

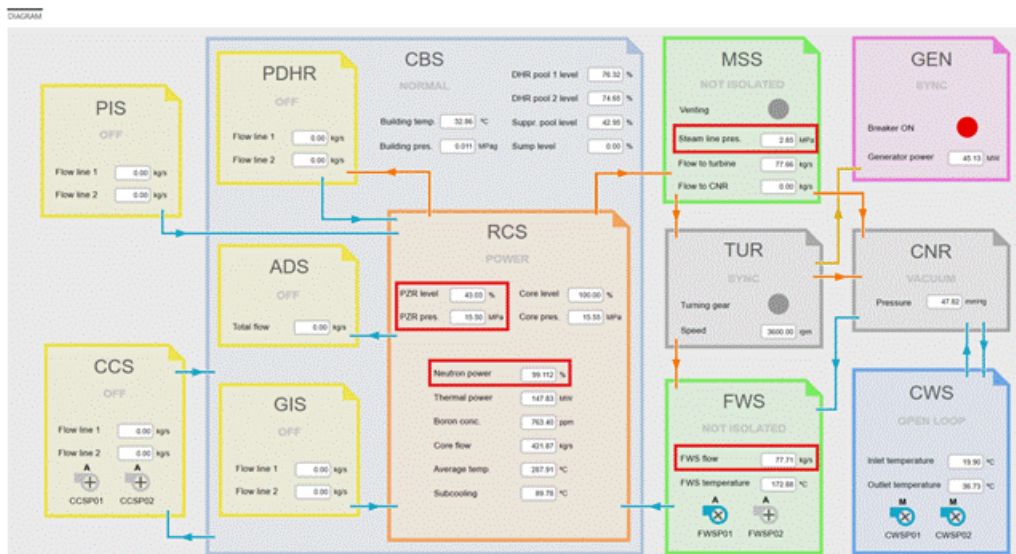
### Exercise 3: Reactor Shutdown (100% to 0%)

#### Objective:

To execute a safe and controlled reactor shutdown from full power to zero power, verifying correct rod insertion, heat removal, system stabilization, and transition to shutdown state conditions in accordance with standard operating procedures.

#### Procedure:

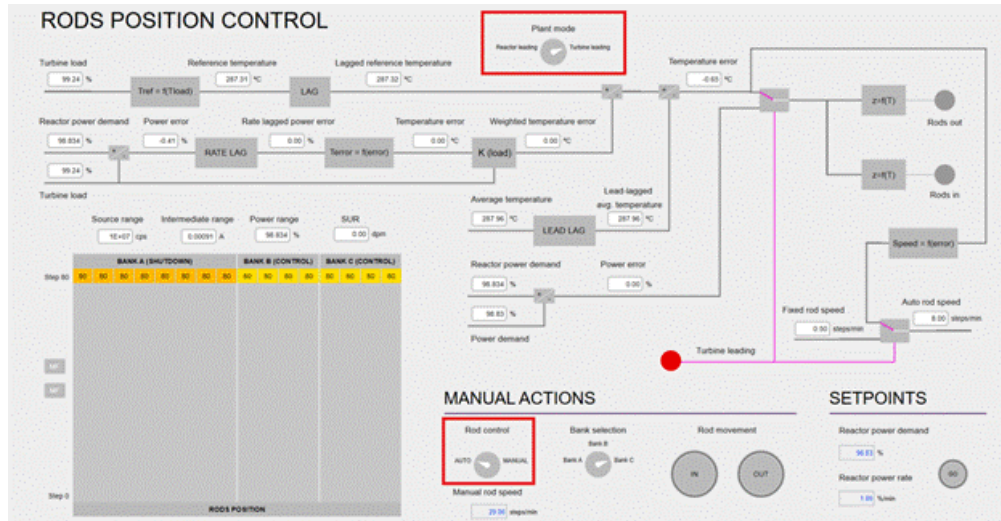
1. Load IC#1 (100% BOL, NC) and allow the system to stabilize.
2. Confirm plant is stable:
  - a. Neutron power: 100%
  - b. FW flow: ~78 kg/s
  - c. SG pressure: ~2.7 MPa
  - d. PZR Level: ~43%
  - e. PZR pressure: 15.5 MPa



