

Q. **Reference: Life Extension Application, Schedule 1, page 14, lines 1-8.**

“Additional scope necessary to support long-term reliability that Hydro proposes to be clustered with the life extension work to minimize future outage time and recommissioning activities are as follows:

- Install dust collection system;
- Design and install turbine pit monorail and hoist;
- Modernization of excitation system controls to address obsolescence;
- Conversion of turbine governor from mechanical to modern digital control; and
- Modernization of the unit control system to address obsolescence and improve asset monitoring”.

a) Provide the cost estimate for each of the five items of additional scope.

b) Which of these five items of additional scope require Unit 7 to be disassembled for completion?

c) Has Hydro considered undertaking any of these five items of additional scope prior to the complete Unit 7 outage in 2028? Explain why or why not.

A. Table 1 provides the cost estimate for each of the five items of additional scope.

Table 1: Additional Scope Cost Estimates (\$ Millions)

Item	Cost
Dust collection system	
Turbine pit monorail and hoist	
Modernization of excitation system controls	
Conversion of turbine governor from mechanical to modern digital control	
Modernization of the unit control system	

1 **b)** The generator brake dust collection system and the turbine pit monorail and hoist are best
2 installed on the generator main bracket before it is lowered into the unit (i.e., during
3 disassembly). When the unit is assembled, access to the area under the rotor and to areas of
4 the turbine pit is challenging and working space is limited, making the installation of both
5 systems difficult.

6 Installation of the dust collection system for the generator slip ring assembly does not
7 require Unit 7 to be disassembled. However, this system is most suitably installed after the
8 generator stator and rotor have been thoroughly cleaned, such that any existing
9 contamination of the windings is removed, and the effectiveness of the dust collection
10 system can be accurately monitored.

11 Replacement of the excitation system controls, conversion of the governor, and
12 modernization of the unit controls do not require disassembly of Unit 7. However, the
13 governor work will require the removal of the Permanent Magnet Generator and the
14 shipment off-site so that the necessary refurbishment and modification of the speed switch
15 assemblies can be completed. The unit cannot operate without this piece of equipment.

16 **c)** Each of the five items of additional scope has been considered for execution prior to the
17 2028 outage. While each scope could be completed as a stand-alone project, there are
18 efficiencies in including these items in the scope of the proposed life extension project. Each
19 item is discussed below.

20 As discussed in part b) of this response, the dust collection systems are best installed on the
21 unit following a thorough cleaning. The next opportunity will be following the stator rewind
22 and rotor refurbishment proposed within this application.

23 While the installation of the turbine pit monorail and hoist with the unit assembled is
24 possible, it is impractical. Significant work would be required to allow safe access for the
25 installation of the equipment, and the turbine pit would be unavailable for critical
26 maintenance activities during the installation due to the risks associated with the overhead
27 work. The use of physical barriers would not be possible due to the limited space and access
28 available.

1 The excitation controls upgrade, the governor modernization, and the unit controls
2 modernization require significant third-party engineering involvement and planned outage
3 durations much longer than the typical period required for routine maintenance
4 intervention for the 150 MW generating unit. Additionally, the significant commissioning
5 efforts required following the execution of these scope items would be duplicated during
6 the life extension scope.

7 Newfoundland and Labrador Hydro proposes to complete the five items of additional scope
8 as part of the Bay d’Espoir Unit 7 Life Extension Project for the reasons discussed above.