

From: Terry Savard <tsavard@canmec.com>
Sent: 2017-03-02 5:27:40 PM
To: Mavromatis William; Hu Nicole; Hillier Steven
Cc: David Charbonneau <dcharbonneau@canmec.com>; Bertrand Mathieu; Jean-David Turcotte <jdturcotte@CANMEC.COM>; Jean-Marc Cartier <jmcartier@canmec.com>; Lydia Plourde <lplourde@canmec.com>; Carrier Daniel; Éric Tremblay <etremblay@canmec.com>; Bourbeau Luc
Subject: Letter 1994-CNM-HAL-126, reply to your letter HCM-CNM-116, Changes to Exhibit 9 Dates.

Attachments: [image001.png](#), [image004.jpg](#), [1994-CNM-HAL-126 - Rev 0 - Reply to letter HCM-CNM-116, Changes.pdf](#), [Attachment 1 EoT Cost Evaluation 2017-02-28.pdf](#), [Attachement 2 Muskrat Falls Phase 2 Site conditions and assumpt.pdf](#), [Attachment 3 CH0032 - Muskrat Falls Gates - Intake & Draft Tube \(with re....pdf](#), [CH0032---29LC- Int & DT Sched DD 2017-01-30 export 2017-03-02.xer](#)

EXTERNAL EMAIL, please exercise caution

Bill,

Enclosed, you will find our letter 1994-CNM-HAL-126 and the related attachments. This letter is our reply to your letter HCM-CNM-116, Changes to Exhibit 9 Dates.

Best regards,

Terry



Terry Savard
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March 02nd, 2017

1994-CNM-HAL-126

Mr. Bill Mavromatis
Project Management
ANDRITZ HYDRO LTÉE
6100 aut. Transcanadienne
Pointe-Claire, Québec, Canada
H9R 1B9

Subject: CH0032-01 – Reply to letter HCM-CNM-116, Changes to Exhibit 9 Dates
Ref: Company's Letter HCM-CNM-088, 094, 103 & 113
Contractor's Letter 1994-CNM-HAL-106 & 123
Attachments: 1- EoT Cost Evaluation_2017-02-28
2- Muskrat Falls Phase 2 Site Conditions and Assumptions_2017-02-28
3- Schedule Update

Dear Mr. Mavromatis,

Contractor acknowledges reception of Company's letter HCM-CNM-116, regarding the changes to exhibit 9 dates. We believe that the meeting held last week with Company was very constructive and will benefit to the project execution.


As per Company's request, attachments to this letter are comprising:

- 1- A Budgetary estimate to support the changed dates from the preliminary version of exhibit 9 received by Company.
- 2- The assumptions and work site conditions supporting the initial lump sum price and the revised estimate.
- 3- An updated schedule to reflect the changed dates from preliminary exhibit 9.

Contractor is emitting a reserve concerning the lead time to update the execution plans and procedures. The changes to exhibit 9 dates received by Company are preliminary and unofficial. A commitment is required to go further in the process by receiving the exhibit 9 revised dates and changed site conditions through the official change mechanisms as per signed agreement.

We remain available for supporting discussions or any interrogations you may have.

Regards,



Jean-David Turcotte, Eng.
Project Director – Hydroelectricity

JDT/ts

Cc: Mathieu Bertrand, Andritz
Steven Hillier, Andritz
Daniel, Carrier, Andritz
Jean-Marc Cartier, Canmec Industriel



Attachment 1: Extension of time cost evaluation summary as of March 1st, 2017

Due to the delay and the change of work sequence planned in the realization of the Contract, CANMEC hereby presents a preliminary estimate of the increase in its Costs due to the Extension of Time.

The following Cost Estimates are summarized as follow:

Field Overhead Cost 9.0 M \$)

• Impacted Period No 1 (February 15 th , 2015 to September 8 th , 2015) :	2.4 M \$
• Impacted Period No 2 (September 9 th , 2015 to October 31 th , 2015) :	1.0 M \$
• Impacted Period No 3 (November 16 th , 2016 to July 15 th , 2017) :	2.3 M \$
• Impacted Period No 4 (September 15 th , 2017 to January 4 th , 2018) :	2.1 M \$
• Impacted Period No 5 (April 14 th , 2019 to June 19 th , 2019) :	1.2 M \$

Unabsorbed home office overhead cost (7.2 M\$)

• Impacted Period No 1 (February 15 th , 2015 to September 8 th , 2015) :	2.2 M \$
• Impacted Period No 2 (September 9 th , 2015 to October 31 th , 2015) :	0.6 M \$
• Impacted Period No 3 (November 16 th , 2016 to July 15 th , 2017) :	2.6 M \$
• Impacted Period No 4 (September 15 th , 2017 to January 4 th , 2018) :	1.2 M \$
• Impacted Period No 5 (April 14 th , 2019 to June 19 th , 2019) :	0.7 M \$

Supplemental storage cost (0.1 M\$)

• Hoarding walls, hydro-mobile, sea cans :	0.1 M \$
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Mobilization and demobilization (0.5 M\$)

• Additional mobilization for work starting on July 15 th , 2017 :	0.5 M \$
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Bonding Cost increase (to be finalized)

Consequences on the cost of site insurance (to be finalized)

Interest on deferred cash flow (to be finalized)

Loss of learning curve (to be finalized)

The information and documentation provided in support of the extension of time claim is subject to the reservation that certain costs, including impact costs, cannot be completely and accurately evaluated at this time. CANMEC therefore reserves the right to amend and update its extension of time claim as additional information becomes available. All information divulged in this document is provided without any prejudice to Canmec's rights.



