construction start.	Closed	01-Oct-2017					Tim Harrington		
46	SCH	A-Series documents not Approved Code 02 or better prior to start of the Work	Company has instructed Contractor to delay start of Work until all A-Series documents are Approved. Schedule delay and cost impacts.	Highly Likely	Moderate	Level 6	Immediate action	Contractor has submitted all documents. All A-Series documents required to start construction are currently Approved Code 02 or better. Any documents received with comments are being reviewed and updated as required. Contractor discussing streamlined Approval with Company.	Contractor approved to start construction.	Closed	20-Oct-2017					Tim Harrington	Finalize and revise remaining documents to achieve Code 1 where remaining.	
47	ENG	RFI-0039 Response: Anti-condensation heaters requested for all electrical and mechanical equipment cabinets / panels.	> Off the shelf items that are CSA certified will now have additional requirements, i.e. slowing procurement dramatically. > Has electrical distribution system within the powerhouse been sized to account for these heaters? Transformers / panels may need to be upsized. > Cabling hasn't been assigned in the current cable schedule for heaters in all this equipment. Likely result in numerous new cables throughout the powerhouse.	Likely	Moderate	Level 5	Plan for action	Contractor advised Company that a broad stroke approach to this heater issue is concerning. Meeting has been requested to review with design engineers.		Open		Likely	Low	Level 4	Plan for action	Justin Curlew	Review meeting with design engineers occurred. Company agreed that off the shelf items do not require same level of scrutiny. Address concerns on a case by case basis with a concession request. Justin to prepare a preliminary list of items this will apply to.	
48	ENG	Light fixture query has been responded to; Contractor evaluating pricing for fixture substitutes and will submit CHR to cover any change. Fixture order on hold until CHR can be approved and processed.	Late delivery of light fixtures	Unlikely	Low	Level 3	Monitor	Expedite CHR submission and approval process.	Ongoing. Site Query was processed and a Change Request submitted.	Open						Brad Burse		
49	COM	Staff and Site Installation inclusion on change requests - Contractor and Company not aligned on entitlement.	> Compensation shortfall for Contractor > Delayed approval and processing of change orders	Likely	High	Level 6	Immediate action	Recommended that parties meet to work out a path forward.	Contractor met with Scott O'Brien 29-Nov-2017. Contractor to provide a proposal to quantify staff/site installation.	Open						Tim Harrington		
50	COM	Site Disallowed Items - Contractor and Company are not totally aligned on this item (tracking, threshold etc.)	Additional resources, cost impact	Likely	Moderate	Level 5	Plan for action	Company and Contractor to work to clarify and resolve this item.	Contractor met with Scott O'Brien 29-Nov-2017. Contractor provided a proposal for quantification / defining of Disallowed Items in letter LTR-CH0031001-0098.	Open						Tim Harrington		
51	HSE	Site wide communications not reliable	Work inefficiency, safety / emergency response	Highly Likely	Moderate	Level 6	Immediate action	Radio coverage deep within the powerhouse galleries is unreliable or not available.	Procedure being developed and formalized for work in the lower galleries. Will utilize Simplex radios in situations where regular radio coverage is not available.	Open		Highly Unlikely	Moderate	Level 3	Monitor	Robert Mercer Mike Moriarty	Procedure to be finalized. Process is in place just not formalized.	



Project Risk Management Register	
Risk Register	MFA-CG-SD-3440-RI-A04-0002-01
Rev:	Date:
Client:	Muskat Falls Corporation ("Company")
Project Name:	Supply and Install Mechanical & Electrical Auxiliaries MF
Contract Number / Project Ref	CH0031-001 / TC0006
Project Manager / Deputy:	Tim Harrington, P.Eng / Charles Lavigne
Project Sponsors:	Cahill - John J Henley, Ganotec - Mike Buckle
Risk Management Team:	Tim Harrington, Charles Lavigne, Laurie Hildebrand, Brad Burse

