

1 Q. Reference: Gas Turbine Failure Analysis - Final Report, January 11, 2017, Alba Power  
2 Ltd. Report, page 10. Alba Power indicates that a step change in temperature  
3 spreads, such as the 20°C experienced at Hardwoods, "is considered significant,"  
4 but that Hydro ran the engine for another 2-3 days before failure. This seems to  
5 contradict Hydro's explanation on page 2, lines 23-26 of its report, which suggests  
6 that the unit was removed from service with the burners cleaned and replaced  
7 before the unit was made available for service. Please clarify Hydro's description of  
8 events prior to the Hardwoods failure.

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11 A. Hydro's description of the events prior to the failure of 202205 are as follows:

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13 February 3, 2016, 23:48 Hardwoods End A and B placed online for generation.

14

15 February 5, 2016, Midday Increase in Exhaust Gas Temperatures (EGT) spread  
16 deviation noted on 202205 (End A) but still under the  
17 alarm limits.

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19 February 6, 2017, 09:16 Both engines removed from service to top up lube oil  
20 reservoirs as a normal maintenance measure  
21 following a number of running hours and unrelated to  
22 EGT spread.

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24 February 6, 2016, 11:38 202205 placed back in service.

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1	February 6, 2016, 11:56	202205 removed from service due to high EGT spread
2		deviation. Condition of thermocouples inspected and
3		testing completed. Alba Power contacted by phone
4		for technical direction for troubleshooting and testing
5		throughout the weekend. Thermocouple testing was
6		completed.
7		
8	February 6, 2016, 14:58	Unit placed online for operation.
9		
10	February 6, 2016, 17:05	Unit shut down due to high temperature.
11		
12	February 6, 2016, 22:19	202205 placed online to test if any improvement in
13		EGT spread deviation noted. No improvement in
14		temperatures noted, 202205 shut down overnight.
15		
16	February 7, 2016	Burners removed, cleaned and reinstalled. Further
17		thermocouple testing was completed. Bad cabling
18		was suspected as a potential cause of temperature
19		issues. Results of findings discussed with Alba Power.
20		
21	February 7, 2016	Further testing runs completed overnight. One
22		thermocouple rejected from EGT spread deviation
23		calculation due to suspected wiring issues. Rejection
24		of a thermocouple is within original equipment
25		manufacturer recommended operating limits.

1	February 7, 2016, 03:37	Placed online for generation. Spread noted to be 35°C
2		overnight.
3		
4	February 8, 2016, 15:00	202205 spread deviation noted to be increasing near
5		50°C, the alarm set point.
6		
7	February 8, 2016, 15:23	202205 engine shut down initiated. Engine failed
8		during shut down.