

1 Q. **Reference: Tab D; Volume 1: Capital Projects over \$200,000 and less than \$500,000 (Replace**
2 **Voltage Regulator – Happy Valley Gas Turbine)**

3 Hydro states on page D-22, lines 2-6, that “The AVR [automatic voltage regulator] was installed
4 in 1992. The AVR malfunctioned in December 2018 when a shorted conductor caused a blown
5 fuse in the AVR. As a result, the generator did not have terminal voltage and the unit was
6 unavailable to operate. The fuse was replaced and the unit put back in service. During the
7 investigation into this failure in early 2019, Newfoundland and Labrador Hydro (“Hydro”)
8 became aware that the OEM had declared the AVR obsolete.” Hydro further states on page D-
9 22, lines 15-16, that “The AVR is a critical component for operation of the unit as it maintains
10 the generator terminal voltage at an acceptable level.” The summary of superseded products on
11 page D-29 indicates that the last day of availability for parts for the AVR was in 2010.

12 Please explain why this critical piece of equipment was not identified earlier through Hydro’s
13 Asset Management Program as a critical spare? If so, please provide.

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16 A. For critical equipment that are not likely to suffer a failure resulting in the equipment being
17 removed from service for an unacceptable time, such as the Happy Valley Gas Turbine
18 automatic voltage regulator (“AVR”), the cost of acquiring and maintaining a complete spare
19 piece of equipment is not justifiable. In such situations, Newfoundland and Labrador Hydro
20 (“Hydro”) stocks select spare components (e.g., cards, fuses, etc.) to allow prompt field repairs.
21 There was a stock of spare components established for the Happy Valley Gas Turbine AVR.

22 Hydro’s asset management practice is to replace equipment declared obsolete. Hydro is
23 normally made aware of on-coming withdrawal of original equipment manufacturer (“OEM”)
24 technical support and component/replacement unit supplies (i.e., obsolescence) through OEM
25 support agreements or information bulletins. The Happy Valley Gas Turbine AVR OEM did not
26 provide or offer Hydro with any such services.

1 Maintenance history shows there were only two situations requiring the replacement of a fuse
2 since 2010, specifically in 2018 and 2019. During investigation to determine the underlying
3 problem causing the 2018 fuse failure, Hydro discussed the situation with the OEM. It was at
4 this time that the OEM informed Hydro of the obsolescence of the AVR. As the AVR is obsolete
5 and replacement components are no longer available from the manufacturer, Hydro believes it
6 is prudent to replace the AVR.