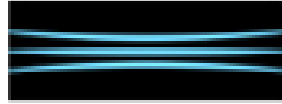


T R A N S P O W E R



Appendix E

Islanding Results

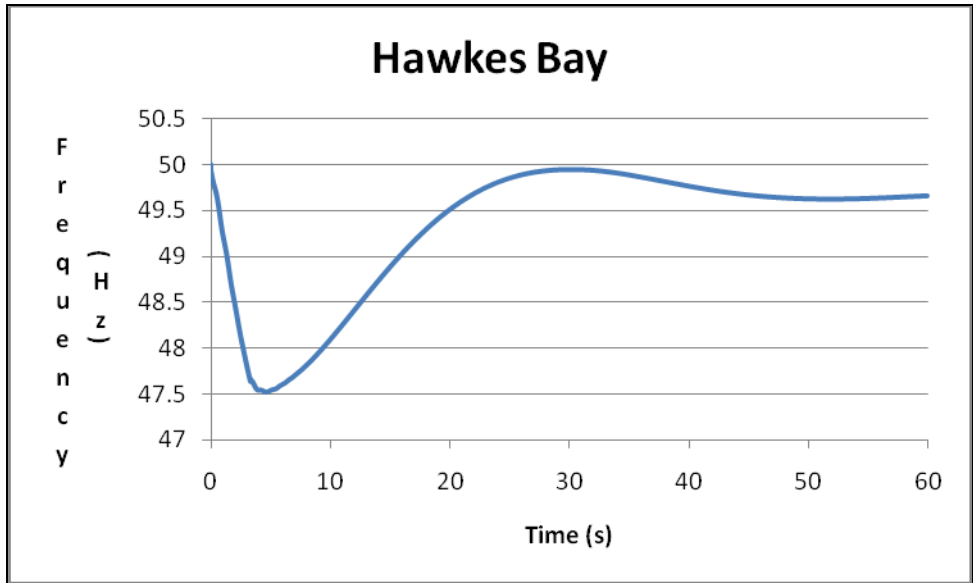


Figure 1: Frequency plot for the Hawkes Bay region

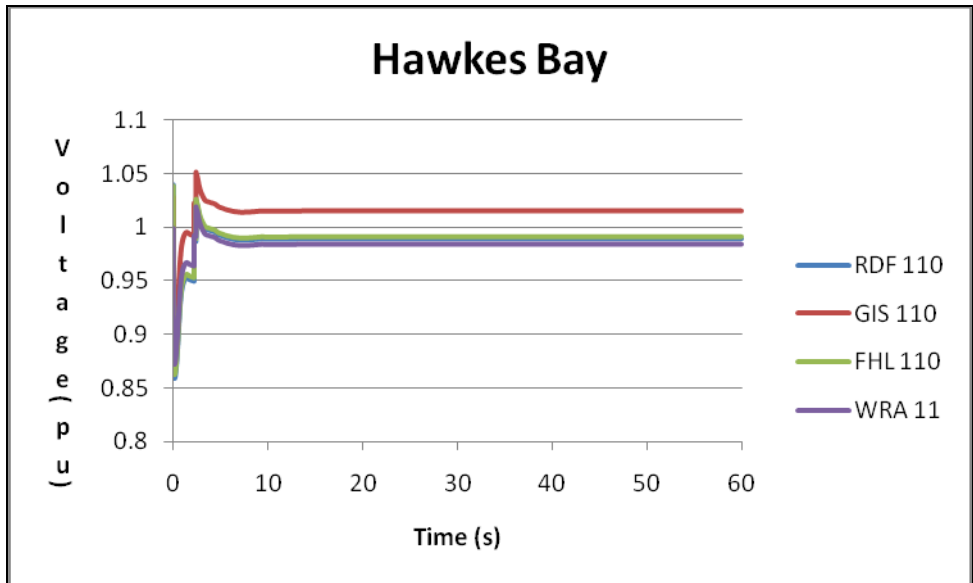


Figure 2: Voltage plots for bus bars in the Hawkes Bay region

The above case was prepared using the North Island scenario with load at 1811 MW.

All of the WKA generators were put in service at 15 MW.

As can be seen a successful island is formed.