Warranty Extension Cost: (1.1 M \$)

• Impacted Period No 1 (February 15 th , 2015 to September 8 th , 2015) :	0.3 M \$
• Impacted Period No 2 (September 9 th , 2015 to October 31 th , 2015) :	0.1 M \$
• Impacted Period No 3 (November 16 th , 2016 to July 15 th , 2017) :	0.4 M \$
• Impacted Period No 4 (September 15 th , 2017 to January 4 th , 2018) :	0.2 M\$
• Impacted Period No 5 (April 14 th , 2019 to June 19 th , 2019) :	0.1 M\$

Indexation Extension Cost: (3.4 M \$)

• Impacted Period No 1 (February 15 th , 2015 to September 8 th , 2015) :	1.0 M \$
• Impacted Period No 2 (September 9 th , 2015 to October 31 th , 2015) :	0.3 M \$
• Impacted Period No 3 (November 16 th , 2016 to July 15 th , 2017) :	1.2 M \$
• Impacted Period No 4 (September 15 th , 2017 to January 4 th , 2018) :	0.6 M\$
• Impacted Period No 5 (April 14 th , 2019 to June 19 th , 2019) :	0.3 M\$

Total Estimated (excluding items to be finalized): 21.3 M \$

The information and documentation provided in support of the extension of time claim is subject to the reservation that certain costs, including impact costs, cannot be completely and accurately evaluated at this time. CANMEC therefore reserves the right to amend and update its extension of time claim as additional information becomes available. All information divulged in this document is provided without any prejudice to Canmec's rights.



Attachment 2: CANMEC CH0032-01 Muskrat Falls Draft Tubes and Intake Hydro-Mechanical Work Site Conditions and Fixed Budget Assumptions

Objective of this memo is to clarify expected worksite conditions and budget assumptions to complete hydro-mechanical work at the draft tubes and intake.

In addition to conditions included in contractual agreement and submitted work procedures, here is a list of assumptions used to prepare budgeted submitted fix price:

Draft tubes hydro-mechanical work

1. High angle rescue is to be performed as required by others;
2. Supervision and worker trailers, dry house and tool cribs in close proximity of worksite (walking distance);
3. A 100 feet wide per 150 feet long footprint downstream of unit (per unit being worked on);
4. No unauthorized circulation in and out of proposed footprint or unit hoardings during the work;
5. An access for tractor-trailer, crane and other vehicles to reserved footprint (on their own power);
6. An unobstructed access to draft tube roof through the South road access as required;
7. An unobstructed laydown area on top of South roof access road (30 x 30 feet) for sea cans and tooling required at a walking distance;
8. Access to a performant internet and cell phone service where our trailers will be located;
9. Work sequence as presented in schedule from Unit 1 to 4 is respected (1 being worked first and 4 being completed last);
10. Snow removal and road maintenance of worksite access completed by others;
11. Dewatering and de-icing management completed by others;
12. Crane operation is not hindered or coordinated outside of preapproved coordination;
13. No overhead work including worksite access, equipment, trailers and tool cribs is allowed;
14. Access to a 200x300 feet laydown in close proximity of worksite will be provided to allow unloading and work on guides, gates and equipment;
15. Access to a minimum of 250kW of electricity;
16. The Draft tube crane rails installation is completed prior to interface I7 readiness;
17. No draft tube roof in place until heavy guide sections installation is completed;
18. The roof is not installed in one of the four unit when interface I7 is ready in order to install the Draft tube crane;
19. The draft tube deck roof can withstand the loading of a mobile crane to install the Draft Tube crane in the accessible Bay;
20. A temporary power feeder is available for the Draft Tube crane prior to interface I7 readiness;
21. After a 48 hours minimum warning for incoming guide alignment final measurements, we require to have an owner and company witness as required within the hour;
22. All permanent and temporary electrical work is out of Canmec's scope;
23. All second stage concrete work to be aligned with hydro-mechanical work schedule.

Intake hydro-mechanical work

1. High angle rescue is to be performed as required by others;
2. Supervision and worker trailers, dry house and tool cribs in close proximity of worksite (walking distance);



3. A 100 feet wide per 150 feet long footprint upstream of unit (per unit being worked on);
4. No unauthorized circulation in and out of proposed footprint or unit hoardings during the work;
5. An unobstructed access to intake bridge through south dam for tractor-trailer, crane or other vehicles (on their own power);
6. An unobstructed access to upstream ramp as required;
7. An unobstructed laydown area on top of South Dam (30 x 50 feet) for sea cans and tooling required at a walking distance;
8. Access to a performant internet and cell phone service where our trailers will be located;
9. Work sequence as presented in schedule from Unit 1 to 4 is respected (1 being worked first and 4 being completed last);
10. Snow removal and road maintenance of worksite access completed by others;
11. Dewatering and de-icing management completed by others;
12. Crane operation is not hindered or coordinated outside of preapproved coordination;
13. No overhead work including worksite access, equipment, trailers and tool cribs is allowed;
14. Access to a 200x300 feet laydown in close proximity of worksite will be provided to allow unloading and work on guides, gates and equipment;
15. Access to a minimum of 500kW of electricity;
16. After a 48 hours minimum warning for incoming guide alignment final measurement, we require to have an owner and company witness as required within the hour;
17. All permanent and temporary electrical work is out of Canmec's scope;
18. All second stage concrete work to be aligned with hydro-mechanical work schedule.

