

1 Q. Please explain how the operation of the Labrador Island Link would be affected by a
2 3 phase fault at the Holyrood Plant, which is understood could result in prolonged
3 ac voltage oscillation including voltage below 0.8pu.

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6 A. A three-phase fault at Holyrood could result in prolonged ac voltage oscillation
7 including voltage below 0.8 pu when the Holyrood Thermal Generating Station is
8 online. Prolonged Holyrood bus voltages below 0.8 pu can be problematic for the
9 thermal plant auxiliaries and result in loss of Holyrood thermal generation. When
10 the Labrador-Island Link (LIL) is commissioned, the Holyrood Thermal Generating
11 Station will not be in operational service (during times when the LIL is operational)
12 and a three-phase fault at Holyrood does not result in system instability.

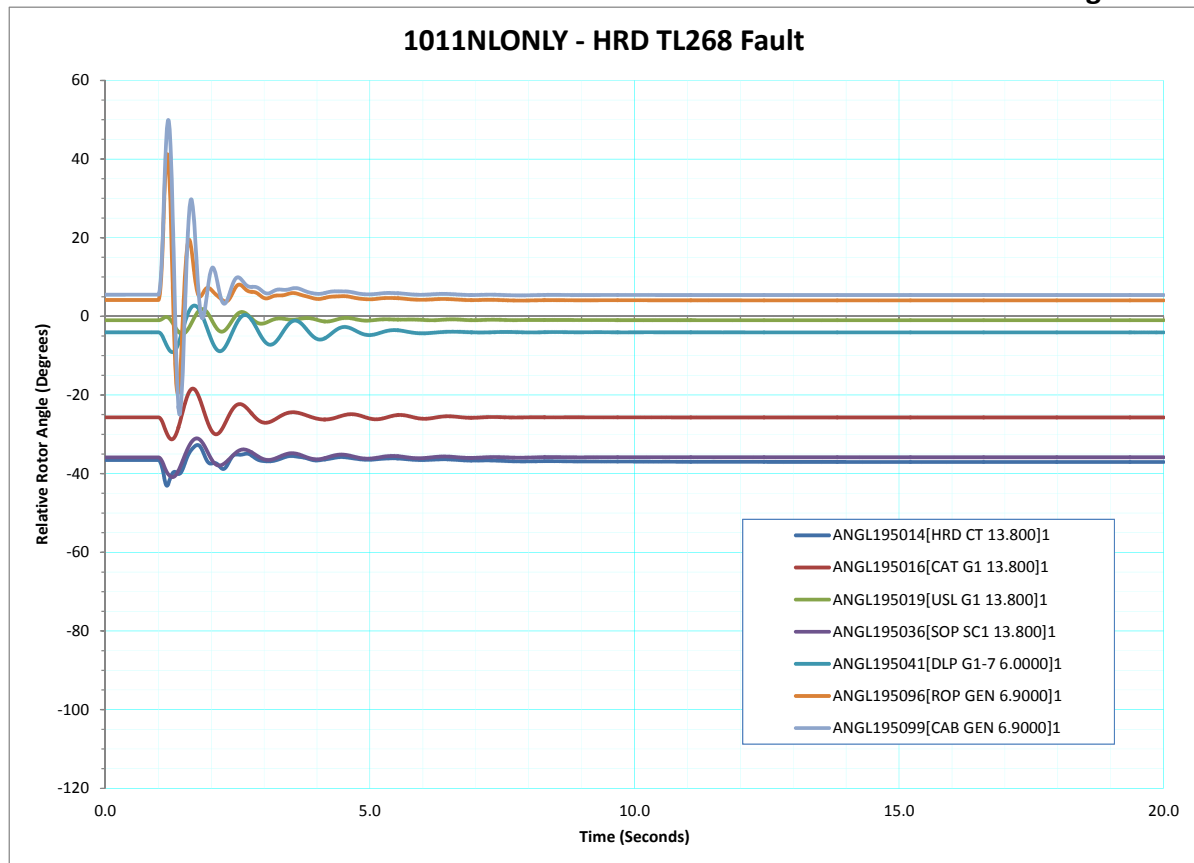
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14 Simulations were performed using the peak load case with the LIL loaded to 900
15 MW to demonstrate the system response to three-phase faults at Holyrood
16 followed by:

- 17 • The tripping of a transmission line to Soldiers Pond Terminal Station
18 (TL268);
- 19 • The tripping of a transmission line to Oxen Pond Terminal Station
20 (TL218); and
- 21 • The tripping of a synchronous condenser.

