Q. In your Application you also note the 'the existing system would have stability issues…resulting in widespread interruptions to customer service. Please provide the test results which has demonstrated this conclusion

A. An example of instability is discussed on Page 35: "*Preliminary transient stability analysis determined that power system stability cannot be maintained for disturbances on the Island Interconnected System following the addition of the Labrador–Island HVdc Link and the synchronous condensers at Soldiers Pond. A three phase fault on TL202 or TL206 at SSD with subsequent tripping of the faulted line was found to result in angular instability.*"

Figure 6.4 from the report is reproduced here to demonstrate the angular instability. From the figure one notes that the rotor angles of the generators on the Avalon Peninsula represented by Rocky Pond (ROP), Horse Chops (HCP), Holyrood combustion turbine in synchronous condenser mode (HRD CT) and Soldiers Pond synchronous condensers (SOP) accelerate beyond 180 degrees and do not oscillate and return to a steady state value. This indicates that the machines have pull out-of-step, or lost synchronism, with the remaining generators on the Island. Out-of-step protection would trip these machines resulting in loss of voltage control and load. The system is therefore unstable for the contingency.

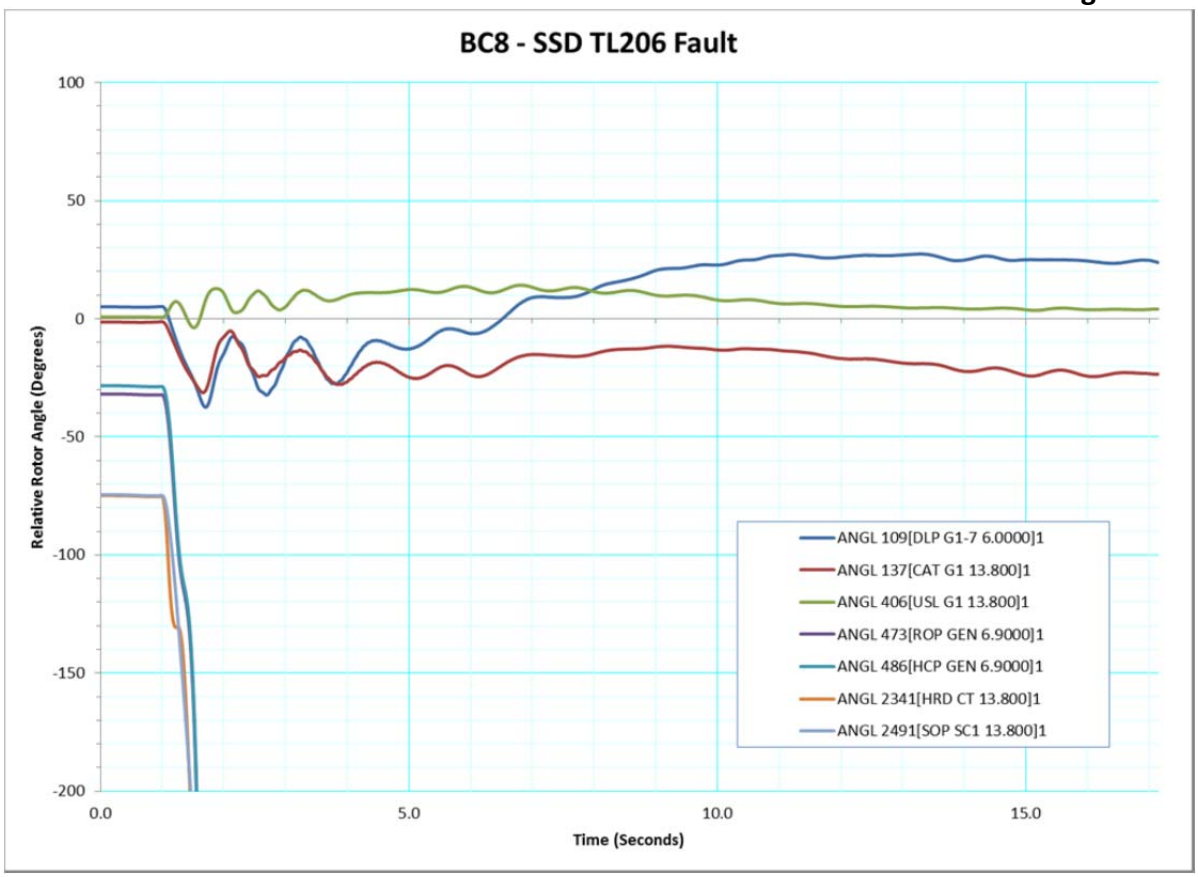

Figure 6.4 - Spring/Fall Day (BC8) SSD TL206 Fault – Relative Rotor Angle (Degrees)

As discussed on page 36, the instability exists for any loading condition in which the power flow between Bay d'Espoir and Sunnyside exceeds 350 MW.