Category Legend	
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Likelihood	Consequences				
	Very Low	Low	Moderate	High	
Highly Unlikely	Level 1	Level 2	Level 3	Level 4	
Unlikely	Level 2	Level 3	Level 4	Level 5	
Likely	Level 3	Level 4	Level 5	Level 6	
Highly Likely	Level 4	Level 5	Level 6	Level 7	

Legend	
Requires Input Information	
Automatically Formulated	

No.	Cat.	Risk Definition	Description of Consequences	Initial Assessment				Mitigation/Safeguard	Comments	Status	Date Resolved	Revised Assessment				Residual Action		
				Likelihood	Consequence	Risk Level	Response					Likelihood	Consequence	Risk Level	Response	Risk Owner	Action Plan	Date Action Req'd
52	COM	If Company and Contractor cannot agree on required backup (level of detail) for the reconciliation of Neutral Funding invoices, then company may stop payment.	Company may stop payment of Neutral Funding invoices if an agreement cannot be reached	Highly Likely	Moderate	Level 6	Immediate action	Work with Company to ensure reconciliation process is agreed and implemented. Contractor to continue the process of programming its systems to provide an adequate level of detail for Company to assess PLA Labour costs.	Ongoing. To date, Contractor has had difficulty meeting Company expectations.	Open					Julie Yarn/ Julie Canuel	Further discussions to take place at the Sponsor level. Contractor to continue its programming efforts.		
53	CON	If the Unit 1 (UN1) Milestone Dates are delayed by Company's other contractors, specifically Andritz Hydro, then there will be cost and schedule impacts.	Schedule impact, cost impacts, reduced productivity	Unlikely	Low	Level 3	Monitor	Contractor to Notify Company. Contractor to work with Company on acceleration or additional resources if needed to reduce schedule impacts and maintain the Completion date. Update schedule for planning purposes.	Ongoing - Contractor to monitor.	Open					Robert Mercer Mike Moriarty			
54	CON	If concrete coring for drain connections (performed by Others) isn't completed in a timely manner, then it will delay piping activities	Schedule impact, cost impacts, reduced productivity	Unlikely	Low	Level 3	Monitor	Contractor will work with Company counterparts and other contractors to coordinate work on a daily basis. Contractor is regularly attending SIMOPS meetings and construction interface meetings.	Ongoing - Contractor to monitor.	Open								



Risk Management - Action Log

Risk Details						Action Details					
Item No.	Category	Risk Definition	Description of Consequences	Current Consequence Rating	Status	Action	Responsible Person	Date Created	Date Required	Date Completed	Comments
2	COM	If quantity variations are not tracked accurately, then Contractor may not be paid for all quantities installed.	Not being paid for the quantity installed.	Moderate	Open	Train staff and craft on systems at time of mobilization and regularly through the project	Julie Canuel	06-Dec-17	Ongoing		
2	COM	If quantity variations are not tracked accurately, then Contractor may not be paid for all quantities installed.	Not being paid for the quantity installed.	Moderate	Open	Full time Quantity Surveyor to be mobilized to site.	Tim Harrington / Charles Lavigne	06-Dec-17	06-Dec-17	06-Dec-17	Closed
2	COM	If quantity variations are not tracked accurately, then Contractor may not be paid for all quantities installed.	Not being paid for the quantity installed.	Moderate	Open	Track quantities during procurement process	Frank Collins / Julie Canuel	06-Dec-17	30-Apr-18		
2	COM	If quantity variations are not tracked accurately, then Contractor may not be paid for all quantities installed.	Not being paid for the quantity installed.	Moderate	Open	Quantity reconciliation to be completed every 3 months	Julie Canuel	06-Dec-17	31-Mar-17		Qty reconciliation required every quarter
3	COM	If there is a Protest, it could result in a Site Shutdown	If there is a protest there is a risk of productivity loss and schedule delay.	Moderate	Open	No current actions. Monitor Site work. Work with Company as necessary to minimize potential impacts.	Tim Harrington	06-Dec-17	Ongoing		
7	CON	Coordination of the Overhead Crane for schedule critical lifts to avoid delays	Potential for delays if crane is not available when required.	High	Open	Include activities for critical lifts in project schedule	Stephane Lacasse	06-Dec-17	06-Dec-17	06-Dec-17	Closed
7	CON	Coordination of the Overhead Crane for schedule critical lifts to avoid delays	Potential for delays if crane is not available when required.	High	Open	Coordinate upcoming lifts through SIMOPs and Interface meetings	Robert Mercer / Mike Moriarity	06-Dec-17	Ongoing		
8	CON	Congested Area - Interface with other Company contractors which could impact Contractor Work and Schedule.	Potential for delays, reduced productivity.	High	Open	Contractor will work with Company counterparts and other contractors to coordinate work on a daily basis	Robert Mercer / Mike Moriarity	06-Dec-17	Ongoing		
8	CON	Congested Area - Interface with other Company contractors which could impact Contractor Work and Schedule.	Potential for delays, reduced productivity.	High	Open	Coordinate upcoming activities through SIMOPs and Interface meetings	Robert Mercer / Mike Moriarity	06-Dec-17	Ongoing		

