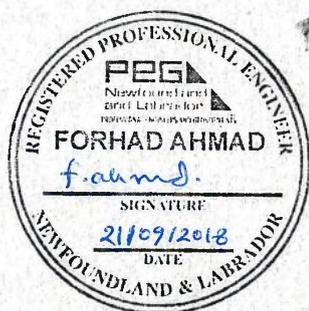


1 Q. **References: Tab 12; Volume II: Diesel Plant Fire Protection – Black Tickle (2019-**
2 **2020)**

3 It appears that sections 3.3, 3.4, 3.4.1, 3.4.2, 3.4.3, 3.5 of the report are in reference
4 to another project. Please confirm that the inclusion of these sections has not
5 replaced text that was meant for this project and that the report entitled Diesel
6 Plant Fire Protection – Black Tickle contains the entirety of the information that
7 Hydro planned to present pertaining to this project.

8
9

10 A. Hydro’s report entitled “Diesel Plant Fire Protection – Black Tickle” as contained
11 within its *2019 Capital Budget Application*, Volume II, Tab 12 contains the entirety
12 of the information pertaining to this project. PUB-NLH-020, Attachment 1 contains
13 Revision 1 of this report which removes sections 3.4, 3.4.1, 3.4.2, 3.4.3, and 3.5 as
14 they do not pertain to the Diesel Plant located in Black Tickle, Section 3.3 is
15 pertinent to the “Diesel Plant Fire Protection – Black Tickle” project. Hydro intends
16 to re-file its *2019 Capital Budget Application* to reflect this report revision.



Electrical
Mechanical
Civil
Protection & Control
Transmission & Distribution
Telecontrol
System Planning

Diesel Plant Fire Protection
Black Tickle

July 2018

Revised October 2018



1 **Summary**

2 Hydro owns and operates 25 diesel powered generation plants. Most are located in remote
3 coastal areas of Newfoundland and Labrador and are not staffed 24 hours per day. There have
4 been six serious fires at several of these plants resulting in the loss of equipment and facilities.
5 Starting in 2014, Hydro has had multi-year program-like projects to install automatic fire
6 protection systems in diesel generating plants. Details were presented most recently in the
7 2018 Capital Budget Application in Diesel Plant Fire Protection, Volume II, Tab 29. To date
8 installations have been completed in three plants. In 2018, automatic fire protection will be
9 installed in the Postville Diesel Generating Station.

10

11 In the 2019, Hydro proposes the continuation of the program in Black Tickle Plant. Engineering
12 will start in 2019 for the 2020 installation of automatic fire suppression in the Black Tickle
13 Generating Station. The estimated cost of this project is \$1,917,400.

14

15 It is anticipated that Hydro will submit other proposals to the Board in subsequent years to
16 have automatic fire suppression installed under other proposed projects to be completed at
17 remote diesel plants.

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1 **1 Introduction**

2 In 21 communities, Hydro’s diesel plants are the only source of electric power as the
3 communities are isolated from the interconnected electrical grid. Out of 21 diesel plants 17
4 plants do not have fire suppression system. Continuous operation of the generating units, or
5 their availability in the case of standby plants, is critical to each community.

6

7 There have been six serious fires at these plants resulting in the loss of equipment and facilities.
8 Starting in 2014, Hydro has had multi-year program-like projects to install automatic fire
9 protection systems in diesel generating plants. Details of the program were presented in the
10 2014 Capital Budget Application in the Install Fire Protection System proposal (Volume II, Tab
11 22). To date installations have been completed in three plants. In 2017, automated fire
12 protection was installed in Nain Diesel Generating Station. In 2018, Hydro is installing
13 automated fire protection in the Postville Diesel Generation Plant. In 2019, Hydro proposes the
14 continuation of the program with installation of an automated fire protection system in Black
15 Tickle (Figure 1).



Figure 1: Black Tickle – Diesel Generating Plant

1 **2 Project Description**

2 The project will install a water mist fire protection system at the Black Tickle Generating
3 Station. The system sprays water and nitrogen, which produces a blanket of atomized water
4 particles that absorb heat and smother the fire. This system will be used in the diesel generator
5 main hall area (Figure 2) and other interior spaces requiring fire protection including the
6 transformer room and the lube and coolant storage room.



Figure 2: Black Tickle – Diesel Generators in Powerhouse

7 The scope of work includes design, procurement, installation, and commissioning of the new
8 equipment. A new storage shelter for nitrogen cylinders, water cylinders and associated
9 equipment will be supplied and installed outside the powerhouse, which includes required
10 foundations, electrical work and ventilation.

