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Cc: [Sam Wolyniec](#); [David Steele](#); [Michael Kennedy](#)
Subject: EY slides
Date: Friday, February 5, 2016 3:55:20 PM
Attachments: [GNL - OC Meeting of Feb 2015 Draft.pdf](#)

Steve, Paul,

As discussed this week, please find attached the EY slides related to our initial findings meeting last week. I'm looking forward to discussing these with the Nalcor team on Tuesday.

Please note the following:

- We haven't shared the more detailed slides with the Steering Committee, only the Exec Summary with the Nalcor comments included
- I've included in this deck those same Exec Summary slides as we did for the Steering Committee – in forwarding to any of the Nalcor team, please can you point out that these are Nalcor comments included against our original draft
- We had started to develop a forward plan slide but this is something I would like to discuss with you and the Client next week, especially in light of your feedback on the QRA process for LTA/LITL – so have just left this slide blank for further discussion

Please don't hesitate to contact me if you have any questions. Otherwise look forward to seeing you next week.

Thanks

Tim

Lower Churchill Project Phase I

EY Review - Interim Findings Summary

Steering Committee Briefing

February 2016



Building a better
working world

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- ▶ Executive Summary
 - ▶ Initial cost, schedule and risk findings
 - ▶ Proposed EY work plan moving forward

The following observations are relevant to the reasonableness of the forecast of cost, schedule and risk, and influence EY's proposed focus moving forward

Scope & Constraints

- ▶ EY, to date, has had no visibility to the potential outcomes of the Astaldi discussions, which currently presents the most material cost and schedule risk to the Project, and potentially has significant knock-on consequences.
- ▶ Nalcor is continuing to re-baseline its forecasts and this is not scheduled to be completed until the end of March.
- ▶ A relatively stable and current baseline is a key condition for success to achieve Government's objectives for the EY review.
- ▶ The above presents the following implications:
 - ▶ The timing of Nalcor re-baseline activities presents a scope limitation in that EY will not be able to provide a complete assessment of cost and schedule forecast and related risk by end of February/early March.
 - ▶ This will reduce the value of reporting to Government under existing agreed reporting timelines.

The following observations are relevant to the reasonableness of the forecast of cost, schedule and risk, and influence EY's proposed focus moving forward

Preliminary Observations & Emerging Risks

[NTD – Add observations on the cooperation and achievements of the project to date. Nalcor requested that these be documented]

- ▶ We have observed potentially substantive risks to cost and/or schedule in 6 of the 10 major contracts reviewed to date, including risk of knock-on Project cost and schedule effects (to be discussed on the following slides).
 - ▶ *[NTD Nalcor noted that the 6 contracts relate to 4 contractors (including Astaldi)]*
 - ▶ *[NTD Nalcor requested that the document note that the risks referred to in the EY document have been identified and documented by the project. Mitigation plans are underway and documented]*
 - ▶ *[NTD Nalcor noted that where risks are 'potential', there is an opportunity for the project to mitigate]*
 - ▶ *[NTD Nalcor requested clarification/context on the use of the term 'substantive' risk so as not to be misinterpreted]*
- ▶ Given the significant scope and time remaining on the Project (construction is 40% complete), a 5% contingency level appears low (before any consideration of the Astaldi situation).
- ▶ Allowances for and documentation of strategic risks do not appear to be included in the current project cost / schedule reporting
 - ▶ *[NTD Nalcor request it be noted that a Quantitative Risk Assessment process is underway]*
- ▶ The escrow mechanism/requirement for Government may affect the way that cost is forecast / reported by the Project – e.g. anticipated material variances are only reflected when contractually committed.
 - ▶ *[NTD The Escrow mechanism has been agreed to by the Federal Govt and GNL and the forecasting process is being implemented in a transparent way by Nalcor]*
- ▶ We have not observed evidence of a fully risk adjusted forecast for Project cost and schedule.
- ▶ Enhanced reporting of cost and schedule risks would enable more effective oversight of the Project.

The following observations are relevant to the reasonableness of the forecast of cost, schedule and risk, and influence EY's proposed focus moving forward

Proposed EY work plan for February

- ▶ Continue with cost and schedule analysis elements that are not fully dependant on outcome of Astaldi / QRA.
- ▶ EY should be provided with access to key data and information through critical elements of the Project as they unfold, including:
 - ▶ Provision of data and information during significant contactor discussions (i.e. work along side the negotiating team outside of the room and review materials and positions as they evolve), and
 - ▶ Allowing EY to take an observer role through re-baselining activities and quantitative risk assessment activities.
 - ▶ *[NTD Nalcor does not agree with this proposal for ongoing participation, rather that any review should occur once this is concluded.]*
- ▶ Extension of the EY review timeline to align to the Project's re-baselining and quantitative risk assessment activities to allow for complete assessment by EY to achieve expected value to Government. Interim and final reporting options should be considered.
 - ▶ *[NTD Nalcor would support earlier reporting on specific segments, e.g. LTA/LITL]*
- ▶ Provide suggestions to the Steering Committee and Nalcor regarding project reporting to enable more effective oversight and assurance of cost and schedule forecasts.