Muskrat Falls Gates - Intake Draft Tube - (WITH DOWNTIME between unit 2 3))		JD-Intake Draft Tube pdf						Data Date: 2017-01-30 Printed: 2017-03-02 15:07																													
Activity ID	Activity Name	Original Duration	Primary Constraint	Primary Constraint Date	Start	Finish	Total Float	Budgeted Labor Units	2017				2018				2019																				
									F	M	A	M	J	Jul	A	S	O	N	D	J	F	M	A	M	J	Jul	A	S	O	N	D	J	F	M	A	M	J
Muskrat Falls Gates - Intake & Draft Tube - (WITH DOWNTIME between unit 2 & 3))		505.8			2017-07-12	2019-06-19	-46.0	72388																													
Project Management		502.8			2017-07-16	2019-06-19	-46.0	0																													
Schedule Milestones		502.8			2017-07-16	2019-06-19	-46.0	0																													
Intake and Powerhouse		364.0			2017-07-16	2018-07-15	-16.0	0																													
Installation		364.0			2017-07-16	2018-07-15	-16.0	0																													
A0145	I8 - Unit 1 - Draft Tube Structure Ready for start of Hydromechanical Installation (Dates for re	0.0	Start On	2017-07-16	2017-07-16*		0.0	0	I8 - Unit 1 - Draft Tube Structure Ready for start of Hydromechanical Installation (Da																												
A0140	I7 - Service Bay Draft Tube Gallery Ready for start of installation of Gantry Crane (Dates	0.0	Start On	2017-07-16	2017-07-16*		0.0	0	I7 - Service Bay Draft Tube Gallery Ready for start of installation of Gantry Crane (Da																												
A0150	I9 - Unit 2 - Draft Tube Structure Ready for start of Hydromechanical Installation (Dates i	0.0	Start On	2017-09-12	2017-09-12*		0.0	0	I9 - Unit 2 - Draft Tube Structure Ready for start of Hydromechanical Installat																												
A0155	I10 - Unit 3 - Draft Tube Structure Ready for start of Hydromechanical Installation (Dates	0.0	Start On	2017-10-10	2017-10-10*		0.0	0	I10 - Unit 3 - Draft Tube Structure Ready for start of Hydromechanical Inst																												
A0160	I11 - Unit 4 - Draft Tube Structure Ready for start of Hydromechanical Installation (Dates	0.0	Start On	2017-11-05	2017-11-05*		0.0	0	I11 - Unit 4 - Draft Tube Structure Ready for start of Hydromechanical I																												
A0170	I12 - Unit 1 - Intake Structure Ready for start of Hydromechanical Intallation (Dates for re	0.0	Start On	2018-01-05	2018-01-05*		0.0	0	I12 - Unit 1 - Intake Structure Ready for start of Hydromechanic																												
A0175	I13 - Unit 2 - Intake Structure Ready for start of Hydromechanical Intallation (Dates for re	0.0	Start On	2018-04-16	2018-04-16*	-6.0	-6.0	0	I13 - Unit 2 - Intake Structure Ready for start of Hyd																												
A0180	I14 - Unit 3 - Intake Structure Ready for start of Hydromechanical Intallation (Dates for re	0.0	As Late As		2018-07-15		-16.0	0	I14 - Unit 3- Intake Structure Ready for s																												
A0185	I15 - Unit 4 - Intake Structure Ready for start of Hydromechanical Intallation (Dates for re	0.0	Start On	2018-07-15	2018-07-15*	-16.0	-16.0	0	I15 - Unit 4- Intake Structure Ready for s																												
MILESTONE-Canmec		502.8			2017-07-16	2019-06-19	-46.0	0																													
Powerhouse		502.8			2017-07-16	2019-06-19	-46.0	0																													
CI3010	I7: Service Bay Draft Tube Gallery Ready for start of Hydromechanical Installation	0.0	Start On	2017-07-16	2017-07-16*		0.0	0	I7: Service Bay Draft Tube Gallery Ready for start of Hydromechanical Installation																												
Intake		530.8			2018-01-05	2019-06-19	-64.0	0																													
CI3070	I12: Unit 1 - Intake Structure Ready for start of Hydromechanical Installation	0.0	As Late As		2018-01-05		0.0	0	I12: Unit 1 - Intake Structure Ready for start of Hydromechanic																												
CI3080	I13: Unit 2 - Intake Structure Ready for start of Hydromechanical Installation	0.0	As Late As		2018-04-16		-6.0	0	I13: Unit 2 - Intake Structure Ready for start of Hyd																												
CI3090	I14: Unit 3 - Intake Structure Ready for start of Hydromechanical Installation	0.0	As Late As		2018-07-15		-16.0	0	I14: Unit 3- Intake Structure Ready for s																												
CI3100	I15: Unit 4 - Intake Structure Ready for start of Hydromechanical Installation	0.0	As Late As		2018-10-01		-30.0	0	I15: Unit 4 - Intake Structure R																												
CI3110	M23: All Intake hydro-mechanical work commissioned and ready for reservoir impoundmer	0.0	Finish On	2019-05-15		2019-06-19*	-64.0	0	M23: All Intake hydro-mechanical work																												
Draft Tubes		350.0			2017-07-16	2018-06-30	-12.7	0																													
CI3020	I8: Unit 1 - Draft Tube Structure Ready for start of Hydromechanical Installation	0.0	As Late As		2017-07-16		0.0	0	I8: Unit 1 - Draft Tube Structure Ready for start of Hydromechanical Installation																												
CI3030	I9: Unit 2 - Draft Tube Structure Ready for start of Hydromechanical Installation	0.0	As Late As		2017-09-12		0.0	0	I9: Unit 2 - Draft Tube Structure Ready for start of Hydromechanical Installat																												
CI3040	I10: Unit 3 - Draft Tube Structure Ready for start of Hydromechanical Installation	0.0	As Late As		2017-10-10		0.0	0	I10: Unit 3 - Draft Tube Structure Ready for start of Hydromechanical Inst																												
CI3050	I11: Unit 4 - Draft Tube Structure Ready for start of Hydromechanical Installation	0.0	As Late As		2017-11-05		0.0	0	I11: Unit 4 - Draft Tube Structure Ready for start of Hydromechanical I																												
CI3060	M22: All Draft Tube hydro-mechanical work complete.	0.0	Finish On	2018-06-30		2018-06-30*	-12.7	0	M22: All Draft Tube hydro-mechanical wor																												
Installation		484.5			2017-07-12	2019-05-21	-46.0	68548																													
Site Installation		484.5			2017-07-12	2019-05-21	-46.0	68548																													
Assembly		484.5			2017-07-12	2019-05-21	-46.0	68548																													
Intake and Powerhouse Installation		484.5			2017-07-12	2019-05-21	-46.0	68548																													
Draft Tube Installation		173.5			2017-07-12	2018-01-17	107.8	9260																													
Unit 1		88.0			2017-07-12	2017-10-07	175.4	2260																													
Bay 1		85.0			2017-07-12	2017-10-04	175.3	1130																													
Draft Tube Embedded Parts		82.0			2017-07-12	2017-10-01	121.8	1060																													
CE23280	DT B1 WBS Summary APE	82.0			2017-07-12	2017-10-01	121.8	0																													
CE23290	DT B1 Receiving & unloading of APE Embedded Parts at site	1.0	As Late As		2017-07-12	2017-07-12	0.0	40	CE23290 DT B1 Receiving & unloading of APE Embedded Parts at site																												
CE23300	DT B1 Threaded rod installation on APE Embedded Parts	1.0	As Late As		2017-07-14	2017-07-14	0.0	40	CE23300 DT B1 Threaded rod installation on APE Embedded Parts																												
CE23320	DT B1 Hydro-Mobile work platform installation for APE Guides	4.0			2017-07-16	2017-07-19	142.3	80	CE23320 DT B1 Hydro-Mobile work platform installation for APE Guides																												
CE23310	DT B1 Availability of water passage for mechanical work on APE	0.0	Start On	2017-07-16	2017-07-16*		0.0	0	CE23310 DT B1 Availability of water passage for mechanical work on APE																												
CE23330	DT B1 Erection of APE Embedded Parts	1.0			2017-07-20	2017-07-20	142.3	40	CE23330 DT B1 Erection of APE Embedded Parts																												
CE23340	DT B1 Shelter installation for APE Embedded Parts	4.0			2017-07-21	2017-07-24	142.3	160	CE23340 DT B1 Shelter installation for APE Embedded Parts																												
CE23350	DT B1 Bolting APE Embedded Parts	2.0			2017-07-25	2017-07-26	142.3	80	CE23350 DT B1 Bolting APE Embedded Parts																												
CE23360	DT B1 Survey of APE Embedded Parts	1.0			2017-07-27	2017-07-27	142.3	30	CE23360 DT B1 Survey of APE Embedded Parts																												
CE23370	DT B1 Rough Alignment (+/- 1.5 mm) of APE Lower Guides	2.0			2017-07-28	2017-07-29	142.3	40	CE23370 DT B1 Rough Alignment (+/- 1.5 mm) of APE Lower Guides																												