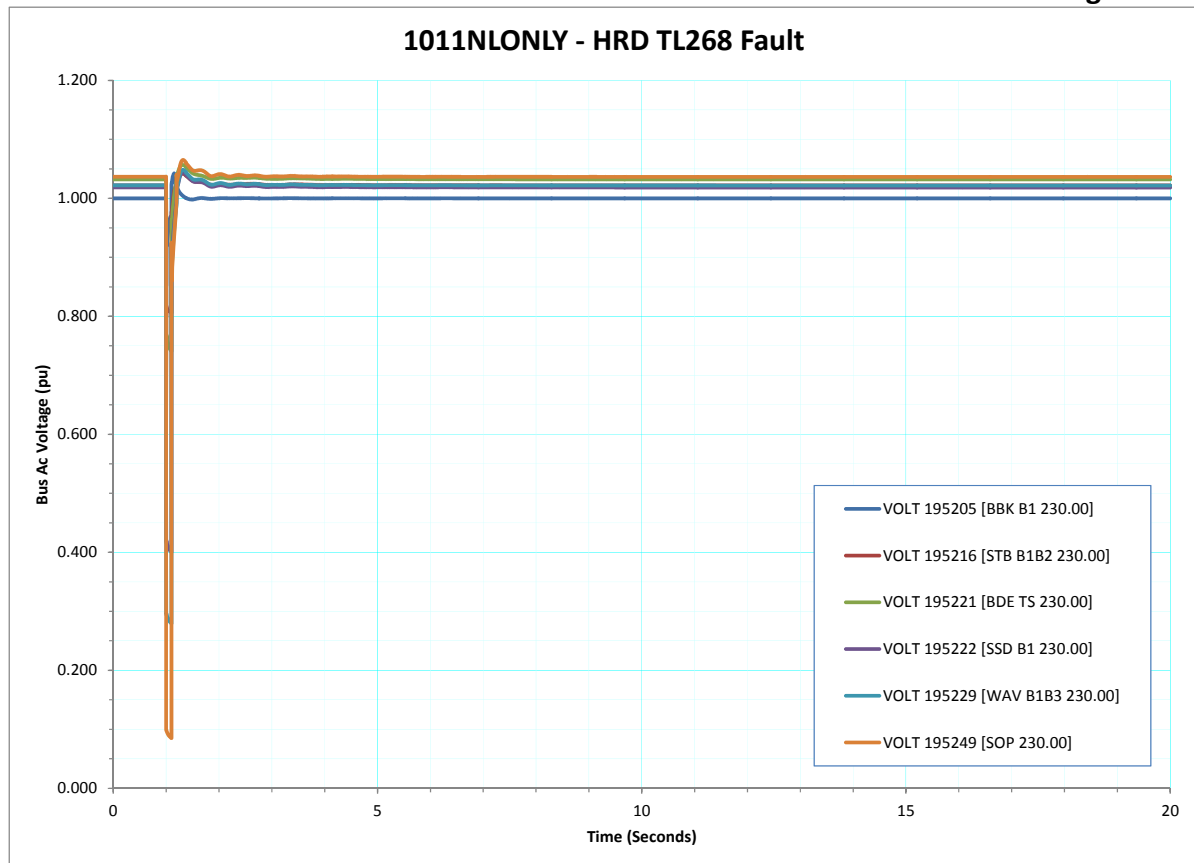
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23 As demonstrated in the figures below, ac stability is maintained and system
24 voltages are held within acceptable limits for these cases.