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Selected Contract Risk position for LTA/LITL

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Contract	Cost	Schedule
<p>CD0501: Alstom – Supply and Install of Converter Stations and Transition Compounds</p> <p>Contract Structure EPC Lump Sum (with cost reimbursable portion for Dynamic Commissioning)</p>	<ul style="list-style-type: none"> ▶ Civil works scope through separate contract (CD0504); execution included in this contract. ▶ EPC contract with approx. 5% known pending changes and/or scope to be awarded which are already included in forecast ▶ Project driven technical changes to Harmonic Independent Sectors and AC Filters have been allocated in \$5M CO. Cost impact not fully mature and may require future allowance, value of which is not currently tracked in FFC, but not expected to be material. 	<ul style="list-style-type: none"> ▶ Overall and procurement trending SPI ~ 0.5, and construction trending SPI ~ 0.3. ▶ Schedule is forecasting late delivery dates on key milestone dates ▶ Contractor forecast on milestone dates not aligned with Nalcor forecast dates. ▶ Past productivity levels are not representative of the current forecast plan. A step change in contractor performance will be required to be sustained for the balance of the contract in order to meet project milestones. ▶ Workshop next week for contractor to present schedule ▶ LDs in place to incentivise contractor schedule
<p>CD0534: Alstom – Supply and Install of Synchronous Condensers at Soldiers Pond</p> <p>Contract Structure EPC Lump Sum</p>	<ul style="list-style-type: none"> ▶ Civil works, executed by others and managed by Alstom are captured in FFC ▶ EPC contract with approx. 5% known pending changes and/or scope to be awarded which are already included in forecast ▶ Contractor has outstanding claims regarding procurement costs associated with fabrication and mobilization delays. Exposure is not quantified at this time, but not expected to be material. 	<ul style="list-style-type: none"> ▶ Procurement SPI < 0.5 with recent flat-lining and construction progress data and SPI performance ~ 0.3 ▶ Contract milestone dates have been revised due to previous contractor delays. ▶ Mitigations to manage delays (expedited critical PO's, splitting PO's) have been applied – impact of mitigation not yet visible ▶ Contractor is in negotiations with vendors for key critical path items for schedule optimization (i.e. Stator Frame Unit 1). Successful outcomes required to maintain current forecasted dates. ▶ LDs in place to incentivise contractor schedule
<p>CT0327: Valard – Construction of 350Kv HVdc Transmission Line</p> <p>Contract Structure: Combination of Lump Sum and Unit Prices</p>	<ul style="list-style-type: none"> ▶ Claims expected in relation to unexpected geotechnical conditions, accesses not constructed to fit-for-purpose standards and provision of incomplete structure material. Nalcor considers its claim defence position very strong. ▶ Significant future scope and geotechnical conditions, geographical challenges and extreme weather conditions may impact cost performance (i.e. need for additional foundations and/or geotechnical field investigations). ▶ The unit price contract structure mitigates cost exposure and Nalcor will only pay for actual quantities, however Valard could face significant cost pressure to accelerate progress and improve performance. Notwithstanding contract structure, this is a potential Nalcor cost risk. 	<ul style="list-style-type: none"> ▶ Construction progress on Work Front 1 (Labrador) considerably behind plan compared to original contractual schedule (< 50% against plan). Nalcor plan has been rebaselined without impacting end date. ▶ Growing potential for schedule impact due to geotechnical conditions and rework needed to rectify some quality issues on tower foundations. ▶ Recovery plan currently being developed by Valard to address delays and bring project back on track. Forecast schedule requires a significant improvement in contractor performance to retain 01-Jul-2017 milestone (HVdc TL construction complete) and significant schedule risk exists. ▶ Options exist to accelerate (more work fronts, move over AC crews) but required improvement is very significant