Risk Details						Action Details					
Item No.	Category	Risk Definition	Description of Consequences	Current Consequence Rating	Status	Action	Responsible Person	Date Created	Date Required	Date Completed	Comments
10	CON	If the masonry wall in the south service bay is performed as scheduled, there may be a safety risk in working around energized cables. Request early installation.	Safety risk for performing wall erection due to interface with live cables. Increase installation costs. Potential damage to cables. Safety risk for workers as working around live cables. Productivity impacts.	Moderate	Open	Contractor to look for future opportunities for wall installation prior to cable energization.	Robert Mercer / Mike Moriarity	06-Dec-17	30-Mar-18		
16	CON	If no clarity on the interface procedure/process & interface dates, there may be schedule impacts/delays.	> Schedule impact, cost impacts, reduced productivity. > Safety liability / responsibility confusion	Moderate	Open	Contractor working to gain early access to areas through SIMOPS and participate at the weekly Interface Management Meeting.	Robert Mercer / Mike Moriarity	06-Dec-17	Ongoing		
16	CON	If no clarity on the interface procedure/process & interface dates, there may be schedule impacts/delays.	> Schedule impact, cost impacts, reduced productivity. > Safety liability / responsibility confusion	Moderate	Open	Contractor to work with Company and Company Other Contractors to firm up the interface dates and reduce the need of having multiple Contractors working in the same area.	Robert Mercer / Mike Moriarity	06-Dec-17	Ongoing		
17	ENG	Timeliness of document review cycle from Company	Unable to deliver docs in time to ensure equipment delivery and schedule is met.	Moderate	Open	Working with Company to expedite document reviews. All agree that 21 day timelines can be improved for most situations.	Justin Curlew	06-Dec-17	Ongoing		
18	ENG	Design interface with different packages, especially controls, load transfer pkg and fire protection/detection	Unable to complete packages and deliver on time.	Moderate	Open	Engage suppliers early to ensure they have all of the proper information for timely completion of packages. Ensure documents/drawings are transmitted in line with schedule requirements. Vendor's with design scope will be required to perform clash analysis.	Justin Curlew / Frank Collins	06-Dec-17	30-Apr-18		
18	ENG	Design interface with different packages, especially controls, load transfer pkg and fire protection/detection	Unable to complete packages and deliver on time.	Moderate	Open	Perform design reviews on key packages and identify interfaces between packages.	Justin Curlew	06-Dec-17	30-Apr-18		