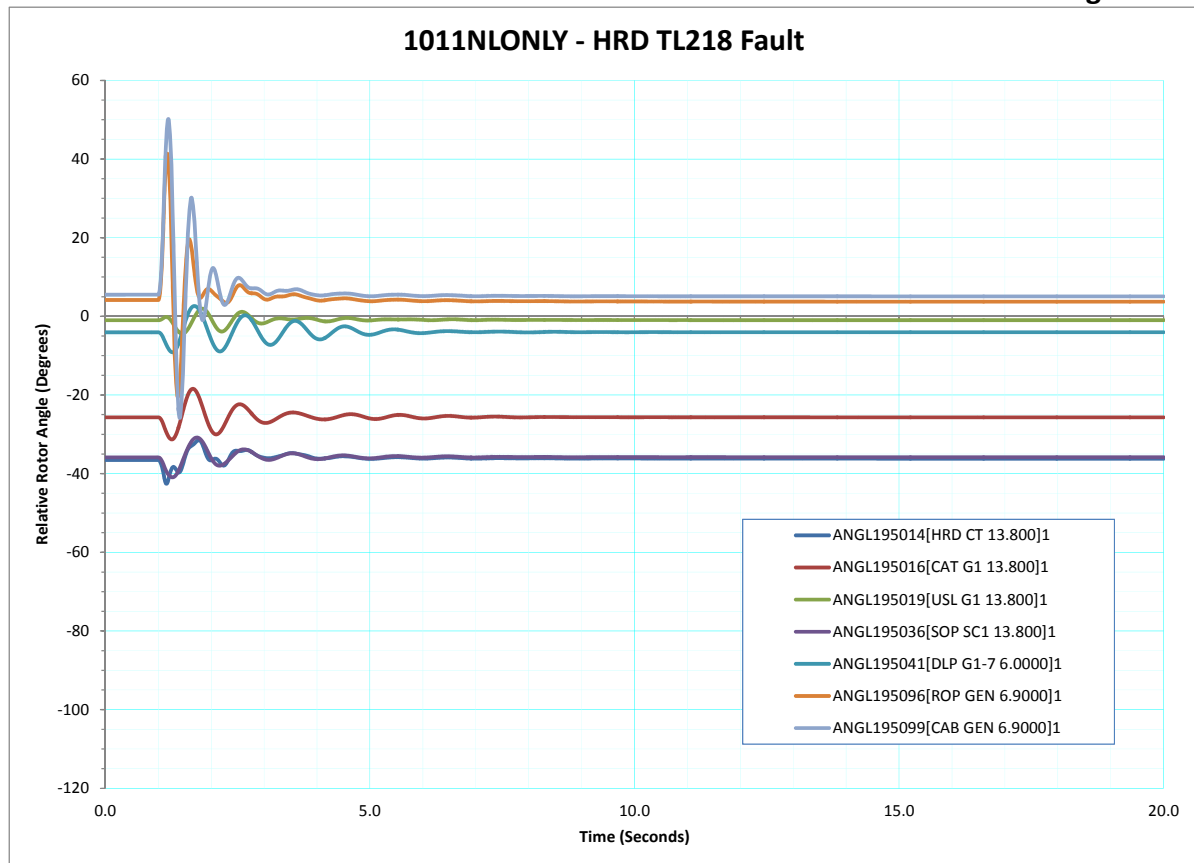
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Figure 1 - 1011NLONLY - HRD TL268 Fault - Relative Rotor Angle (Degrees)



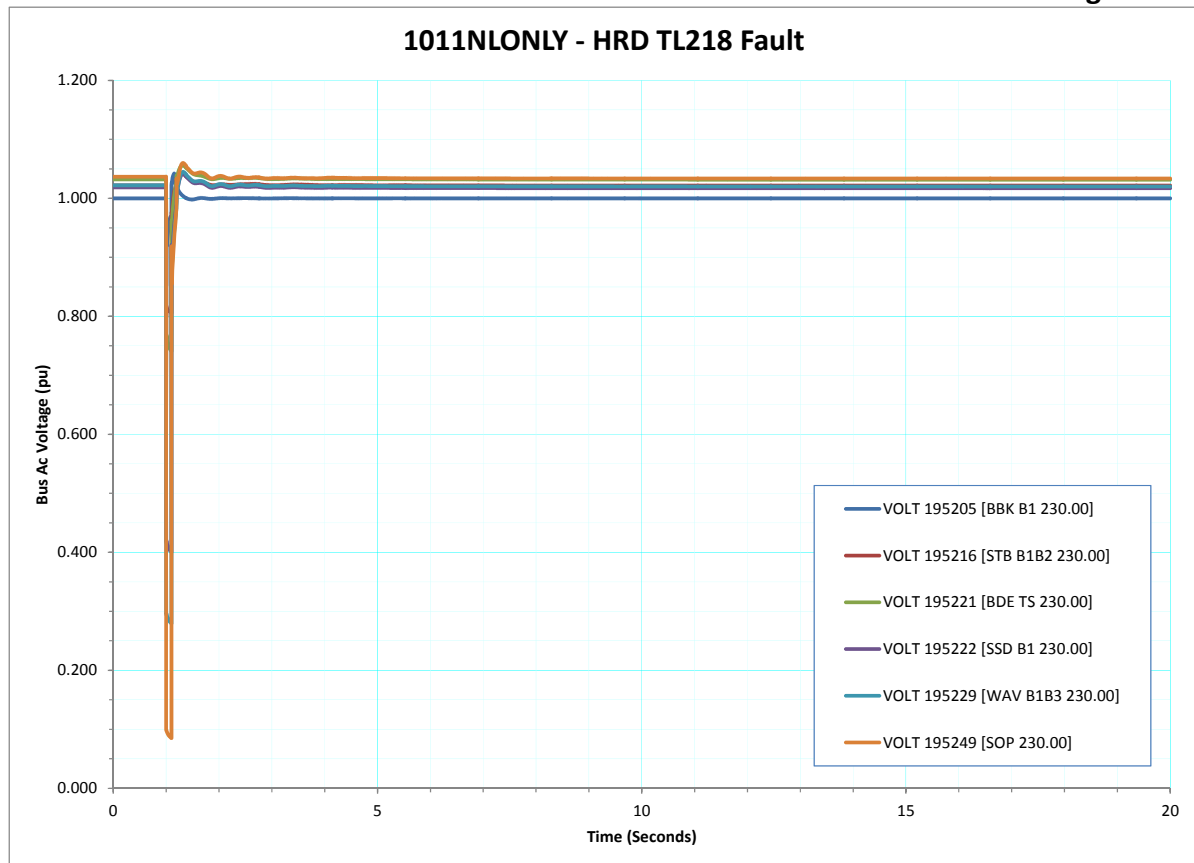
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Figure 2 - 1011NLONLY - HRD TL268 Fault - Bus Ac Voltage (pu)