▶ WBS Summary
 ▶ Actual Work
 ▶ Critical Remaining Work
 ◆ B..
 ▶ Level of Effort
 ▶ Remaining
 ▶ Project Baseline Bar
 ◆ M.

Muskrat Falls Gates - Intake Draft Tube - (WITH DOWNTIME between unit 2 3))		JD-Intake Draft Tube pdf						Data Date: 2017-01-30 Printed: 2017-03-02 15:07																
Activity ID	Activity Name	Original Duration	Primary Constraint	Primary Constraint Date	Start	Finish	Total Float	Budgeted Labor Units	2017				2018				2019							
									F	M	A	M	J	Jul	A	S	O	N	D	J	F	M	A	M
CE23380	DT B1 Precision Alignment of APE Lower & Upper Guides	4.0			2017-07-30	2017-08-02	142.3	80																
CE23400	DT B1 Cutting of APE Transition Plates	2.0			2017-07-30	2017-07-31	167.8	40																
CE23390	DT B1 Alignment of APE Sill beam	4.0			2017-08-03	2017-08-06	142.3	80																
CE23410	DT B1 Pre-pour measurements of APE Embedded Parts	1.0			2017-08-19	2017-08-19	142.3	20																
CE23430	DT B1 Transition plates installation of APE Guides	2.0			2017-08-21	2017-08-22	147.8	80																
CE23450	DT B1 Post-pour welding of APE Guide Transition Plates	2.0			2017-08-28	2017-08-29	147.8	40																
CE23460	DT B1 Paint touch-ups of APE Guides	3.0			2017-08-30	2017-09-01	149.8	30																
CE23470	DT B1 Rectification of APE Embedded Parts	3.0			2017-08-30	2017-09-01	147.8	60																
CE23480	DT B1 Final measurements of APE Embedded Parts	2.0			2017-09-02	2017-09-03	147.8	40																
CE23490	DT B1 Hydro-Mobile work platform dismantle for APE Guides	1.0			2017-09-30	2017-09-30	121.8	40																
CE23500	DT B1 Shelter removal for APE Embedded Parts	1.0			2017-10-01	2017-10-01	121.8	40																
Stoplogs		3.0			2017-10-02	2017-10-04	175.3	70																
CE23510	DT B1 WBS Summary AVA	3.0			2017-10-02	2017-10-04	175.3	0																
CE23520	DT B1 Receiving & unloading of AVA Stoplogs storage support	0.0			2017-10-02	2017-10-02	175.8	0																
CE23530	DT B1 Installation of AVA Stoplog storage support	1.0			2017-10-02	2017-10-02	175.8	20																
CE23540	DT B1 Grouting of AVA Stoplog storage support	0.5			2017-10-03	2017-10-03	175.8	10																
CE23550	DT B1 Receiving & unloading of AVA Stoplogs (2)	0.5			2017-10-04	2017-10-04	175.3	20																
CE23560	DT B1 Storage of AVA stoplogs (2)	0.5			2017-10-04	2017-10-04	175.3	20																
Bay 2		87.0			2017-07-13	2017-10-07	175.4	1130																
Draft Tube Embedded Parts		83.0			2017-07-13	2017-10-03	121.8	1060																
CE23580	DT B2 WBS Summary APE	83.0			2017-07-13	2017-10-03	121.8	0																
CE23590	DT B2 Receiving & unloading of APE Embedded Parts at site	1.0	As Late As		2017-07-13	2017-07-13	0.0	40																
CE23600	DT B2 Threaded rod installation on APE Embedded Parts	1.0	As Late As		2017-07-15	2017-07-15	0.0	40																
CE23610	DT B2 Availability of water passage for mechanical work on APE	0.0	Start On	2017-07-16	2017-07-16*		0.0	0																
CE23620	DT B2 Hydro-Mobile work platform installation for APE Guides	4.0			2017-07-25	2017-07-28	144.3	80																
CE23630	DT B2 Erection of APE Embedded Parts	1.0			2017-07-29	2017-07-29	144.3	40																
CE23640	DT B2 Shelter installation for APE Embedded Parts	4.0			2017-07-30	2017-08-02	144.3	160																
CE23650	DT B2 Bolting APE Embedded Parts	2.0			2017-08-03	2017-08-04	144.3	80																
CE23660	DT B2 Survey of APE Embedded Parts	1.0			2017-08-07	2017-08-07	142.3	30																
CE23670	DT B2 Rough Alignment (+/- 1.5 mm) of APE Lower Guides	2.0			2017-08-08	2017-08-09	142.3	40																
CE23680	DT B2 Precision Alignment of APE Lower & Upper Guides	4.0			2017-08-10	2017-08-13	142.3	80																
CE23700	DT B2 Cutting of APE Transition Plates	2.0			2017-08-10	2017-08-11	158.8	40																
CE23690	DT B2 Alignment of APE Sill beam	4.0			2017-08-14	2017-08-17	142.3	80																
CE23710	DT B2 Pre-pour measurements of APE Embedded Parts	1.0			2017-08-18	2017-08-18	142.3	20																
CE23730	DT B2 Transition plates installation of APE Guides	2.0			2017-08-21	2017-08-22	149.8	80																
CE23750	DT B2 Post-pour welding of APE Guide Transition Plates	2.0			2017-08-28	2017-08-29	149.8	40																
CE23760	DT B2 Paint touch-ups of APE Guides	3.0			2017-08-30	2017-09-01	151.8	30																
CE23770	DT B2 Rectification of APE Embedded Parts	3.0			2017-08-30	2017-09-01	149.8	60																
CE23780	DT B2 Final measurements of APE Embedded Parts	2.0			2017-09-02	2017-09-03	149.8	40																
CE23790	DT B2 Hydro-Mobile work platform dismantle for APE Guides	1.0			2017-10-02	2017-10-02	121.8	40																
CE23800	DT B2 Shelter removal for APE Embedded Parts	1.0			2017-10-03	2017-10-03	121.8	40																
Stoplogs		4.0			2017-10-04	2017-10-07	175.4	70																
CE23810	DT B2 WBS Summary AVA	4.0			2017-10-04	2017-10-07	175.4	0																
CE23820	DT B2 Receiving & unloading of AVA Stoplogs storage support	0.0			2017-10-04	2017-10-04	176.8	0																
CE23830	DT B2 Installation of AVA Stoplog storage support	1.0			2017-10-04	2017-10-04	176.8	20																
CE23840	DT B2 Grouting of AVA Stoplog storage support	0.5			2017-10-05	2017-10-05	176.8	10																
CE23850	DT B2 Receiving & unloading of AVA Stoplogs (2)	0.5			2017-10-06	2017-10-07	175.4	20																

