

1 Q. Please answer the question in PUB-NLH-109 (reliability of the black start system as a
2 whole) in terms of the probability that the system will function as intended when
3 called upon.

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6 A. Based on the actual performance data of the blackstart plant since it was
7 commissioned, and assuming a requirement of eight units, the probability of the
8 blackstart system as a whole being unavailable when required - the utilization
9 forced outage probability (UFOP) - is 12.87%. The CEA average UFOP for stand-by
10 gas turbines (operating factor of less than 10%) for the period 2009-2013 was
11 18.22%.

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13 From Hydro's response to NP-NLH-018 from Hydro's Application, *Installation of*
14 *Diesel Units for the Purpose of Blackstarting:*

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16 Hydro has the alternative to blackstart Holyrood Unit 3 instead of
17 Unit 1 or Unit 2. The boiler feed pump motors on Unit 3 are 2500 hp
18 motors. Analysis has confirmed that seven 1.825 MW diesel units are
19 required to successfully start the 2500 hp boiler feed pump of Unit 3.
20 Successful blackstart of Unit 3 using seven diesel units would then
21 enable start of Holyrood Units 1 and 2.

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23 There were no occasions since the plant was commissioned when there were not at
24 least seven units available when the plant was called upon which would equate to a
25 UFOP of 0% (see in this regard, Hydro's response to PR-PUB-NLH-104 (Rev 1, Jun 10-
26 15)).