Q. (Reference Application, Schedule B, page 5).

With reference to the location of MUN-T2, it is stated "*This area is frequented by students and staff of the University*" and para. 5 of the Application states "*MUN-T2 cannot be returned to service without exposing the University and public to safety risks.*" Do those statements imply that failure of MUN-T2 poses a risk of personal injury to students, staff and the public? Is there not fencing and other protections in place to ensure the safety of individuals in the vicinity of MUN-T2? How is it that NP chose a location to construct this facility in such an area frequented by students and staff, and with exposure to the public and safety risks? Please explain.

A. The statements made in the report reflect uncertainties related to the specific failure mode of MUN-T2.

Memorial ("MUN") Substation is located on land owned by Memorial University as part of its St. John's campus. The location of MUN Substation was selected by the university, Provincial Government and Newfoundland Power in the 1960s. A customer-owned concrete block wall fence surrounds the substation with chain-link entrance gates. When all equipment is in normal operation and functioning properly, the substation does not pose an unreasonable safety risk to the university or its students, staff or the public.

MUN-T2 is experiencing a rare form of core deterioration. Newfoundland Power has no records of experiencing this failure mode in its history. The Company's transformer consultant, van Kooy Transformer Consulting Services Inc. ("van Kooy"), has only observed one other instance of this failure mode in its 35 years of experience. van Kooy advised that there is currently no standard industry practice used for monitoring core deterioration. A deteriorating core is a rare condition that cannot be monitored while the transformer is still in service.[1]

Industry experience suggests the insulation material between transformer core laminations will continue to break down without the ability to monitor the rate of deterioration. A further decrease of insulation material will likely lead to additional core vibration. Increased vibrations can cause shifting in the transformer windings, resulting in an internal fault. The severity of this type of fault ranges from a fault between windings tripping the transformer protection, to a severe failure.

A severe failure could result in an overpressure event, which would lead to a release of oil from the transformer's explosion vent. In extreme cases, the overpressure event could result in the rupture of the transformer tank or bushings, which would release significant quantities of oil, exposing the substation to the risk of a fire. The two transformers in MUN Substation are located in close proximity to one another as well as to other equipment within the substation. A severe failure of MUN-T2 could therefore cause damage to the MUN-T1 transformer, as well as the adjacent 66 kV structures, switches, transmission line breakers, and the existing switchgear building. While

[1] For additional information, see the *Application, Schedule B, Section 3.0 Risk Assessment.*

Newfoundland Power expects the damage would most likely be contained within the substation, this could not be guaranteed given the unique location of MUN Substation.

Based on these uncertainties, the failure of MUN-T2 necessitates a reasonably cautious approach to mitigate potential safety risks and further reliability risks. It has therefore been removed from service.