

From: tonyscott@nalcorenergy.com
To: scotto*brien@nalcorenergy.com
Subject: Fw: Concrete schedule for CH0007
Date: Tuesday, June 12, 2012 10:29:43 AM

FYI



Tony Scott, PTech BTech
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----- Forwarded by Tony Scott/NLHydro on 06/12/2012 10:29 AM -----

From: "Stanton, Lee" <IEE.STANTON@SNCLAVALIN.COM>
To: <TonyScott@nalcorenergy.com>
Date: 06/11/2012 05:58 PM
Subject: RE: Concrete schedule for CH0007

I'll keep looking for something in my files. What I have found and will bring in July is the Bectel-Kumagi Limestone Completion Report. It doesn't have pour statistics but has other info you may find interesting.

We had a teleconference this morning on the Dam Facing alternatives. They are pushing to have everything for their Friday meeting. Told them I would do my best.

Mike Collins also asked if we could talk about the composite floor TQ. Turns out the 4 month savings came from our friend Paul Lemay who yet again demonstrated he doesn't look at or understand the schedule. At one point he was claiming the crews could jump back and forth between units 1 & 3, 2 & 4. Even after I pointed out this was not how the schedule was done, he then said they go to the Intake. Had to point out that was already finished and this work was towards the end of the schedule. Even had to point out that if the work was done in parallel, the time savings could not possibly be sequential.

I understand why Dave gets so frustrated with these guys.

Lee

From: TonyScott@nalcorenergy.com [mailto:TonyScott@nalcorenergy.com]
Sent: Monday, June 11, 2012 11:37
To: Stanton, Lee
Subject: RE: Concrete schedule for CH0007

Lee,

Would appreciate some benchmark info if you are able to locate. Hasn't been much of a "fuss" about this of late, but would like to have something to feed into Jason to backup the risk analysis that was done (and also as ammo to backup our schedule document).

Thanks!

Tony



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From: "Stanton, Lee" <IEE.STANTON@SNCLAVALIN.COM>
To: <TonyScott@nalcenergy.com>
Cc: <DaveParidy@nalcenergy.com>
Date: 06/01/2012 12:44 AM
Subject: RE: Concrete schedule for CH0007

As I have pointed out to Paul in the past EM-1A is not a good benchmark. EM-1A is like the Gull PH, not a mass concrete. I have told these guys that they should be comparing MF to LG-1 as it is more similar structure,

You may remember when Normand was making a fuss about the monthly placing rates during the constructability reviews, Gervais called his friend who ran LG-1 and it turned out the monthly rates were more for LG-1 than we are proposing for MF. That is when the argument became well LG-1 has more units.

I have to go to Vancouver for a doctor appointment Friday, but I will see if I can find some benchmarks from other projects over the weekend.

Lee

From: TonyScott@nalcenergy.com [<mailto:TonyScott@nalcenergy.com>]
Sent: Thursday, May 31, 2012 17:55
To: Stanton, Lee
Cc: DaveParidy@nalcenergy.com
Subject: Fw: Concrete schedule for CH0007

Lee,

Any comments?



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----- Forwarded by Tony Scott/NLHydro on 05/31/2012 10:24 PM -----

From: Jason Kean/NLHydro
To: Ron Power/NLHydro@NLHydro, Tony Scott/NLHydro@NLHydro, Dave Paridy/NLHydro@NLHydro, Scott O'Brien/NLHydro@NLHYDRO
Date: 05/31/2012 10:10 PM
Subject: Fw: Concrete schedule for CH0007

Some thoughts to consider.

JK

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----- Forwarded by Jason Kean/NLHydro on 05/31/2012 10:09 PM -----

From: "Lemay, Paul" <Paul.Lemay@snclavalin.com>
 To: <JasonKean@nalcorenergy.com>
 Cc: <MarkTurpin@nalcorenergy.com>, "Tremblay, Jean-Daniel" <Jean-Daniel.Tremblay@snclavalin.com>
 Date: 05/31/2012 02:30 PM
 Subject: Concrete schedule for CH0007

Jason,

To answer your request about my comment on the latest concrete schedule received from Tony Scott, here is my preliminary observation:

Part A: CONCRETE QUANTITIES INVOLVED VS BATCH PLANT PRODUCTION CAPACITY

- The total quantity of concrete is : 438,000 m3
- The total window to execute these quantities is: 36 months
- The monthly average quantity to be poured is : 12,200 m3 with some month at 15,000m3 and a peak at 20,800 m3 in august 2014.
- This brings us to a respective daily average during these months of 405 m3, 500 m3 and 667 m3.

As a bench mark information, at Eastmain-1A, we had 100,000 m3 poured in 23 months, for a monthly average of 4,350 m3 and a daily average of 145 m3 with the support of one concrete batch plant of 125 m3/hr capacity, plus one extra mixer.

Here at Muskrat Falls, we have 4 times more concrete for a period of just 1,6 time longer than Eastmain-1A, that means that we will need at least two, 125 m3 plant and two extra mixer to suffice the demand (500m3/day at M. Falls divided by 145 m3/day at Eastmain = 3.45 mixers, we would have 4).

We also could pour on two shift sequence, if weather condition or breakup equipment situation occurs and we need to catch up!

Part B: VALIDATION OF THE (DAYS / CYCLE) OPERATION, FOR EACH POUR

The numbers of days we have per structure, divided by the numbers of pours, gives us the average number of days per cycle, that normally, should varies between 4 to 5 days for (forming, rebar, pouring, curing and un-forming) and here are my findings:

From the schedule, I counted a total of 771 pours for all the concrete structures, with an average rate of 4.71 days / cycle described as follow:

- Intake-Powerhouse: 1,034 days / 242 pours for: 4.27 days/cycle
- Spillway: 122 days / 22 pours for 5.54 days/cycle (total of 5 bays split in two sectors for approximately 238 pours)
- Rollways: 92 days / 22 pours for 4.18 days/cycle (total of 66 pours for 3 rollways)
- Center Dam: 608 days / 145 pours for 4.19 days/cycle
- South & gravity dam: 365 days / 80 pours for 4.56 days/cycle

As a bench mark, at Eastmain-1A we had 162 pours over a period of 700 days for an average of 4.32 days / cycle.

Also as a bench mark information, at Eastmain-1A we had 162 pours on a total of 100,000 m3 for an average of 621 m3/pour, and here at Muskrat Falls, we have 771 pours on a total of 438,000 m3 for an average of 568 m3/pour.

In conclusion,

This is a quite aggressive schedule because of the huge quantities involved in a relatively short period of time and although the day/cycle ratio seems to me reasonable, the fact remain that, running at a pace of some 480 m3 / day, for almost three consecutive years, at every day, will remain quite a challenge!

I suggest we put a time or money provision in our contingency plan, to overcome a possible failure that may occur.

Regards,

Paul Lemay, p.eng
Lead Estimator.

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