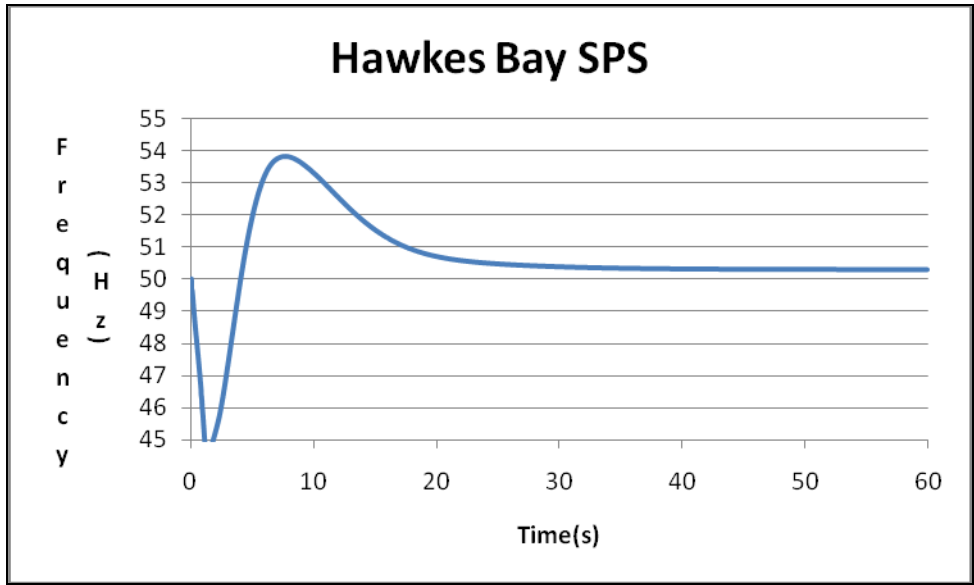


Figure 3: SPS graph for Hawkes Bay region

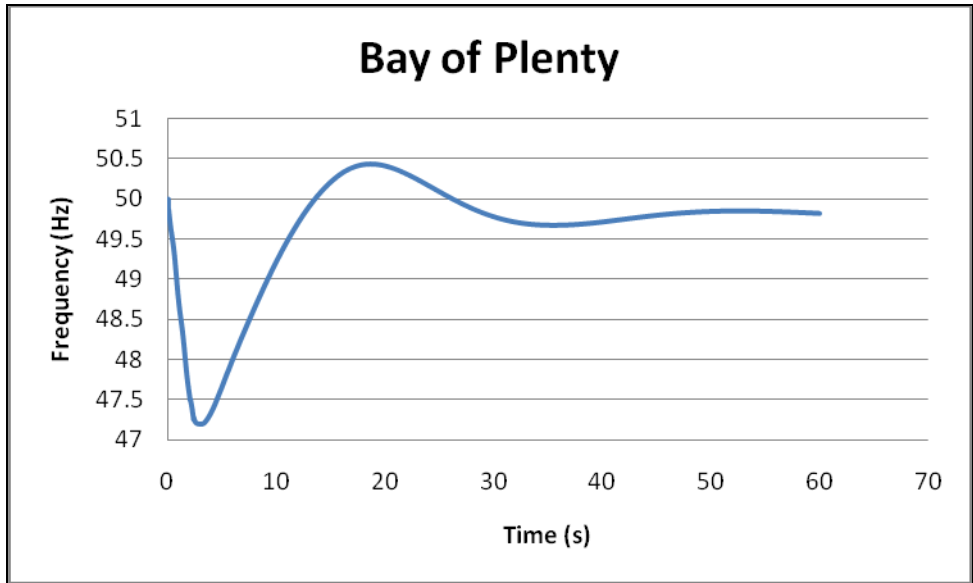


Figure 4: Frequency plot for the Bay of Plenty region

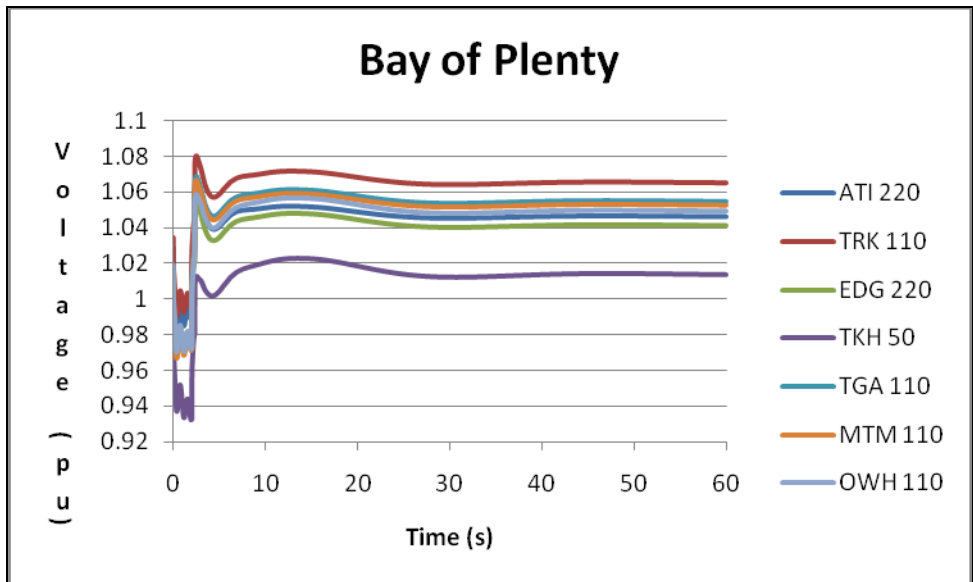


Figure 5: Voltage plots for bus bars in the Bay of Plenty region

The case above was for an overnight trough of 1811 MW.

Matahina generation was brought to 15 MW.

Atiamuri generators 2 and 3 were added at 10 MW each.

Both AUFLS blocks were required.