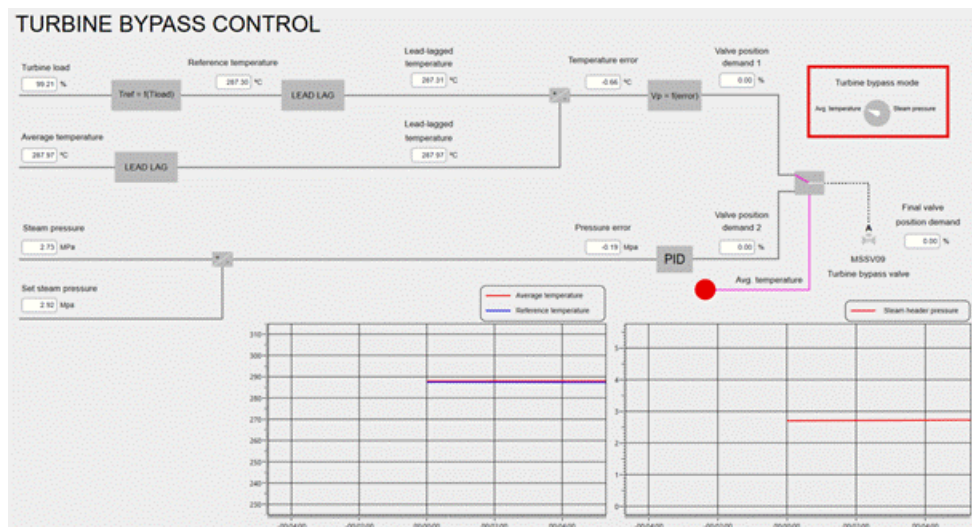
### 3. Ensure proper Plant Status

a. Plant Mode = Turbine Leading

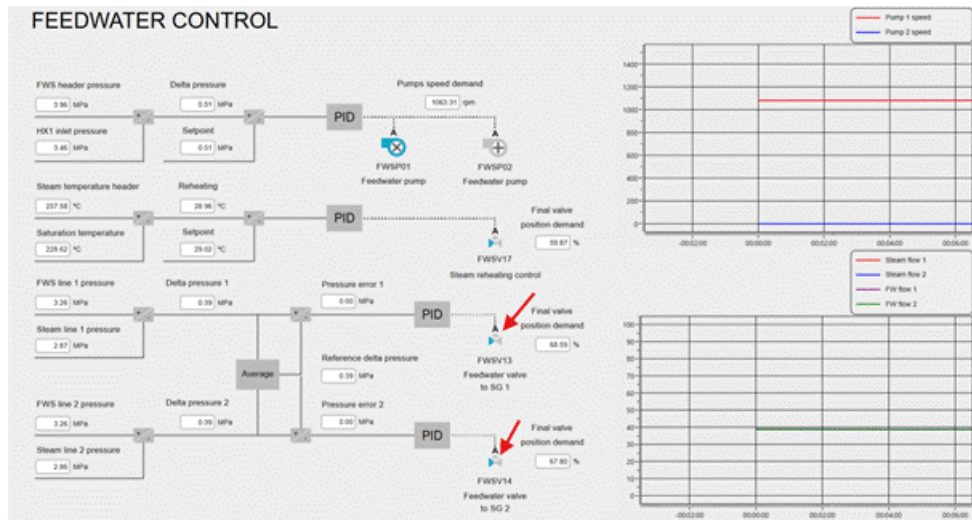
b. Rod Control = Auto



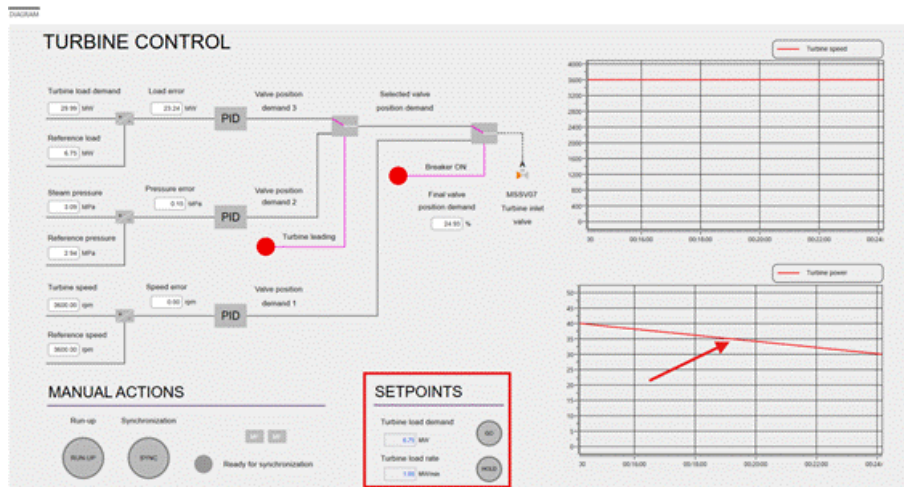
c. MSB = Temp Average