WBS Summary
 Actual Work
 Critical Remaining Work
 B..
 M.

Level of Effort
 Remaining
 Project Baseline Bar
 M.

Muskrat Falls Gates - Intake Draft Tube - (WITH DOWNTIME between unit 2 3))		JD-Intake Draft Tube pdf							Data Date: 2017-01-30 Printed: 2017-03-02 15:07											
Activity ID	Activity Name	Original Duration	Primary Constraint	Primary Constraint Date	Start	Finish	Total Float	Budgeted Labor Units	2017				2018				2019			
									F	M	A	M	J	Jul	A	S	O	N	D	J
CE23860	DT B2 Storage of AVA stoplogs (2)	0.5			2017-10-07	2017-10-07	175.4	20												
Unit 2		61.5			2017-09-08	2017-11-08	149.8	2260												
Bay 3		58.5			2017-09-08	2017-11-05	149.8	1130												
Draft Tube Embedded Parts		55.5			2017-09-08	2017-11-02	108.3	1060												
CE23890	DT B3 Receiving & unloading of APE Embedded Parts at site	1.0	As Late As		2017-09-08	2017-09-08	0.0	40												
CE23880	DT B3 WBS Summary APE	55.5			2017-09-08	2017-11-02	108.3	0												
CE23900	DT B3 Threaded rod installation on APE Embedded Parts	1.0	As Late As		2017-09-10	2017-09-10	0.0	40												
CE23920	DT B3 Hydro-Mobile work platform installation for APE Guides	4.0			2017-09-12	2017-09-15	108.3	80												
CE23910	DT B3 Availability of water passage for mechanical work on APE	0.0	Start On	2017-09-12	2017-09-12*		0.0	0												
CE23930	DT B3 Erection of APE Embedded Parts	1.0			2017-09-16	2017-09-16	108.3	40												
CE23940	DT B3 Shelter installation for APE Embedded Parts	4.0			2017-09-17	2017-09-20	108.3	160												
CE23950	DT B3 Bolting APE Embedded Parts	2.0			2017-09-21	2017-09-22	108.3	80												
CE23960	DT B3 Survey of APE Embedded Parts	1.0			2017-09-23	2017-09-23	108.3	30												
CE23970	DT B3 Rough Alignment (+/- 1.5 mm) of APE Lower Guides	2.0			2017-09-24	2017-09-25	108.3	40												
CE24000	DT B3 Cutting of APE Transition Plates	2.0			2017-09-26	2017-09-27	127.8	40												
CE23980	DT B3 Precision Alignment of APE Lower & Upper Guides	4.0			2017-09-26	2017-09-29	108.3	80												
CE23990	DT B3 Alignment of APE Sill beam	4.0			2017-09-30	2017-10-03	108.3	80												
CE24010	DT B3 Pre-pour measurements of APE Embedded Parts	1.0			2017-10-16	2017-10-16	108.3	20												
CE24030	DT B3 Transition plates installation of APE Guides	2.0			2017-10-17	2017-10-19	108.3	80												
CE24050	DT B3 Post-pour welding of APE Guide Transition Plates	2.0			2017-10-24	2017-10-26	108.3	40												
CE24060	DT B3 Paint touch-ups of APE Guides	3.0			2017-10-26	2017-10-29	110.3	30												
CE24070	DT B3 Rectification of APE Embedded Parts	3.0			2017-10-26	2017-10-29	108.3	60												
CE24080	DT B3 Final measurements of APE Embedded Parts	2.0			2017-10-29	2017-10-31	108.3	40												
CE24090	DT B3 Hydro-Mobile work platform dismantle for APE Guides	1.0			2017-10-31	2017-11-01	108.3	40												
CE24100	DT B3 Shelter removal for APE Embedded Parts	1.0			2017-11-01	2017-11-02	108.3	40												
Stoplogs		3.0			2017-11-02	2017-11-05	149.8	70												
CE24110	DT B3 WBS Summary AVA	3.0			2017-11-02	2017-11-05	149.8	0												
CE24120	DT B3 Receiving & unloading of AVA Stoplogs storage support	0.0			2017-11-02	2017-11-02	150.3	0												
CE24130	DT B3 Installation of AVA Stoplog storage support	1.0			2017-11-02	2017-11-03	150.3	20												
CE24140	DT B3 Grouting of AVA Stoplog storage support	0.5			2017-11-03	2017-11-03	150.3	10												
CE24150	DT B3 Receiving & unloading of AVA Stoplogs (2)	0.5			2017-11-04	2017-11-04	149.8	20												
CE24160	DT B3 Storage of AVA stoplogs (2)	0.5			2017-11-05	2017-11-05	149.8	20												
Bay 4		60.5			2017-09-09	2017-11-08	149.8	1130												
Draft Tube Embedded Parts		56.5			2017-09-09	2017-11-04	108.3	1060												
CE24190	DT B4 Receiving & unloading of APE Embedded Parts at site	1.0	As Late As		2017-09-09	2017-09-09	0.0	40												
CE24180	DT B4 WBS Summary APE	56.5			2017-09-09	2017-11-04	108.3	0												
CE24200	DT B4 Threaded rod installation on APE Embedded Parts	1.0	As Late As		2017-09-11	2017-09-11	0.0	40												
CE24210	DT B4 Availability of water passage for mechanical work on APE	0.0	Start On	2017-09-12	2017-09-12*		0.0	0												
CE24220	DT B4 Hydro-Mobile work platform installation for APE Guides	4.0			2017-09-21	2017-09-24	110.3	80												
CE24230	DT B4 Erection of APE Embedded Parts	1.0			2017-09-25	2017-09-25	110.3	40												
CE24240	DT B4 Shelter installation for APE Embedded Parts	4.0			2017-09-26	2017-09-29	110.3	160												
CE24250	DT B4 Bolting APE Embedded Parts	2.0			2017-09-30	2017-10-01	110.3	80												
CE24260	DT B4 Survey of APE Embedded Parts	1.0			2017-10-04	2017-10-04	108.3	30												
CE24270	DT B4 Rough Alignment (+/- 1.5 mm) of APE Lower Guides	2.0			2017-10-05	2017-10-06	108.3	40												
CE24300	DT B4 Cutting of APE Transition Plates	2.0			2017-10-07	2017-10-08	118.8	40												
CE24280	DT B4 Precision Alignment of APE Lower & Upper Guides	4.0			2017-10-07	2017-10-10	108.3	80												
CE24290	DT B4 Alignment of APE Sill beam	4.0			2017-10-11	2017-10-14	108.3	80												

