

- 1 Q. Re: Data: Please provide a copy of all site-visit notes, interview notes, pictures, etc.  
2 obtained by the Company's depreciation witness, specifically identifying the date  
3 and times associated with the information.  
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- 6 A. Please refer to CA-NLH-12 Attachment 1.

NL HYDRO

NOTES FROM OPERATIONAL AND MANAGEMENT INTERVIEWS

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APRIL 15, 2010

Vice President - Regulated Operations

Topic: Changes in Assets since 2005 Depreciation Study

- A lot of the production equipment has moved to a more electronic nature. This would include items such as Governors and Exciters.
- While NL Hydro does not have a dedicated program for the replacement of analog control equipment to electronic control, there has been an introduction of digital control equipment into the system.
- NL Hydro has started to replace generator windings in recent years.

Topic: Capital Maintenance programs

- Most capital maintenance budgets are replacing units of plant and do result in retirement of capital items.
- The company has undertaken some major rebuilds of generating units that do result in a life extension with little retirement of existing parts. Therefore capital dollars are expended but few investment dollars are retired.

Topic: Poles and Towers

- Most of the transmission is still wood pole construction
- Most pole retirements are caused by environmental factors such as ice loading or damage caused by salt intrusion.
- NL Hydro does have a Test and Treat program as part of its wooden pole management system.
- Steel towers started being introduced into the system in the mid 1960s
- The steel towers do not have any type of cathodic protection
- The company has begun a program of testing the barred steel portion of the towers to test for corrosion.
- Overall the steel towers have held up and performed well over the major storms in the past few years.
- The weak spot of the pole structures are the joint where the cross arms are attached to the poles which has resulted in some retirement of poles.

Topic: Overhead Conductor

- While the company has not yet witnessed issues with corrosion caused by salt, it is expected to start to become an issue.
- The overhead conductor used throughout the NL Hydro system is designed to a higher than normal industry standard in order to meet the unique ice and wind issues.

Topic: Distribution Transformers

- Accounting for transformers is a “Location Life Accounting Method” resulting in a higher than industry normal (as compared to those using cradle to grave accounting) amount of transformer retirements.
- Given the corrosion caused by salt and damage caused by ice and wind, few transformers are re-used. The transformers that are removed from service are usually rusted and often leak. However, any salvage proceeds realized from the sale of the scrapped units is book to an income statement account.
- Retirements caused by lightning are less of an issue in the NL Hydro system than may be in other Canadian electric systems.
- The company has applied to Environment Canada for an extension relating to the upcoming 2014 P.C.B. regulations. However, the company will have a large replacement program within the next few years for the replacement of the transformers.
- The company has started to move to the installation of stainless steel transformer tanks in order to avoid some of the corrosion issues that have become apparent.

Customer Service Manager

Topic: Metering and AMR

- Replacement of electro mechanical meters will be accelerated to meet the new Measurement Canada standards to be introduced in 2011. Will result in the replacement of a significant number of meters over the next few years.
- It is expected that the analog meters will be completely removed within 5 years.
- To date, old analog meters have been replaced with AMR meters on an as needed basis, with about 20% of the metering fleet currently being AMR meters.
- The AMR system is a power line based system where readings are transmitted back to a communications system at the closest sub-station.
- NL Hydro currently has about 35,000 meters in service and about 6,000 in inventory.
- Accounting for meters is a “Location Life Accounting Method” resulting in a higher than industry normal (as compared to those using cradle to grave accounting) amount of meter retirements.
- Going forward, meters will not likely be repaired given the digital nature of the meters.

Vice President – Engineering Services

Topic: Hydro Dams

- All Dams are subject to the provisions of a Dam Safety Review Program, in which each dam is reviewed every two years. The review will highlight any maintenance or repairs that are required. Historically most repairs have been undertaken with operating cost budgets and have not resulted in any significant retirement activity.
- Most of the dams were built in the 1960s and are earth dams, which do not include any powerhouse structures integrated into the dam.

Topic: Hydro Dam Gates/Hoists, etc.

- The company has recently filed a 20 year plan with the Public Utilities Board outlining the long term strategy of this equipment.

- There is a large mix of construction techniques and technology used within the various dams throughout the system, based on the construction techniques commonly used during the various periods of installation.
- It is felt within the company that the current 50 year average service life may be a bit short based on the recent reviews and assessments. Overall the company suggests that an average life of approximately 60 years would be appropriate from an engineering and operations perspective.