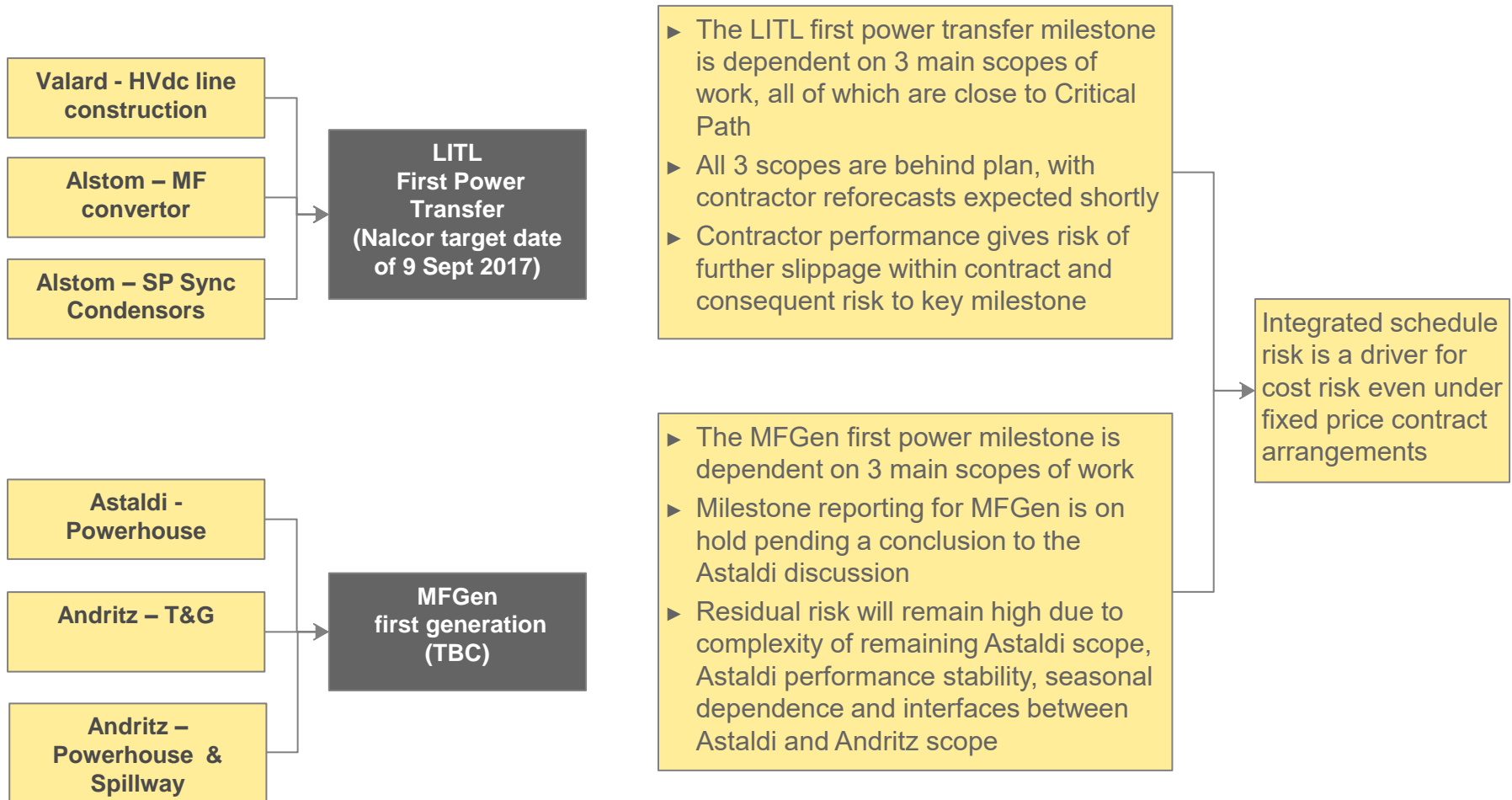
Selected Contract Risk position for MFGen