Risk Details						Action Details					
Item No.	Category	Risk Definition	Description of Consequences	Current Consequence Rating	Status	Action	Responsible Person	Date Created	Date Required	Date Completed	Comments
18	ENG	Design interface with different packages, especially controls, load transfer pkg and fire protection/detection	Unable to complete packages and deliver on time.	Moderate	Open	Include LDs and performance guarantees in vendor contracts to provide performance certainty.	Justin Curlew / Frank Collins	06-Dec-17	30-Apr-18		
18	ENG	Design interface with different packages, especially controls, load transfer pkg and fire protection/detection	Unable to complete packages and deliver on time.	Moderate	Open	Submit fire protection and fire detection drawings to Company for submittal to Service NL for review	Justin Curlew	17-Jan-18	31-Mar-18		
20	ENG	If Seismic Design is not completed prior to installation then there may be schedule impacts.	Without design complete will be difficult to install and complete services.	Moderate	Open	Design vendors have been engaged. Monitor progress.	Justin Curlew	06-Dec-17	31-Jan-18		Cable tray supports
21	ENG	Clash checking (all disciplines) required to avoid potential clashes during installation.	Potential of clash between services. Re-Design & Re-installation would be required.	Moderate	Open	Engage suppliers early to ensure they have all of the proper information for timely completion of packages. Ensure documents/drawings are transmitted in line with schedule requirements. Vendor's with design scope will be required to perform clash analysis.	Justin Curlew / Frank Collins	06-Dec-17	30-Apr-18		
21	ENG	Clash checking (all disciplines) required to avoid potential clashes during installation.	Potential of clash between services. Re-Design & Re-installation would be required.	Moderate	Open	Company and Contractor engineering groups to perform design review and address potential clashes early on in the process.	Justin Curlew	06-Dec-17	30-Apr-18		
23	HSE	If there is no Emergency Rescue Plan / Team developed and in place, then this puts workers at risk.	Workers at risk.	High	Open	Emergency response plan developed and communicated to all Site Personnel. Develop and train emergency response team.	Chris Kieley	06-Dec-17	Ongoing		
23	HSE	If there is no Emergency Rescue Plan / Team developed and in place, then this puts workers at risk.	Workers at risk.	High	Open	Company's pending emergency rescue plan will be rolled out Dec 14, 2017 at the construction interface meeting. Company to provide supplemental emergency response support. Integrate with Contractor plan as necessary.	Chris Kieley	06-Dec-17	22-Dec-17	22-Dec-17	Closed


Risk Details						Action Details					
Item No.	Category	Risk Definition	Description of Consequences	Current Consequence Rating	Status	Action	Responsible Person	Date Created	Date Required	Date Completed	Comments
24	HSE	Confined space work can pose safety risk.	Workers at risk.	High	Closed	Develop and train team so that all employees at Site have been trained on the safety procedure.	Chris Kieley	06-Dec-17	22-Dec-17	22-Dec-17	Closed
24	HSE	Confined space work can pose safety risk.	Workers at risk.	High	Closed	Ensure proper equipment is readily available and crews have adequate training.	Chris Kieley	06-Dec-17	22-Dec-17	22-Dec-17	Closed
27	HSE	Spill & Waste Management	Environmental risk. Workers at risk.	Moderate	Open	Ensure equipment for spill and waste management is available on site.	Chris Kieley	06-Dec-17	06-Dec-17	06-Dec-17	Closed
27	HSE	Spill & Waste Management	Environmental risk. Workers at risk.	Moderate	Open	Confirm hazardous waste removal vendor is properly certified.	Chris Kieley	06-Dec-17	06-Dec-17	06-Dec-17	Closed
30	MC&C	If the third party experts required for specialized equipment are not available there may be delays.	Third party not available when required resulting in delays.	Moderate	Open	Proper planning and scheduling of required third party activities.	Jeremie Bertin / Stephane Lacasse	06-Dec-17	Ongoing		
30	MC&C	If the third party experts required for specialized equipment are not available there may be delays.	Third party not available when required resulting in delays.	Moderate	Open	Include notification requirements in subcontract related to delay.	Jeremie Bertin / Frank Collins	06-Dec-17	30-Jun-18		
32	MC&C	Delays in reception of regulatory approvals (pressure piping, fire protection, diesel tank and piping).	Delays in schedule, impact on major milestones.	High	Open	Proper planning, training, and scheduling to ensure documentation and authorization are requested on time. Tracking authorization response time and any delays after submittal.	Jeremie Bertin / Perry Snook	06-Dec-17	Ongoing		
33	PRO	Product Loss / Damage in Transit	Project Delay / Additional Cost	Moderate	Open	Purchase agreements to include provisions to address shipping risk, including insurance, packaging requirements and timely replacement in the event of damage.	Frank Collins	06-Dec-17	30-Apr-18		
34	PRO	If Equipment not properly preserved may result in damage.	Potential damage / Additional Cost	Moderate	Open	Develop preservation plan and communicate to responsible personnel.	Frank Collins	06-Dec-17	30-Apr-18		