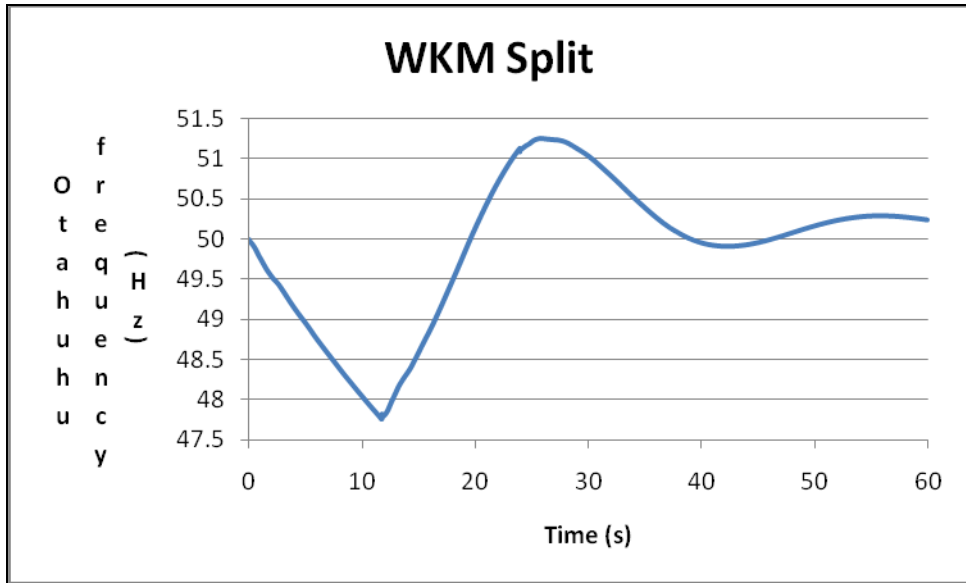


Figure 6: Frequency plot for Otahuhu

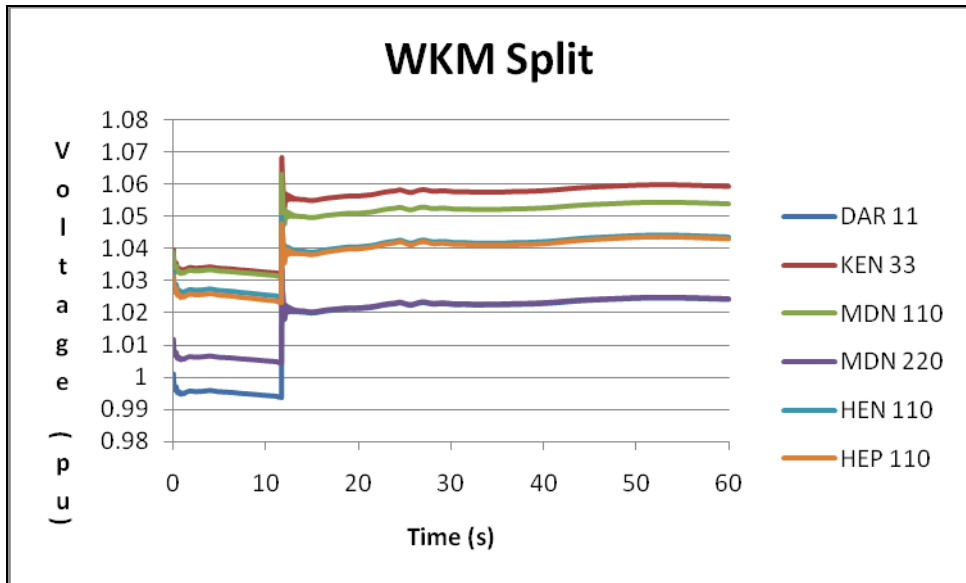


Figure 7: Voltage plot for bus bars in the UNI

This study was based on the North Island scenario with 3000 MW load and Huntly at 1150 MW.

An additional 100 MW of generation was needed for the island and was achieved by connecting Huntly Unit 1 at 100 MW.

