Q. The report mentions that temporary bipole faults, with recovery after 200 msec, were considered in the study. Please provide some examples of a temporary bipole fault. Please explain how the converters were modelled to recover from a temporary bipole fault. Do permanent bipolar faults cause overloads or instability?

A. A temporary bipole fault refers to a condition where power transfer is momentarily interrupted on both HVdc poles simultaneously. Such a condition may arise from a condition that causes a flashover of both poles such as a lightning strike or forest fire.

The recovery of the HVdc system from a temporary bipole fault requires three stages that include fault detection, de-ionisation, and the ramping of the system from 0 MW to the specified power level. Fault detection and de-ionisation are discussed in Hydro's response to PUB-NLH-002. HVdc ramp rates are discussed in Hydro's response to PUB-NLH-018.

In the event of a permanent bipole fault, underfrequency load shedding is required to rebalance load with available on line generating capacity so that system frequency recovers and system stability is maintained. This is discussed in Hydro's response to NP-NLH-004.