Risk Details						Action Details					
Item No.	Category	Risk Definition	Description of Consequences	Current Consequence Rating	Status	Action	Responsible Person	Date Created	Date Required	Date Completed	Comments
34	PRO	If Equipment not properly preserved may result in damage.	Potential damage / Additional Cost	Moderate	Open	Coordinate delivery schedule with Site installation to minimize preservation required at Site. Contractor to use preservation module within Company provided PCS system	Frank Collins	06-Dec-17	Ongoing		
35	PRO	Late Delivery of Critical Equipment	Project Delay / Additional Cost	Moderate	Open	Ensure delivery dates are tied to critical defined milestones and monitored in the control schedule with milestones and need dates.	Frank Collins / Stefane Lacasse	06-Dec-17	06-Dec-17	06-Dec-17	Closed
35	PRO	Late Delivery of Critical Equipment	Project Delay / Additional Cost	Moderate	Open	Progress reports and tracking inspections on these items will be done by the procurement team.	Frank Collins	06-Dec-17	Ongoing		
35	PRO	Late Delivery of Critical Equipment	Project Delay / Additional Cost	Moderate	Open	Vendor package awards are being issued with delivery sureties and penalties for late delivery.	Frank Collins	06-Dec-17	30-Apr-18		
39	QUA	If there are issues with the welding of the IPB, it may result in potential additional work.	Additional cost, schedule impact	Moderate	Open	Contractor to communicate with Company when work is to be performed to ensure manufacturer representative to be onsite for erection of IPB. IPB manufacturer to provide welding procedures well in advance of work start.	Perry Snook	06-Dec-17	31-Mar-18		
39	QUA	If there are issues with the welding of the IPB, it may result in potential additional work.	Additional cost, schedule impact	Moderate	Open	Training on IPB prior to installation. Leverage existing qualified welders. Coordinate with Company and Company's other contractors as needed.	Perry Snook	06-Dec-17	30-Jun-18		
40	QUA	If welding inspections are not performed at required frequencies, then Contractor may not discover welding deficiencies or meet project inspection requirements.	Additional cost, schedule impact	Moderate	Open	Ensure qualified workers perform the tasks. Regular monitoring of ongoing work by supervisor and quality group.	Perry Snook	06-Dec-17	Ongoing		