Topic: Steel Tower Transmission Lines

- The only issue is that the company has seen some issue with the Towers at the point where support becomes buried.
- It is felt within the company that the current 50 year average service life may be a bit short based on the recent reviews and assessments. Overall the company suggests that an average life of approximately 60 years would be appropriate from an engineering and operations perspective.

Topic: Poles and conductor

- NL Hydro has virtually no cedar poles in the current system and very limited amounts of Douglas Fir poles. In addition the company has also replaced most of the Yellow Pine poles as well.
- The company has a wood pole replacement program in place. As part of this program, every pole is physically inspected at least once every 10 years.
- The company suggests that a small life extension to the previously recommended 35 years may be appropriate for the poles within the transmission system.
- Some conductor on the system is starting to show fatigue within the steel core, which has caused, and is expected to further cause, some replacement of conductor.

Topic: Auxiliary Power systems

- A preliminary life estimate of 40 years was reviewed. It was felt that the 15 year life extension from 25 to 40 years is much too long, and is not at all consistent with expectations. An Iowa curve with a maximum life of between 30 and 40 years would make more sense.
- The lack of retirement history is felt to be caused by retirement orders not being processed with will be reviewed.

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NOTES FROM OPERATIONAL AND MANAGEMENT INTERVIEWS

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June 8, 2010

Vice President - Regulated Operations

Topic: Follow up from April 15 discussions

- Review of specific preliminary life estimates
  - Account 193 – Dykes and Liners – Fuel Storage – the recommended 42 years looks correct from an Engineering and Operations perspective.
  - Account 179 – Dams, Dykes, Canals, and Tunnels – the recommended 100 years is appropriate, especially considering that 100 years is an average age, not a maximum life expectation.
  - Account 301 – Governors – The preliminary mortality study indicated a life of approximately 55 years. The company does not believe that a life of 55 years is appropriate for the following reasons:
    - Newer vintages of governors are digital and will not have any hope of lasting for more than 15 to 20 years.
    - Approximately one third of the governors in the system are digital and will not last more than 15 to 20 years.
    - Engineering believes that a 30 to 40 year life may appropriately reflect the mix of equipment in the account.
  - Account 769 – Turbines – The 50 year preliminary estimate seems about right. However, it appears, based on the retirement data that a number of historic turbine upgrades did not result in retirement entries. It is anticipated that future retirement transactions will increase, providing that the retirement process is modified to capture the retirement of plant during turbine upgrades.

Manager – Technical Planning

- NL Hydro views that the Microsoft products have no more than a 5 year life
- Would suggest that new Personal Productivity software be assigned a 5 year life and maintain a 7 year life on legacy software (pre-2010)
- Would suggest a 7 or 8 year life on Enterprise software systems.
- Company policy would dictate no more than a 5 year life for Hardware, with most computers being replaced prior to 5 years.

Manager – Engineering - Telecontrol

Topic: Battery Types

- It is expected that Flooded Cell (lead acid) batteries would have a life of 20 years.
  - Based on testing of the lead acid batteries, it has been found that by the 20<sup>th</sup> year, the batteries are not in good shape and cannot be relied upon.
  - As a result batteries are now being tested much more frequently than in the past, resulting in higher instance of early retirement.

- Historically, some groups have kept their battery systems for too long without appropriate testing, and are now finding that these old systems are not accurate or reliable.
- It is expected that VRLA (Valve Regulated Lead Acid) batteries would have a life of no more than 10 years.
  - Currently these VRLA batteries are used only in limited circumstances. At one time, NL Hydro had a lot of these batteries, but have started replacing these VRLA batteries with flooded cell batteries.

Topic: Battery Chargers

- Older type battery chargers may have a 30 to 35 year estimated life.
- Newer style chargers are smaller and more electronic in nature, but have more control abilities.
- Approximately half of the battery chargers in the system are the new technology types and would have a maximum life of not more than 20 years.

Asset Specialist - Fleet

Topic: Review of Various fleet assets and life estimates

- Equipment used by the transmission line crews will achieve only a 4 to 5 year life given the harsh operating conditions that the assets are exposed to.
- Equipment used by the distribution line crews will achieve a 7 to 10 year life given the less harsh operating conditions that the assets are exposed to.
- Suggest a 6 year life for most fleet assets