Most of the other cases failed either due to a lack of generation in the split region or voltage instability.

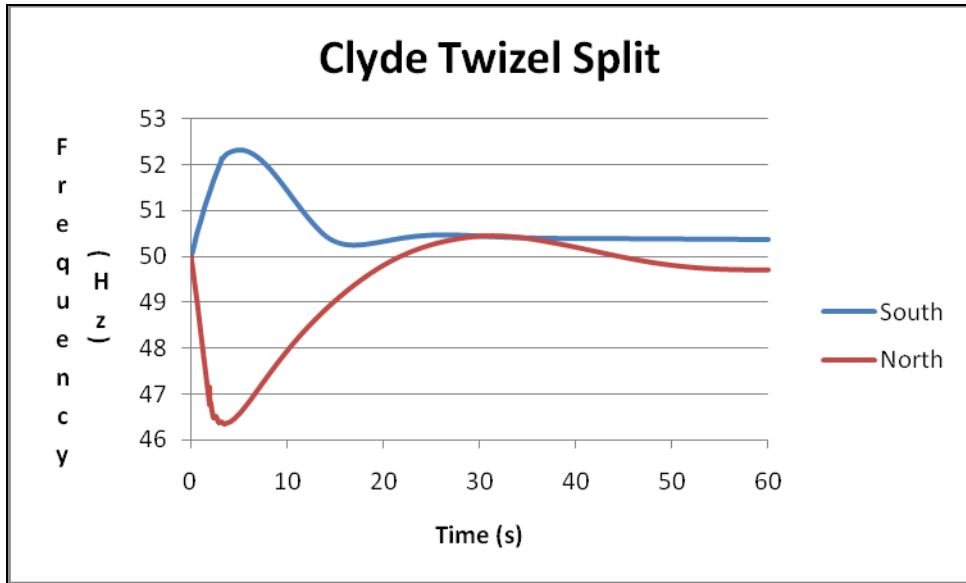


Figure 8: Frequency plot for North and South

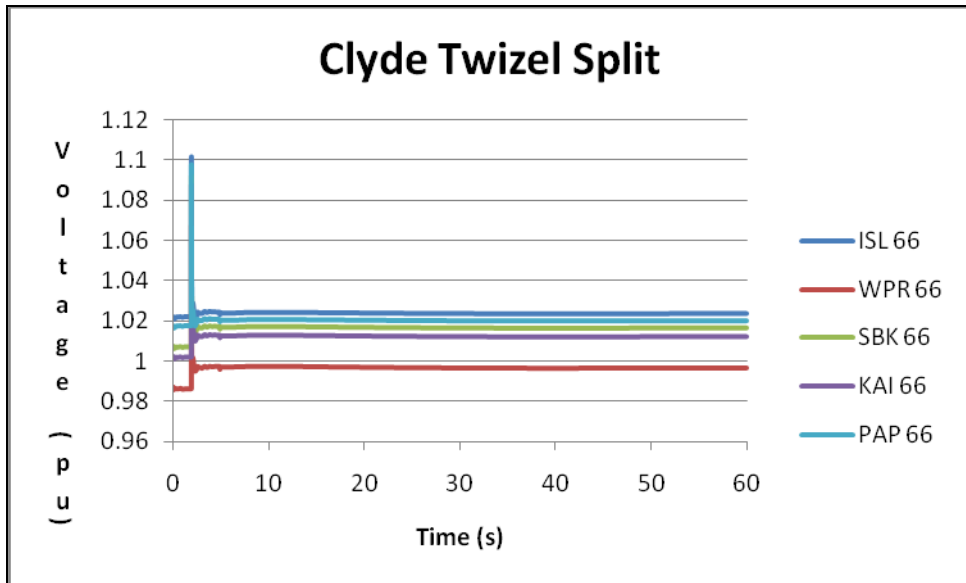


Figure 9: Voltage plots for surrounding bus bars

The above results were obtained with a load of 1500 MW and DC South transfer of 660 MW.