Risk Details						Action Details					
Item No.	Category	Risk Definition	Description of Consequences	Current Consequence Rating	Status	Action	Responsible Person	Date Created	Date Required	Date Completed	Comments
40	QUA	If welding inspections are not performed at required frequencies, then Contractor may not discover welding deficiencies or meet project inspection requirements.	Additional cost, schedule impact	Moderate	Open	Prepare documentation, plan, weld map, ITPs etc. in advance of inspection.	Perry Snook	06-Dec-17	Ongoing		
41	QUA	If Off-site QA inspections are not performed, it may result in the delivery of non-compliant products.	Receiving non-compliant product. Delays.	Moderate	Open	Perform off site inspections as listed in the project quality plan.	Perry Snook	06-Dec-17	Ongoing		
42	SCH	Certain night shift work may experience reduced productivity, less supervision.	Loss of productivity, safety	Moderate	Open	Proper supervision and turnover from day shift to night shift. Concentrate critical activities during day shift (where possible) where there is additional supervision available. Monitor productivity dayshift vs nightshift.	Robert Mercer / Stephane Lacasse	06-Dec-17	Ongoing		
43	SCH	Areas not turned over exactly when and where they are supposed to be, or in the condition stated.	Change of plan/sequence, reduced productivity	High	Closed	-	-	-	-	-	Closed
44	SCH	Transfer of area to Contractor	Multiple contractors working in the same area, reduced productivity, potential damage, safety	Moderate	Closed	-	-	-	-	-	Closed
45	SCH	Approval of labour productivity management plan, health and safety plan and C-SEPP prior to start of permanent work.	Delayed start date for permanent work.	High	Closed	-	-	-	-	-	Closed
46	SCH	A-Series documents not Approved Code 02 or better prior to start of the Work	Company has instructed Contractor to delay start of Work until all A-Series documents are Approved. Schedule delay and cost impacts.	Moderate	Closed	-	-	-	-	-	Closed
49	COM	Staff and Site Installation inclusion on change requests - Contractor and Company not aligned on entitlement.	> Compensation shortfall for Contractor > Delayed approval and processing of change orders	High	Open	Contractor to provide a proposal to quantify staff/site installation.	Tim Harrington / Brad Bursey	06-Dec-17	22-Dec-17	18-Dec-17	CHR-CH0031001-0012 <i>Elevator Temp Services</i> & CHR-CH0031001-0018 <i>Removal of Existing Fireproofing</i> have been submitted providing additional detail for site installation and staff labour costs.

Risk Details						Action Details					
Item No.	Category	Risk Definition	Description of Consequences	Current Consequence Rating	Status	Action	Responsible Person	Date Created	Date Required	Date Completed	Comments
50	COM	Site Disallowed Items - Contractor and Company are not totally aligned on this item (tracking, threshold etc.)	Additional resources, cost impact	Moderate	Open	Contractor to provide a proposal for quantification / defining of Disallowed Items	Tim Harrington / Charles Lavigne	06-Dec-17	15-Dec-17	14-Dec-17	Contractor provided a proposal for quantification / defining of Disallowed Items in letter LTR-CH0031001-0098. Awaiting response from Company.
51	HSE	Site wide communications not reliable	Work inefficiency, safety / emergency response	Moderate	Open	Procedure being developed and formalized for work in the lower galleries. Will utilize Simplex radios in situations where regular radio coverage is not available.	Robert Mercer / Mike Moriarity	06-Dec-17	22-Dec-17	22-Dec-17	Closed. Procedure completed, reviewed with crews and posted in lunchrooms.
52	COM	If Company and Contractor cannot agree on required backup (level of detail) for the reconciliation of Neutral Funding invoices, then company may stop payment.	Company may stop payment of Neutral Funding invoices if an agreement cannot be reached	Moderate	Open	Contractor to provide all backup once programming is complete.	Julie Yarn	06-Dec-17	Ongoing		
52	COM	If Company and Contractor cannot agree on required backup (level of detail) for the reconciliation of Neutral Funding invoices, then company may stop payment.	Company may stop payment of Neutral Funding invoices if an agreement cannot be reached	Moderate	Open	Meeting to take place at the Sponsors level to progress the issue	Tim Harrington / Charles Lavigne	06-Dec-17	19-Jan-18		

