

1 **Q.** In the report “Rose Blanche Hydro Plant Turbine No. 1 Refurbishment”, in
2 **Schedule C, Section 2.3, page 4, it is written “To prevent future overheating of the**
3 **mechanical components of the runner assembly, a new cooling water system supplying**
4 **the seal areas, complete with dedicated flow switches, will be installed. In addition, a**
5 **more sensitive non-contact shaft vibration monitoring system will be installed for**
6 **improved protection of the unit.”**

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8 **Should the existing vibration monitoring system have tripped the unit before**
9 **damage to the shaft was incurred? If not, why did it not.**

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11 **A.** No. Consistent with Newfoundland Power’s protection standards for small hydro plants
12 at the time the Rose Blanche Plant was built, the existing vibration protection system
13 consists of seismic-type vibration switches mounted on the bearing caps. Systems of this
14 type will trigger a unit trip when problematic levels of vibration are detected; however, it
15 is believed that the failure of the turbine runner occurred suddenly, at the time the unit
16 tripped in response to the high bearing temperature.¹ In these circumstances, the
17 vibration system would not have provided any protection.

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19 The proposed addition of a more sensitive vibration monitoring system as part of this
20 project is consistent with the standards applied by Newfoundland Power when upgrading
21 the technology of its older hydroelectric plants.²

¹ On a unit trip at the Rose Blanche Plant, the breaker opens, increasing the unit speed for a short period of time. It is believed that the failure of the brittle runner material occurred during this period of “overspeed”.

² See, for example, *Pierre’s Brook Hydro Plant Refurbishment*, Newfoundland Power 2016 Capital Budget Application.