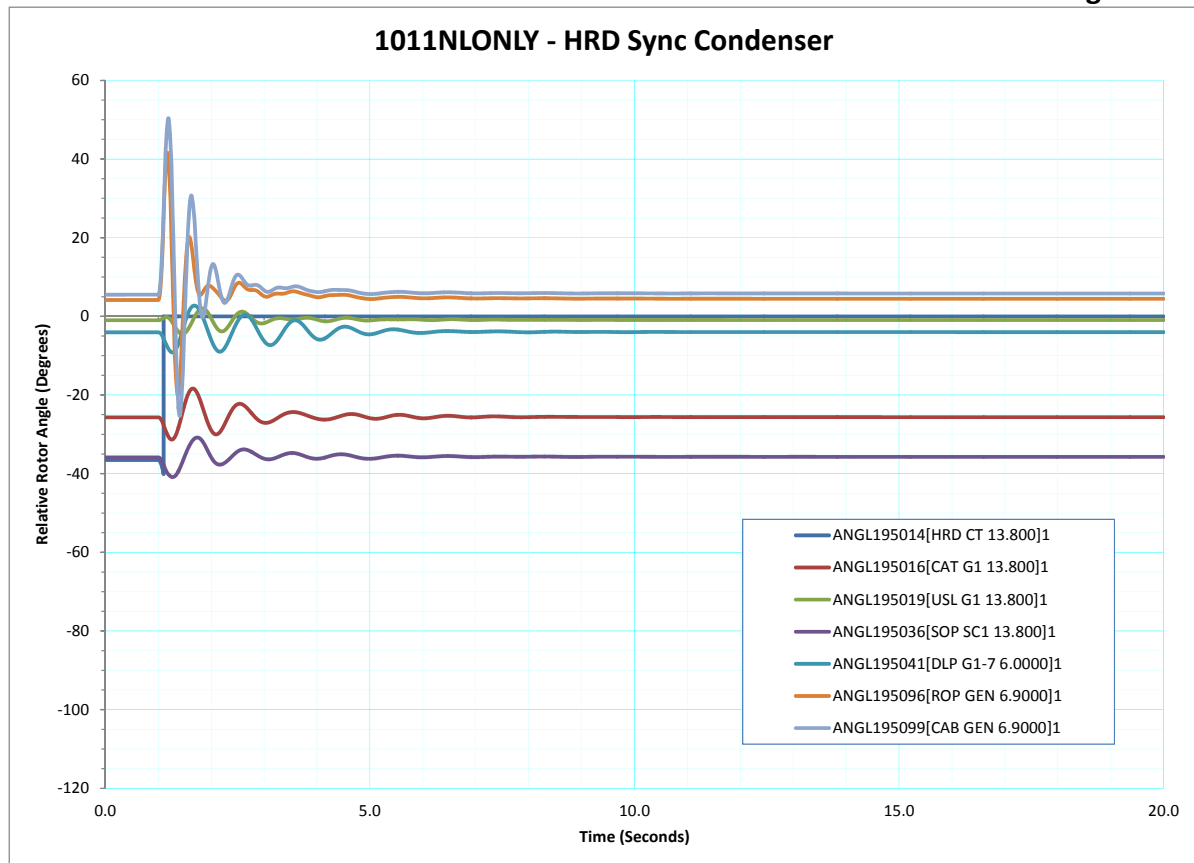
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Figure 3 - 1011NLONLY - HRD TL218 Fault - Relative Rotor Angle (Degrees)