Only one block of AUFLS tripped and both parts of the grid successfully islanded but this will not always be the case.

The tripping of the AUFLS caused a transient over voltage but steady state voltages were more than acceptable.

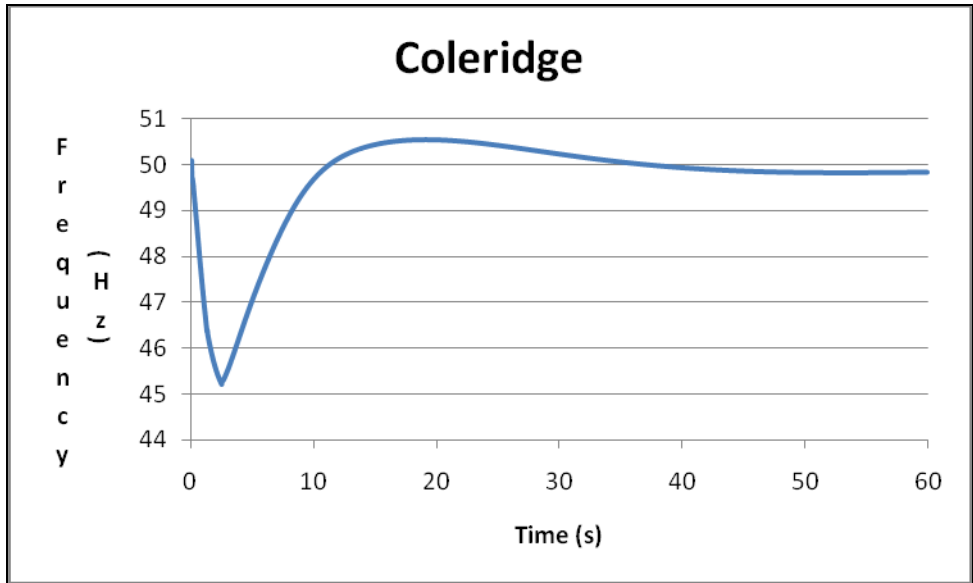


Figure 10: Frequency plot for Coleridge

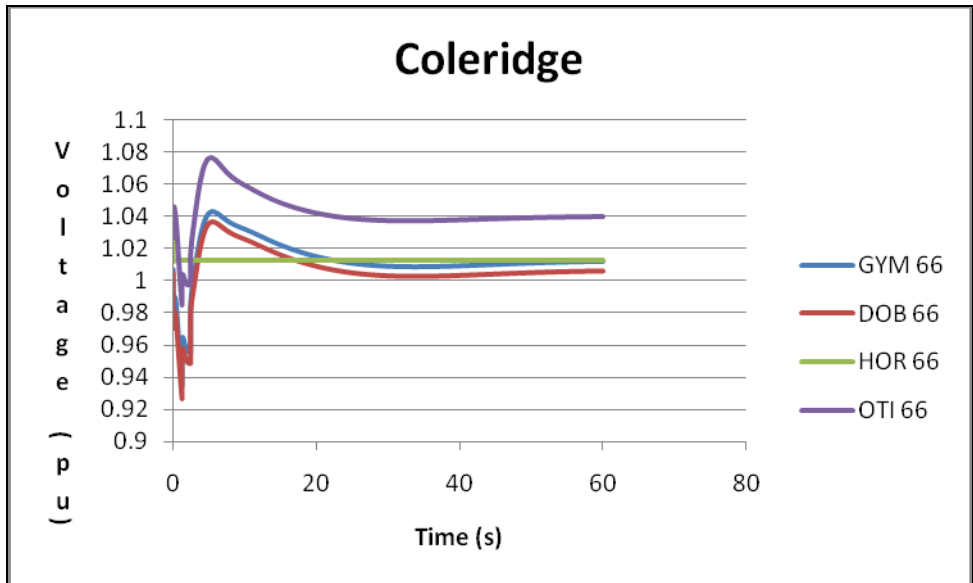


Figure 11: Voltage plots for surrounding bus bars

The above results were obtained using the South Island scenario with 1500 MW load and DCS transfer of 660 MW.