d. FW System = Auto (FWSV13/FWSV14)



4. Start Turbine Load Reduction to 15%:
  - a. Set Turbine Load to 6.75MW at 1MW/min
  - b. Press Go
  - c. Monitor the Turbine Power decrease

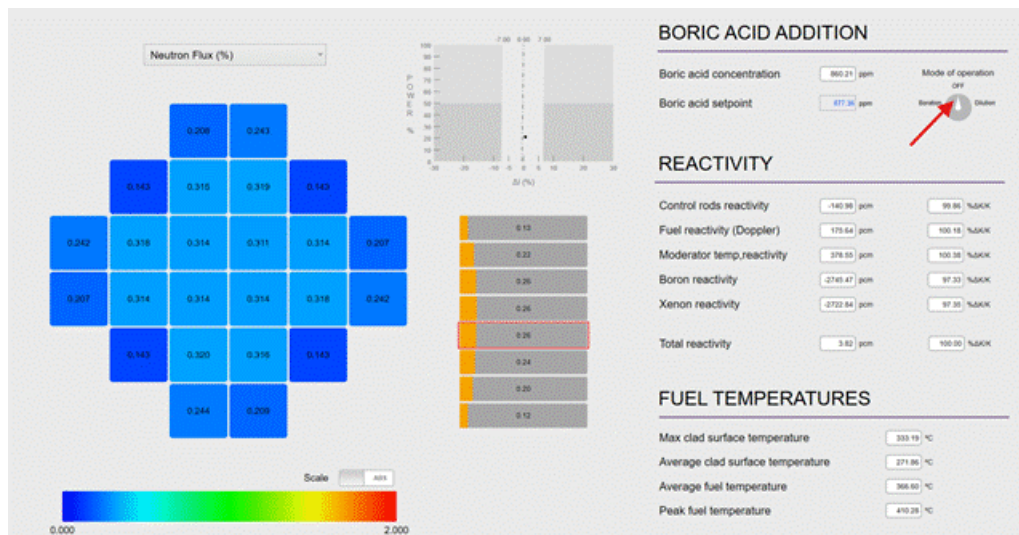
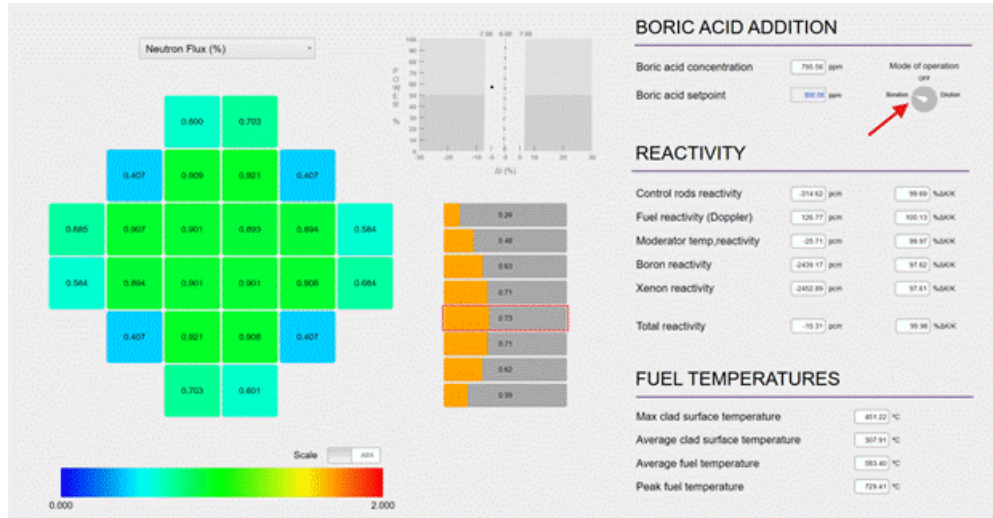