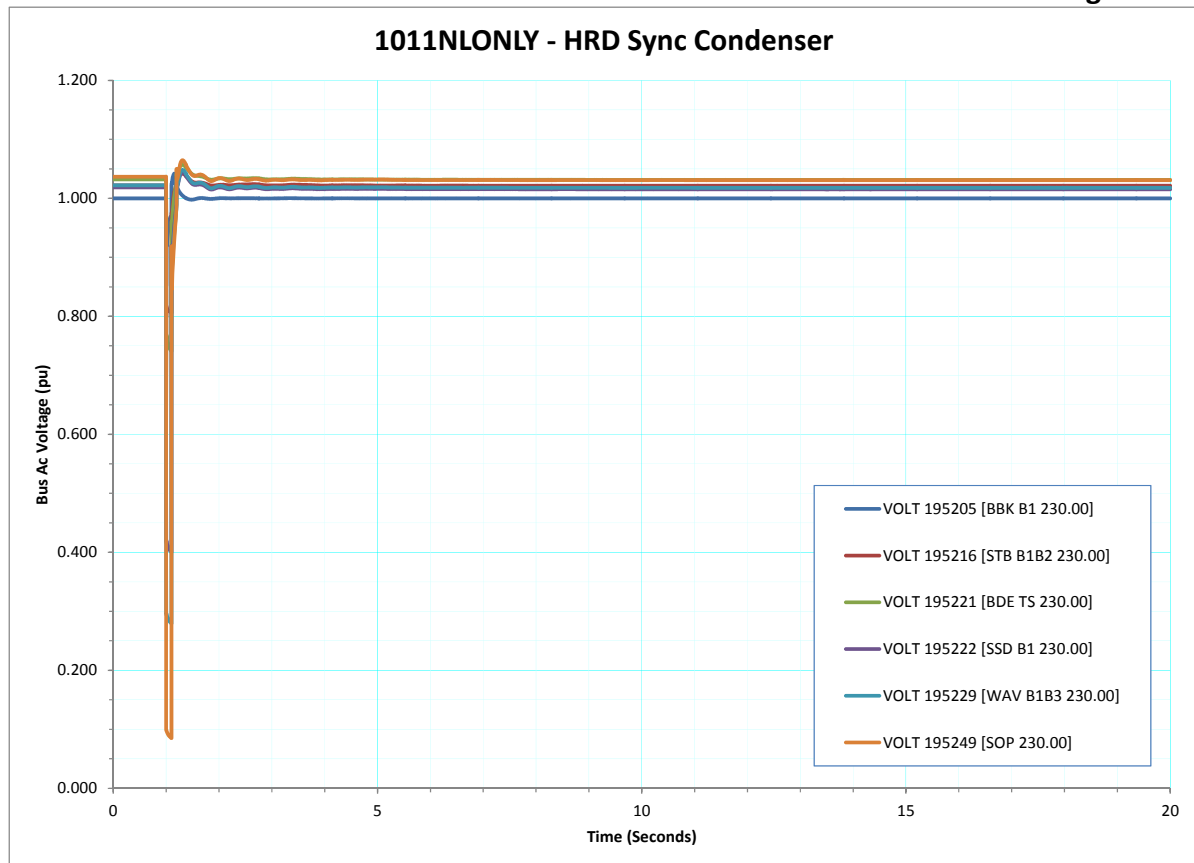
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Figure 4 - 1011NLONLY - HRD TL218 Fault - Bus Ac Voltage (pu)



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Figure 5 - 1011NLONLY - HRD Sync Condenser - Relative Rotor Angle (Degrees)



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Figure 6 - 1011NLONLY - HRD Sync Condenser - Bus Ac Voltage (pu)