WBS Summary (Green arrow) Actual Work (Blue bar) Critical Remaining Work (Red bar) B. (Yellow diamond)

 Level of Effort (Green bar) Remaining (Light Green bar) Project Baseline Bar (Black bar) M. (Black diamond)

Muskrat Falls Gates - Intake Draft Tube - (WITH DOWNTIME between unit 2 3))		JD-Intake Draft Tube pdf						Data Date: 2017-01-30 Printed: 2017-03-02 15:07																													
Activity ID	Activity Name	Original Duration	Primary Constraint	Primary Constraint Date	Start	Finish	Total Float	Budgeted Labor Units	Gantt Chart																												
									2017				2018				2019																				
									F	M	A	M	J	Jul	A	S	O	N	D	J	F	M	A	M	J	Jul	A	S	O	N	D	J	F	M	A	M	J
Draft Tube Embedded Parts		55.0			2017-10-07	2017-11-30	129.3	1060																													
CE24780	DT B6 WBS Summary APE	55.0			2017-10-07	2017-11-30	129.3	0																													
CE24790	DT B6 Receiving & unloading of APE Embedded Parts at site	1.0	As Late As		2017-10-07	2017-10-07	0.0	40																													
CE24800	DT B6 Threaded rod installation on APE Embedded Parts	1.0	As Late As		2017-10-09	2017-10-09	0.0	40																													
CE24810	DT B6 Availability of water passage for mechanical work on APE	0.0	Start On	2017-10-10	2017-10-10*		0.0	0																													
CE24820	DT B6 Hydro-Mobile work platform installation for APE Guides	4.0			2017-10-19	2017-10-22	115.8	80																													
CE24830	DT B6 Erection of APE Embedded Parts	1.0			2017-10-23	2017-10-23	115.8	40																													
CE24840	DT B6 Shelter installation for APE Embedded Parts	4.0			2017-10-24	2017-10-27	129.8	160																													
CE24850	DT B6 Bolting APE Embedded Parts	2.0			2017-10-28	2017-10-29	129.8	80																													
CE24860	DT B6 Survey of APE Embedded Parts	1.0			2017-11-01	2017-11-01	127.8	30																													
CE24870	DT B6 Rough Alignment (+/- 1.5 mm) of APE Lower Guides	2.0			2017-11-02	2017-11-03	127.8	40																													
CE24880	DT B6 Precision Alignment of APE Lower & Upper Guides	4.0			2017-11-04	2017-11-07	127.8	80																													
CE24900	DT B6 Cutting of APE Transition Plates	2.0			2017-11-04	2017-11-05	138.3	40																													
CE24890	DT B6 Alignment of APE Sill beam	4.0			2017-11-08	2017-11-11	127.8	80																													
CE24910	DT B6 Pre-pour measurements of APE Embedded Parts	1.0			2017-11-12	2017-11-12	127.8	20																													
CE24930	DT B6 Transition plates installation of APE Guides	2.0			2017-11-15	2017-11-16	129.3	80																													
CE24950	DT B6 Post-pour welding of APE Guide Transition Plates	2.0			2017-11-22	2017-11-23	129.3	40																													
CE24960	DT B6 Paint touch-ups of APE Guides	3.0			2017-11-24	2017-11-26	131.3	30																													
CE24970	DT B6 Rectification of APE Embedded Parts	3.0			2017-11-24	2017-11-26	129.3	60																													
CE24980	DT B6 Final measurements of APE Embedded Parts	2.0			2017-11-27	2017-11-28	129.3	40																													
CE24990	DT B6 Hydro-Mobile work platform dismantle for APE Guides	1.0			2017-11-29	2017-11-29	129.3	40																													
CE25000	DT B6 Shelter removal for APE Embedded Parts	1.0			2017-11-30	2017-11-30	129.3	40																													
Stoplogs		5.5			2017-12-01	2017-12-06	127.8	70																													
CE25010	DT B6 WBS Summary AVA	5.5			2017-12-01	2017-12-06	127.8	0																													
CE25020	DT B6 Receiving & unloading of AVA Stoplogs storage support	0.0			2017-12-01	2017-12-01	130.8	0																													
CE25030	DT B6 Installation of AVA Stoplog storage support	1.0			2017-12-01	2017-12-01	130.8	20																													
CE25040	DT B6 Grouting of AVA Stoplog storage support	0.5			2017-12-02	2017-12-02	130.8	10																													
CE25050	DT B6 Receiving & unloading of AVA Stoplogs (2)	0.5			2017-12-05	2017-12-05	127.8	20																													
CE25060	DT B6 Storage of AVA stoplogs (2)	0.5			2017-12-06	2017-12-06	127.8	20																													
Unit 4		61.5			2017-11-01	2018-01-17	107.8	2260																													
Bay 7		58.5			2017-11-01	2018-01-14	107.8	1130																													
Draft Tube Embedded Parts		56.0			2017-11-01	2018-01-11	107.8	1060																													
CE25080	DT B7 WBS Summary APE	56.0			2017-11-01	2018-01-11	107.8	0																													
CE25090	DT B7 Receiving & unloading of APE Embedded Parts at site	1.0	As Late As		2017-11-01	2017-11-01	0.0	40																													
CE25100	DT B7 Threaded rod installation on APE Embedded Parts	1.0	As Late As		2017-11-03	2017-11-03	0.0	40																													
CE25120	DT B7 Hydro-Mobile work platform installation for APE Guides	4.0			2017-11-05	2017-11-08	107.8	80																													
CE25110	DT B7 Availability of water passage for mechanical work on APE	0.0	Start On	2017-11-05	2017-11-05*		0.0	0																													
CE25130	DT B7 Erection of APE Embedded Parts	1.0			2017-11-09	2017-11-09	107.8	40																													
CE25140	DT B7 Shelter installation for APE Embedded Parts	4.0			2017-11-10	2017-11-13	107.8	160																													
CE25150	DT B7 Bolting APE Embedded Parts	2.0			2017-11-14	2017-11-15	107.8	80																													
CE25160	DT B7 Survey of APE Embedded Parts	1.0			2017-11-16	2017-11-16	107.8	30																													
CE25170	DT B7 Rough Alignment (+/- 1.5 mm) of APE Lower Guides	2.0			2017-11-17	2017-11-18	107.8	40																													
CE25180	DT B7 Precision Alignment of APE Lower & Upper Guides	4.0			2017-11-19	2017-11-22	107.8	80																													
CE25200	DT B7 Cutting of APE Transition Plates	2.0			2017-11-19	2017-11-20	127.8	40																													
CE25190	DT B7 Alignment of APE Sill beam	4.0			2017-11-23	2017-11-26	107.8	80																													
CE25210	DT B7 Pre-pour measurements of APE Embedded Parts	1.0			2017-12-09	2017-12-09	107.8	20																													
CE25230	DT B7 Transition plates installation of APE Guides	2.0			2017-12-11	2017-12-12	107.8	80																													

