NOVA SCOTIA POWER
An Emera Company

October 19, 2010

Nancy McNeil
Clerk of the Board
Nova Scotia Utility and Review Board
1601 Lower Water Street, 3rd Floor
P.O. Box 1692, Unit "M"
Halifax, NS B3J 3S3

Re: NSPI's Relay Testing Report 2009 - P-401.32 - Matter 03232 Responses to Information Requests (IRs)

Dear Ms. McNeil:

Enclosed are IR responses pertaining to the capital item referenced above. These IRs were received on October 5, 2010.

Regards,

Lee Thomson-Lutz, MBA, CMA
Manager, Capital

Encl.

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Request IR-1:

Nova Scotia Power's 2006-2007 Relay Testing Report (letter dated July 2, 2008), indicated 1712 relays were included in the transmission test program. The 2008 Relay Testing Report (letter dated April 27, 2009), indicated a total number of 1580 relays which was adjusted from the prior year report to reflect the number of customer owned relays and those not in service. The 2009 Relay Testing Report (letter dated June 3, 2010), indicates a total of 1408 relays tested during the three year program.

a) What is the total number of relays in the system?

b) Please elaborate on "customer owned relays and those not in service".

c) Were all relays on the system tested during the three year cycle? If not, how many remain untested, and why?

Response IR-1:

(a) As of the end of 2009 the total number of 138kV & 69kV mechanical relays in the test program was 1223. Under the three year program, 1408 relays were tested. Of this total, 185 relays are either now defined as part of the Bulk Power System and are tested as per Northeast Power Coordinating Council (NPCC) requirements, or have been retired and/or replaced due to changes in protection. The number of relays included in the transmission test program has changed year over year due to changes in NPCC designation and system protection upgrades.

(b) Customer owned relays are relays which are associated with protection of customer owned equipment at locations such as Bowater, NewPage and Michelin. Some of these relays are in NSPI's substations and some are in the customer's plant.

Response IR-1: (cont'd)

The database of relays contains all mechanical relays in the system. A number of those relays are no longer in service because they have been replaced with newer digital relays, or parts of the system have been retired. Also, some of the relays have been replaced or removed from service as a result of upgrades to the protection systems to support the integration of the new renewable energy projects.

(c) Relays which are protecting NSPI's transmission system except those designated as part of the Bulk Power System have been tested as part of the current 3 year program. Those designated as part of the Bulk Power System are tested as per NPCC requirements. There was only 1 unit which was not tested during this program as it was unable to be removed from service. NSPI has determined the impact to the electrical system is too significant to remove this relay from service for testing. This relay will be tested during the next scheduled major maintenance outage.

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Request IR-2:

Program costs for the three years are stated as $188,689, $159,441, and $92,210 successively. Please analyze and explain the year over year drop in costs.

Response IR-2:

Year	# of Units Tested	# of Substations	Annual Cost	Average Cost per Relay
2007	653	15	$188,689	$289
2008	430	26	$159,441	$371
2009	325	22	$92,210	$284
Total	**1408**	**63**	**$440,340**	**$313**

Over the three years, the overall costs associated with the relay testing program have decreased proportionally with the number of relays being tested.

The number of substations and relays at each site affects the travel, set up and the overall testing costs of the relays in a particular year. The actual cost per relay will vary based on the type of relay being tested and each site could be configured differently. For example, during the first year a number of substations were completed which included more relays per site, reducing the travel and set up costs.

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Request IR-3:

Please provide a detailed rationale supporting NSPI's assertion that a ten year cycle for testing relays would be more appropriate.

Response IR-3:

The rationale for extending the testing period to ten years is based on cost effectively managing the risk to the transmission system.

Historically NSPI has found few issues with the reliability of the mechanical relays and the testing over the past three years confirms this experience with a failure rate of approximately 2%. Each of the relays that failed during testing had back up protection in place in the event of a failure to operate properly.

Based on the testing results of the past three years NSPI is confident that the chances of finding failed units in the next three year cycle has been reduced even further. A 10 year cycle is a more appropriate time frame for this testing program.

The actual practice of testing the units can be a higher risk to the system reliability as parts of the protection system are removed from service resulting in single contingency situations during the testing period.