1 The majority of the work, including detailed design, will be completed by the external
2 contractor supplying the systems, with support from Hydro personnel.

3

4 **3 Justification**

5 This project is justified by the requirement to protect critical assets at the diesel plant in Black
6 Tickle from fire.

7

8 **3.1 Existing System**

9 The diesel plant at Black Tickle is not staffed 24 hours per day and does not have a fire
10 protection system. The plant is equipped with a fire detection system that consists of heat
11 detectors, manual pull stations, fire alarm annunciation control panels, audible alarms, and
12 auto dialers. When a fire is detected, the fire alarm system will alarm and the auto dialer will
13 attempt to contact the shift operator or Energy Control Center (ECC) in St. John's. In addition,
14 the control panel, which interfaces with the plant's operating equipment, is activated to shut
15 down all ventilation systems and on-line generators. The plant is also equipped with a number
16 of portable fire extinguishers. If there is a fire, extinguishing the fire is either done by plant
17 personnel or by the local volunteer fire department.

18

19 **3.2 Operating Experience**

20 Major outages that were the result of fires in diesel plants include:

- 21 • Fire in Rencontre East, on September 2, 2002, when the plant was destroyed and
22 resulted in a power outage of 42.5 hours;
- 23 • Fire in the Nain diesel plant that occurred on September 7, 2008, resulted in a power
24 outage of 35.5 Hours. In addition, a second major outage occurred at Nain diesel plant
25 on November 19, 2008, due to a fault in the temporary bus work used to interconnect
26 the temporary mobile diesels to the main diesel plant. This outage lasted 29.5 hours for
27 50% of the customers and 52 hours for the remaining customers; and
- 28 • Fire in Black Tickle, on March 14, 2012, when the engine hall was damaged resulting in a
29 power outage of 40 hours.

3.3 Development of Alternatives

There are no viable alternatives to this project. The powerhouse does not have adequate space to install fire walls between the diesel generators.

When the gas turbine operates in generation mode, at least one of the engines has to run continuously for the generator to produce power. However, when the generator runs in synchronous condensing mode only one engine is required to bring the generator up to the proper speed. At that point, the generator can operate without the engine, which is then shut down.

4 Conclusion

The Black Tickle plant has no automatic fire protection systems to permit early intervention in the event of a fire. As a continuation of Hydro’s Fire Protection projects, this project will address the risk of damage resulting from a fire by installing automatic fire protection systems in the Black Tickle diesel generator plant main hall area and other interior spaces requiring fire protection.

4.1 Project Estimate

The estimate for this project is shown in Table 1.

Table 1: Project Estimate (\$000)

Project Cost	2019	2020	Beyond	Total
Material Supply	0.0	20.0	0.0	20.0
Labour	87.8	75.0	0.0	162.8
Consultant	56.0	64.0	0.0	120.0
Contract Work	168.9	923.0	0.0	1091.9
Other Direct Costs	42.4	25.0	0.0	67.4
Interest and Escalation	22.1	140.8	0.0	162.9
Contingency	0.0	292.4	0.0	292.4
Total	377.2	1,540.2	0.0	1,917.4

1 **5 Project Schedule**

2 The anticipated schedule for this project is provided in Table 2.

Table 2: Project Schedule

Activity		Start Date	End Date
Planning	Open Project	Jan 2019	Jan 2019
Tendering	Issue and evaluate request for proposal's (RFP)	Feb 2019	Apr 2019
Design	Site Visit	May 2019	Jun 2019
	Prepare conceptual designs		
	Contract Awards	Jun 2019	Jul 2019
	Prepare detailed design and shop drawings		
Installation	Installation of Storage Facility for Nitrogen Cylinders	Jul 2019	Sep 2019
Procurement	Supply fire protection equipment	Jul 2019	Sep 2019
Installation	Install fire protection equipment	Jul 2020	Aug 2020
Commissioning	Perform testing and commissioning of fire protection systems	Aug 2020	Sep 2020
Closeout	Prepare closeout package	Nov 2020	Nov 2020

3 **6 Future Plans**

4 At present, 17 of Hydro's 21 diesel plants do not have a fire suppression system. It is
5 anticipated that Hydro will submit proposals in subsequent years to have automated fire
6 protection systems installed at additional remote diesel plants.