WBS Summary
 Actual Work
 Critical Remaining Work
 B..
 M.

Level of Effort
 Remaining
 Project Baseline Bar
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Muskrat Falls Gates - Intake Draft Tube - (WITH DOWNTIME between unit 2 3))		JD-Intake Draft Tube pdf						Data Date: 2017-01-30 Printed: 2017-03-02 15:07																			
Activity ID	Activity Name	Original Duration	Primary Constraint	Primary Constraint Date	Start	Finish	Total Float	Budgeted Labor Units	2017					2018					2019								
									F	M	A	M	J	Jul	A	S	O	N	D	J	F	M	A	M	J		
CE25250	DT B7 Post-pour welding of APE Guide Transition Plates	2.0			2017-12-18	2017-12-19	107.8	40						CE25250	DT B7 Post-pour welding of APE Guide Transition Plates												
CE25260	DT B7 Paint touch-ups of APE Guides	3.0			2017-12-20	2017-12-22	109.8	30						CE25260	DT B7 Paint touch-ups of APE Guides												
CE25270	DT B7 Rectification of APE Embedded Parts	3.0			2017-12-20	2017-12-22	107.8	60						CE25270	DT B7 Rectification of APE Embedded Parts												
CE25280	DT B7 Final measurements of APE Embedded Parts	2.0			2018-01-08	2018-01-09	107.8	40						CE25280	DT B7 Final measurements of APE Embedded Parts												
CE25290	DT B7 Hydro-Mobile work platform dismantle for APE Guides	1.0			2018-01-10	2018-01-10	107.8	40						CE25290	DT B7 Hydro-Mobile work platform dismantle for APE Guides												
CE25300	DT B7 Shelter removal for APE Embedded Parts	1.0			2018-01-11	2018-01-11	107.8	40						CE25300	DT B7 Shelter removal for APE Embedded Parts												
Stoplogs		2.5			2018-01-12	2018-01-14	107.8	70																			
CE25310	DT B7 WBS Summary AVA	2.5			2018-01-12	2018-01-14	107.8	0																			
CE25320	DT B7 Receiving & unloading of AVA Stoplogs storage support	0.0			2018-01-12	2018-01-12	107.8	0						CE25320	DT B7 Receiving & unloading of AVA Stoplogs storage support												
CE25330	DT B7 Installation of AVA Stoplog storage support	1.0			2018-01-12	2018-01-12	107.8	20						CE25330	DT B7 Installation of AVA Stoplog storage support												
CE25340	DT B7 Grouting of AVA Stoplog storage support	0.5			2018-01-13	2018-01-13	107.8	10						CE25340	DT B7 Grouting of AVA Stoplog storage support												
CE25350	DT B7 Receiving & unloading of AVA Stoplogs (2)	0.5			2018-01-13	2018-01-13	107.8	20						CE25350	DT B7 Receiving & unloading of AVA Stoplogs (2)												
CE25360	DT B7 Storage of AVA stoplogs (2)	0.5			2018-01-14	2018-01-14	107.8	20						CE25360	DT B7 Storage of AVA stoplogs (2)												
Bay 8		60.5			2017-11-02	2018-01-17	107.8	1130																			
Draft Tube Embedded Parts		55.0			2017-11-02	2018-01-11	109.3	1060																			
CE25380	DT B8 WBS Summary APE	55.0			2017-11-02	2018-01-11	109.3	0																			
CE25390	DT B8 Receiving & unloading of APE Embedded Parts at site	1.0	As Late As		2017-11-02	2017-11-02	0.0	40						CE25390	DT B8 Receiving & unloading of APE Embedded Parts at site												
CE25400	DT B8 Threaded rod installation on APE Embedded Parts	1.0	As Late As		2017-11-04	2017-11-04	0.0	40						CE25400	DT B8 Threaded rod installation on APE Embedded Parts												
CE25410	DT B8 Availability of water passage for mechanical work on APE	0.0	Start On	2017-11-05	2017-11-05*		0.0	0						CE25410	DT B8 Availability of water passage for mechanical work on APE												
CE25420	DT B8 Hydro-Mobile work platform installation for APE Guides	4.0			2017-11-14	2017-11-17	109.8	80						CE25420	DT B8 Hydro-Mobile work platform installation for APE Guides												
CE25430	DT B8 Erection of APE Embedded Parts	1.0			2017-11-18	2017-11-18	109.8	40						CE25430	DT B8 Erection of APE Embedded Parts												
CE25440	DT B8 Shelter installation for APE Embedded Parts	4.0			2017-11-19	2017-11-22	109.8	160						CE25440	DT B8 Shelter installation for APE Embedded Parts												