Cahill - Ganotec Weekly Reporting: G - CH0031 - Muskrat - S&I Mech & Elec B

		CURRENT BUDGET	PERIOD [01/27]				JOB TO DATE			
Project Name	CB MH	MH	CE MH Var	CE PF	%	MH	CE MH Var	CE PF	%	
G - CH0031 - Muskrat - S&I Mech & Elec B	707,041	4,570	1,391	1.30	0.8%	34,222	7,439	1.22	5.9%	
Financial Results Analysis	707,041	4,570	1,391	1.30	0.8%	34,222	7,439	1.22	5.9%	
PLA Labour - Support Crew	176,787	1,642	(2)	1.00	0.9%	14,734	2	1.00	8.3%	
Labour Training	3,380	28	0	1.00	0.8%	737	6	1.01	22.0%	
Labour Support Crew	173,407	1,614	(2)	1.00	0.9%	13,998	(4)	1.00	8.1%	
PLA Labour - Mob/Demob & Direct Work	530,254	2,928	1,393	1.48	0.8%	19,488	7,437	1.38	5.1%	
Mobilisation & Demobilisation	9,826	329	0	1.00	3.3%	3,956	945	1.24	49.9%	
G002 - Mobilization	6,117	329	0	1.00	5.4%	3,956	945	1.24	80.1%	
G005 - Demobilization	3,709		0		0.0%		0		0.0%	
Direct Work	520,428	2,599	1,393	1.54	0.8%	15,425	6,600	1.43	4.2%	
G010 - PIPING/MECHANICAL	132,958	436	149	1.34	0.4%	1,869	860	1.46	2.1%	
G012 - HVAC SYSTEM	68,535	353	37	1.11	0.6%	1,824	(258)	0.86	2.3%	
G014 - ELECTRICAL	202,676	1,287	(63)	0.95	0.6%	7,952	(59)	0.99	3.9%	
G016 - ARCHITECTURAL	114,505	523	1,270	3.43	1.6%	3,780	6,057	2.60	8.6%	
G018 - DIESEL GENERATOR SYSTEM	1,755		0		0.0%		0		0.0%	
Field modifications						108	(108)			
Grand Total	707,041	4,570	1,391	↑ 1.30	0.8%	34,222	7,439	↑ 1.22	5.9%	
Job to Date Column Legend		Comments/ Details								
MH		Actual MH Worked								
CE MH Var		Actual MH Gain or Loss compare to MH Work								
CE PF		= (MH+CE MH Var) / MH								
%		% Completed = (MH+CE MH Var) / CB MH								



Muskrat Falls

		Name
Management	Project Manager	Tim Harrington
	Deputy Project Manager	Charles Lavigne
	Construction Manager	Robert Mercer
	Deputy Construction Manager	Michael Moriarity
	Risk Manager / Contract Admin	Laurie Hildebrand
	Contract Admin	Brad Bursey
	Project Controls	Julie Canuel
	Deputy Project Controls	Jeff Butler
Construction	Business Manager	Leah Pearson
	Piping Superintendent	Tim Dicks
	E&I Superintendent	Jared Desrosiers
Project Engineering / Controls	Arch/HVAC/Sub Superintendent	Ross Stamp
	Project Engineer	Justin Curlew
	Deputy Project Engineer	Etienne Fortin
	Package Eng - Mech	Cutris Doyle
	Package Eng - Piping	Daniel Parsons
	Package Eng - Elect	Bradon Hynes
	Package Eng - Elect	Bartlett, David
	Package Eng - Arch/HVAC/Sub	Foley, Jessica
	Scheduler/Planner	Stéphane Lacasse
	Scheduler/Planner	Steve Walsh
	Cost Control	Julie Yarn
Completions	Quantity Surveyor	Simon Lambert
	Completions Manager	
Safety	Deputy Completions Manager	Jeremie Bertin
	HSE Lead	Chris Keiley
	HSE Advisor	Perry Murphy
Quality	HSE Advisor	Ivan Brenton
	QA/QC Lead	Snook, Perry
	Deputy QA/QC Lead	Justin Gibbons
Procurement	E&I Quality Advisor	Lee Onekeo
	Proc. / Material Controls Lead	Frank Collins
	Purchaser	Rochelle Fisher
	Purchaser	Bill Atkinson
Labour Relations / Logistics	Material Control	Ferdanand, Thomas
	Labour Relations	Carol Ann Molloy
Intership	Travel Coordinator	Paula Acreman
	Engineering Student	Rachel Tobin
	Engineering Student	Jennifer Careen