# IEEE 39 Bus with Solar.pptx

**Slide 6**

Contingency: Gen 39 Efd Frequency Sweep

Applies a forced oscillation to Generator 39’s exciter set point to identify the resonance frequency. The oscillation frequencies checked are 0.4 Hz, 0.5 Hz, 0.6 Hz, 0.7 Hz, and 0.8 Hz.

**Slide 15**

Contingency: Gen 39 Efd Frequency Verification

Applies a forced oscillation to Generator 39’s exciter set point to verify the resonance frequency. The oscillation frequencies checked are 0.65 Hz, 0.7 Hz, and 0.75 Hz.

**Slide 24**

Contingency: Gen 39 Load Frequency Sweep

Applies a forced oscillation to Load 39 to identify the resonance frequency at Gen 39 due to load switching. The oscillation frequencies checked are 0.4 Hz, 0.5 Hz, 0.6 Hz, 0.7 Hz, and 0.8 Hz.

**Slide 35**

Contingency: Gen 39 Load Frequency Verification

Applies a forced oscillation to Load 39 to verify the resonance frequency at Gen 39 due to load switching. The oscillation frequencies checked are 0.65 Hz, 0.7 Hz, and 0.75 Hz.

**Slide 44**

Contingency: Gen 37 Efd Frequency Sweep

Applies a forced oscillation to Generator 37’s exciter set point to identify the resonance frequency. The oscillation frequencies checked are 1.4 Hz, 1.5 Hz, 1.6 Hz, 1.7 Hz, 1.8 Hz, and 1.9 Hz.

**Slide 53**

Contingency: Gen 37 Efd Frequency Verification

Applies a forced oscillation to Generator 37’s exciter set point to verify the resonance frequency. The oscillation frequencies checked are 1.7 Hz, 1.75 Hz, and 1.8 Hz.

**Slide 62**

Contingency: Gen 37 Load Frequency Sweep

Applies a forced oscillation to Load 25 to identify the resonance frequency at Gen 37 due to load switching. The oscillation frequencies checked are 1.4 Hz, 1.5 Hz, 1.6 Hz, 1.7 Hz, 1.8 Hz, and 1.9 Hz.

**Slide 72**

Contingency: Gen 37 Load Frequency Verification

Applies a forced oscillation to Load 25 to verify the resonance frequency at Gen 37 due to load switching. The oscillation frequencies checked are 1.7 Hz, 1.75 Hz, and 1.8 Hz.

**Slide 82**

Contingency: Gen 30 Efd Frequency Sweep

Applies a forced oscillation to Generator 30’s exciter set point to identify the resonance frequency. The oscillation frequencies checked are 1 Hz, 1.1 Hz, 1.2 Hz, 1.3 Hz and 1.4 Hz.

**Slide 91**

Contingency: Gen 30 Efd Frequency Verification

Applies a forced oscillation to Generator 30’s exciter set point to verify the resonance frequency. The oscillation frequencies checked are 1.15 Hz, 1.2 Hz, and 1.25 Hz.

**Slide 100**

Contingency: Gen 30 Load Frequency Sweep

Applies a forced oscillation to Load 3 to identify the resonance frequency at Gen 30 due to load switching. The oscillation frequencies checked are 1 Hz, 1.1 Hz, 1.2 Hz, 1.3 Hz and 1.4 Hz.

**Slide 110**

Contingency: Gen 30 Load Frequency Verification

Applies a forced oscillation to Load 3 to verify the resonance frequency at Gen 30 due to load switching. The oscillation frequencies checked are 1.15 Hz, 1.2 Hz, and 1.25 Hz.

# IEEE 39 Contingency Analysis.pptx

**Slid 5**

Contingency: Trip Gen 37

Generator 37 is tripped (opened) at 10 seconds to observe the frequency response.

**Slid 9 and 17**

Contingency: Trip Gen 37 with Load Increase

Generator 37 is tripped (opened) at 10 seconds and Load 39 is increased by 50 MW at 20 seconds to observe the load shedding event. After the load shedding event, Generator 37 is brought online to observe the effect to system frequency.

**Slid 26**

Contingency: Load Switching Test 1 – 50 MW

Contingency: Load Switching Test 2 – 100 MW

A forced oscillation is applied at Load 39 with an amplitude of 50 MW in Test 1 and 100 MW in Test 2 with no bias added to the initial load value. Then Generator 37 is tripped (opened) at 10 seconds to observe the frequency response.

**Slid 34**

Contingency: Load Switching Test 2 – 100 MW

A forced oscillation is applied at Load 39 with an amplitude 100 MW with no bias added to the initial load value. Then Generator 37 is tripped (opened) at 10 seconds to observe the frequency response.

**Slid 43**

Contingency: Load Switching Test 3 – 200 MW

A forced oscillation is applied at Load 39 with an amplitude 200 MW with no bias added to the initial load value. Then Generator 37 is tripped (opened) at 10 seconds to observe the frequency response.

**Slid 51**

Contingency: Load Switching Test 4 – 400 MW

A forced oscillation is applied at Load 39 with an amplitude 400 MW with no bias added to the initial load value. Then Generator 37 is tripped (opened) at 10 seconds to observe the frequency response.

**Slid 59**

Contingency: Load Switching Test 5 – 100 MW with 100 MW bias

A forced oscillation is applied at Load 39 with an amplitude 100 MW with a 100 MW bias added to the initial load value. Then Generator 37 is tripped (opened) at 10 seconds to observe the frequency response.

**Slid 68**

Contingency: Load Switching Test 5 – 100 MW with 50 MW bias

A forced oscillation is applied at Load 39 with an amplitude 100 MW with a 50 MW bias added to the initial load value. Then Generator 37 is tripped (opened) at 10 seconds to observe the frequency response.