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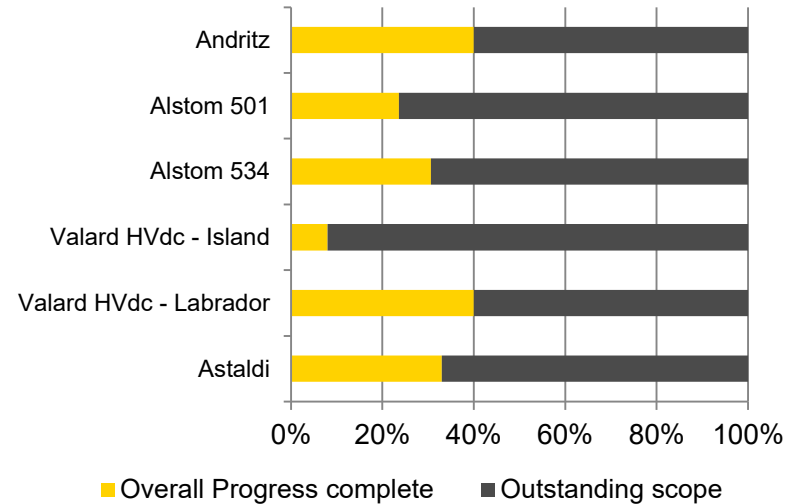
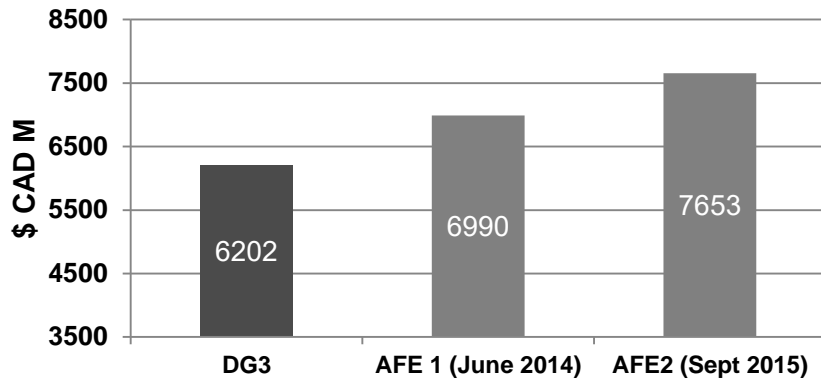
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Contract	Cost	Schedule
<p>CH0030: Andritz - Supply & Install Turbines & Generators</p> <p>Contract Structure EPC Lump Sum</p>	<ul style="list-style-type: none"> Any Pre-installation delay costs carried by the Andritz under EPC arrangement Costs for storage of manufactured parts is included in the forecast Installation access delays will result in a future EOT claim Installation is only ~20% of the contract value, so risk of material cost growth is low 	<ul style="list-style-type: none"> All installation milestones on hold pending Astaldi review. The manufacturing schedule has been delayed (60% vs 84 % planned), but without wider impact due to the Astaldi delay. Once access to Powerhouse work area is available, installation and completion milestones are critical path items Installation and commissioning activities have seasonal dependence and interfaces to Astaldi and Balance of Plant (BoP), which are sources of delay risk
<p>CH0032: Andritz - Supply and Install of Powerhouse & Spillway Hydro-mechanical Equipment</p> <p>Contract Structure EPC Lump Sum</p>	<ul style="list-style-type: none"> Acceleration plan provided for Spillway works at a cost of \$3.5M – \$5.5M Further cost risk could be associated with acceleration plan if the contractor will not meet milestone, but not likely to be material 	<ul style="list-style-type: none"> The manufacturing schedule has been delayed (4% vs 56%), but without wider impact due to the Astaldi delay There have been installation access delays due to Astaldi, but access is now available. The parts of spillway scope critical to river diversion have been accelerated to meet a June 14th Milestone The contractor is incentivised through a bonus structure, but there is risk inherent in the acceleration plan, both commercial and technical (this is the first time Andritz is performing installations on site)
<p>ACH0007: Astaldi - Construction of Intake & Powerhouse, Spillway and Transition Dams</p> <p>Contract Structure Unit Cost and Cost Reimbursable</p>	<ul style="list-style-type: none"> Current Status: Achieved 33% progress on concrete pouring to date Cost forecast risk assessment is subject to commercial negotiations Future cost performance is highly dependent on delivering improved operational productivity 	<ul style="list-style-type: none"> Very significantly behind schedule, however production rates have increased to near short term goals in December 2015 Key forward progress risk is upcoming works have higher complexity / and more interfaces Schedule forecast risk assessment subject to commercial negotiations

Impact of contract schedule risks on key Project milestones



The current 5% contingency does not reflect risks to project completion



Progress figures from latest available Contractor monthly reports and Nalcor update to COC

- ▶ The Project has gone through 2 major cost re-forecasting processes since sanction at DG3.
- ▶ Although some significant risks are now reduced (e.g. procurement estimates, labour market risk), significant scope, execution risk and complexity remain – the Project stands at 40.5% construction completion (reference December Dashboard report).
- ▶ Excluding the Astaldi risk, which is the subject of a re-baselining process, the project contingency, at approximately 5% of remaining budget is a relatively low value, which increases the likelihood of future requests for additional funding to successfully complete the Project, while meeting the agreed quality standards and delivery schedule.
- ▶ With significant scope and at least 3 years of the Project’s execution remaining, it would be prudent to increase the amount of contingency.

Approach to contingency funding

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- ▶ The escrow mechanism/requirement for Government may affect the way that cost is forecast / reported by the Project – e.g. anticipated material variances are only reflected when contractually committed.
- ▶ The original project budget and subsequent FFCs include allowances for tactical risks but not strategic risks.
- ▶ The original contingency amount was calculated on the basis of P50 (i.e., a 50% confidence level). A P80 confidence level would be more prudent for a project of this scale and complexity.
- ▶ As a result of the above factors, the amount presently in the contingency fund is likely to be insufficient to meet the cost of project related risks that may materialize.

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Proposed EY work plan moving forward

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To be discussed

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