The case shows AUFLS was required for an island to form.

An additional generator was added at Coleridge with 9 MW of generation to obtain the result.

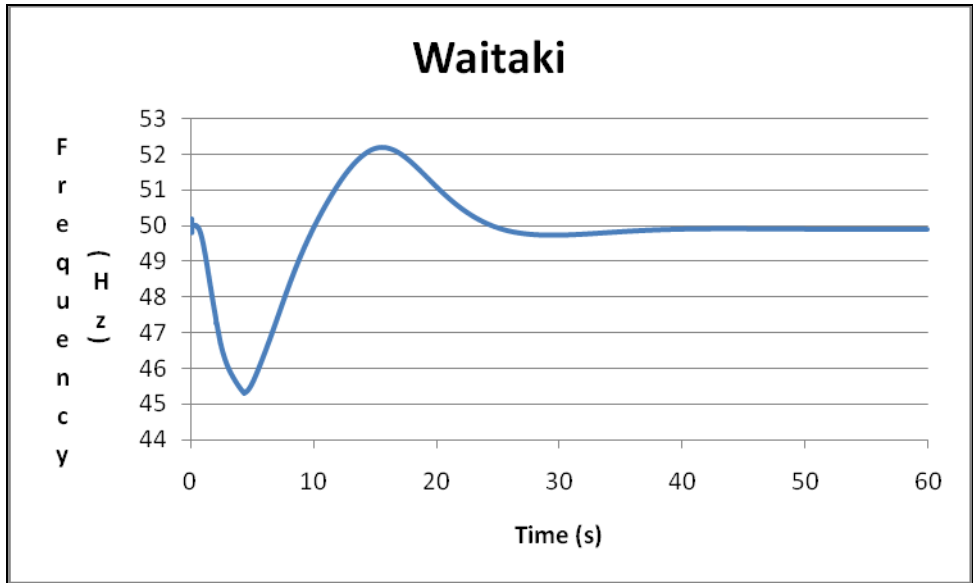


Figure 12: Frequency plot for Waitaki

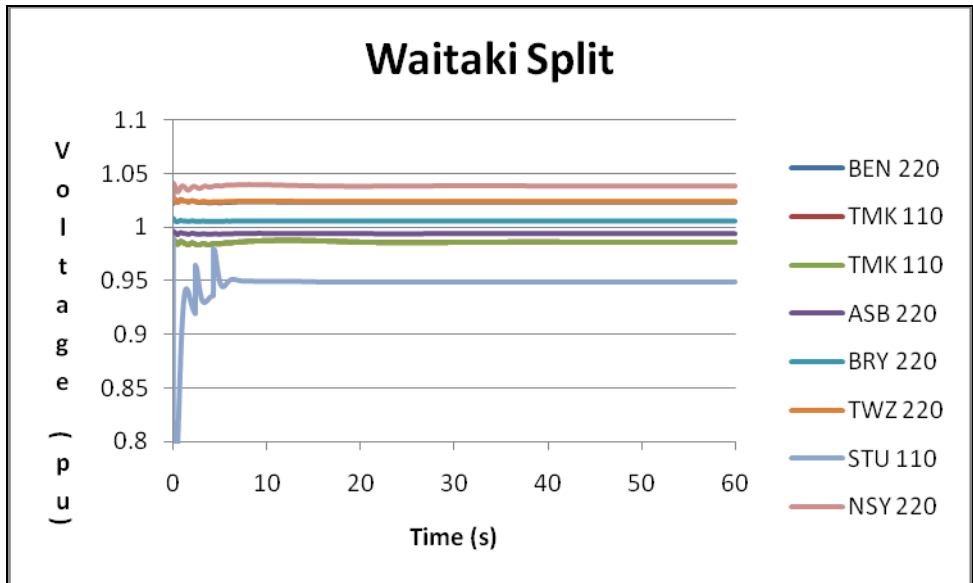


Figure 13: Voltage plots for surrounding bus bars

The above results were obtained with a load of 1500 MW and DC South transfer of 660 MW.

Waitaki G1 was removed from the original scenario to obtain the result.

Both blocks of AUFLS tripped but this will not always be the case.

The tripping caused a transient under voltage but steady state voltages were more than acceptable