CE25450	DT B8 Bolting APE Embedded Parts	2.0			2017-11-23	2017-11-24	109.8	80						CE25450	DT B8 Bolting APE Embedded Parts												
CE25460	DT B8 Survey of APE Embedded Parts	1.0			2017-11-27	2017-11-27	107.8	30						CE25460	DT B8 Survey of APE Embedded Parts												
CE25470	DT B8 Rough Alignment (+/- 1.5 mm) of APE Lower Guides	2.0			2017-11-28	2017-11-29	107.8	40						CE25470	DT B8 Rough Alignment (+/- 1.5 mm) of APE Lower Guides												
CE25480	DT B8 Precision Alignment of APE Lower & Upper Guides	4.0			2017-11-30	2017-12-03	107.8	80						CE25480	DT B8 Precision Alignment of APE Lower & Upper Guides												
CE25500	DT B8 Cutting of APE Transition Plates	2.0			2017-11-30	2017-12-01	118.3	40						CE25500	DT B8 Cutting of APE Transition Plates												
CE25490	DT B8 Alignment of APE Sill beam	4.0			2017-12-04	2017-12-07	107.8	80						CE25490	DT B8 Alignment of APE Sill beam												
CE25510	DT B8 Pre-pour measurements of APE Embedded Parts	1.0			2017-12-08	2017-12-08	107.8	20						CE25510	DT B8 Pre-pour measurements of APE Embedded Parts												
CE25530	DT B8 Transition plates installation of APE Guides	2.0			2017-12-11	2017-12-12	109.3	80						CE25530	DT B8 Transition plates installation of APE Guides												
CE25550	DT B8 Post-pour welding of APE Guide Transition Plates	2.0			2017-12-18	2017-12-19	109.3	40						CE25550	DT B8 Post-pour welding of APE Guide Transition Plates												
CE25560	DT B8 Paint touch-ups of APE Guides	3.0			2017-12-20	2017-12-22	111.3	30						CE25560	DT B8 Paint touch-ups of APE Guides												
CE25570	DT B8 Rectification of APE Embedded Parts	3.0			2017-12-20	2017-12-22	109.3	60						CE25570	DT B8 Rectification of APE Embedded Parts												
CE25580	DT B8 Final measurements of APE Embedded Parts	2.0			2018-01-08	2018-01-09	109.3	40						CE25580	DT B8 Final measurements of APE Embedded Parts												
CE25590	DT B8 Hydro-Mobile work platform dismantle for APE Guides	1.0			2018-01-10	2018-01-10	109.3	40						CE25590	DT B8 Hydro-Mobile work platform dismantle for APE Guides												
CE25600	DT B8 Shelter removal for APE Embedded Parts	1.0			2018-01-11	2018-01-11	109.3	40						CE25600	DT B8 Shelter removal for APE Embedded Parts												
Stoplogs		5.5			2018-01-12	2018-01-17	107.8	70																			
CE25610	DT B8 WBS Summary AVA	5.5			2018-01-12	2018-01-17	107.8	0																			
CE25620	DT B8 Receiving & unloading of AVA Stoplogs storage support	0.0			2018-01-12	2018-01-12	110.8	0						CE25620	DT B8 Receiving & unloading of AVA Stoplogs storage support												
CE25630	DT B8 Installation of AVA Stoplog storage support	1.0			2018-01-12	2018-01-12	110.8	20						CE25630	DT B8 Installation of AVA Stoplog storage support												
CE25640	DT B8 Grouting of AVA Stoplog storage support	0.5			2018-01-13	2018-01-13	110.8	10						CE25640	DT B8 Grouting of AVA Stoplog storage support												
CE25650	DT B8 Receiving & unloading of AVA Stoplogs (2)	0.5			2018-01-16	2018-01-16	107.8	20						CE25650	DT B8 Receiving & unloading of AVA Stoplogs (2)												
CE25660	DT B8 Storage of AVA stoplogs (2)	0.5			2018-01-17	2018-01-17	107.8	20						CE25660	DT B8 Storage of AVA stoplogs (2)												
Overhead Crane		12.5			2017-07-16	2017-07-28	238.8	220																			
CE25680	DT WBS Summary AGR Overhead Crane	12.5			2017-07-16	2017-07-28	238.8	0																			
CE25700	DT Receiving & unloading of AGR Overhead Crane	1.0			2017-07-16	2017-07-16	238.8	40						CE25700	DT Receiving & unloading of AGR Overhead Crane												
CE25690	DT Availability of Service Bay Draft Tube Gallery	0.0			2017-07-16		238.8	0						CE25690	DT Availability of Service Bay Draft Tube Gallery												

▶ WBS Summary
 ▬ Actual Work
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 ◆ B..
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 ▬ Project Baseline Bar
 ◆ M.