5. Borate the RCS to compensate for the power defect and Xe concentration
  - a. Set the selector to “Boration”
  - b. Introduce a new boron concentration (20 ppm at a time)



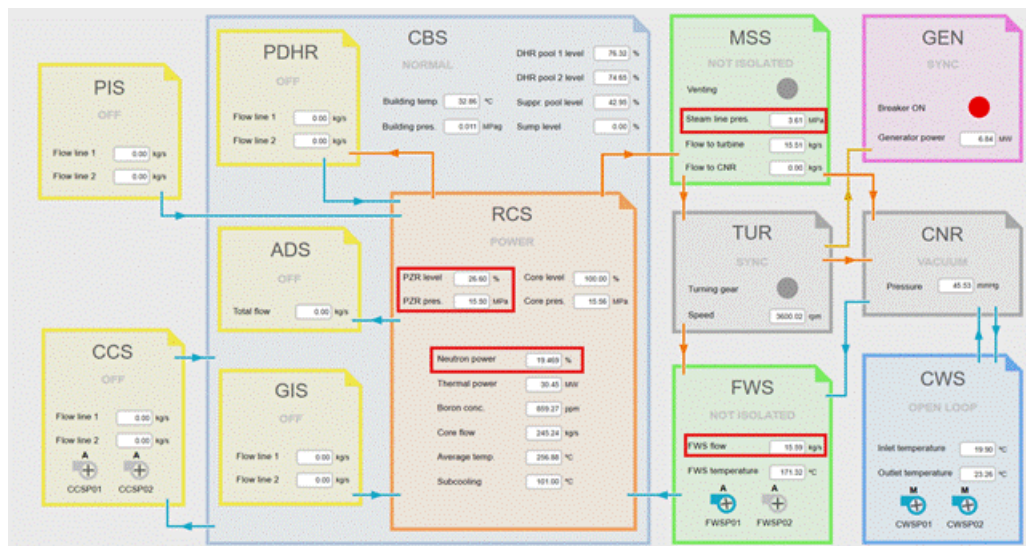
c. Repeat 'step b' as many times as necessary

d. Set the selector to "Off"



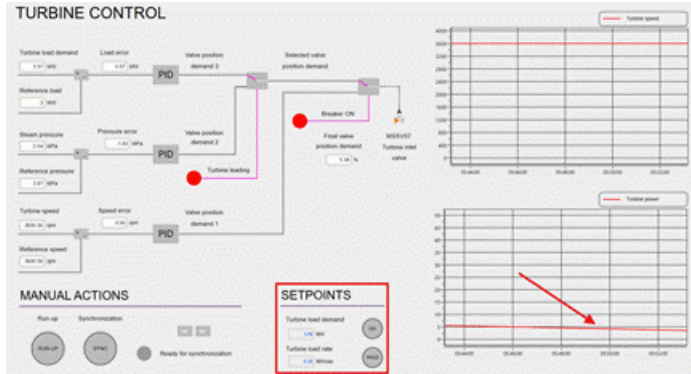
6. Verify Step #1 variables once power demand reaches 6.75MW

- Neutron power:  $\sim 15\%$
- FW flow:  $\sim 15$  kg/s
- SG pressure:  $\sim 3.6$  MPa
- PZR Level:  $\sim 26\%$
- PZR pressure: 15.5 MPa

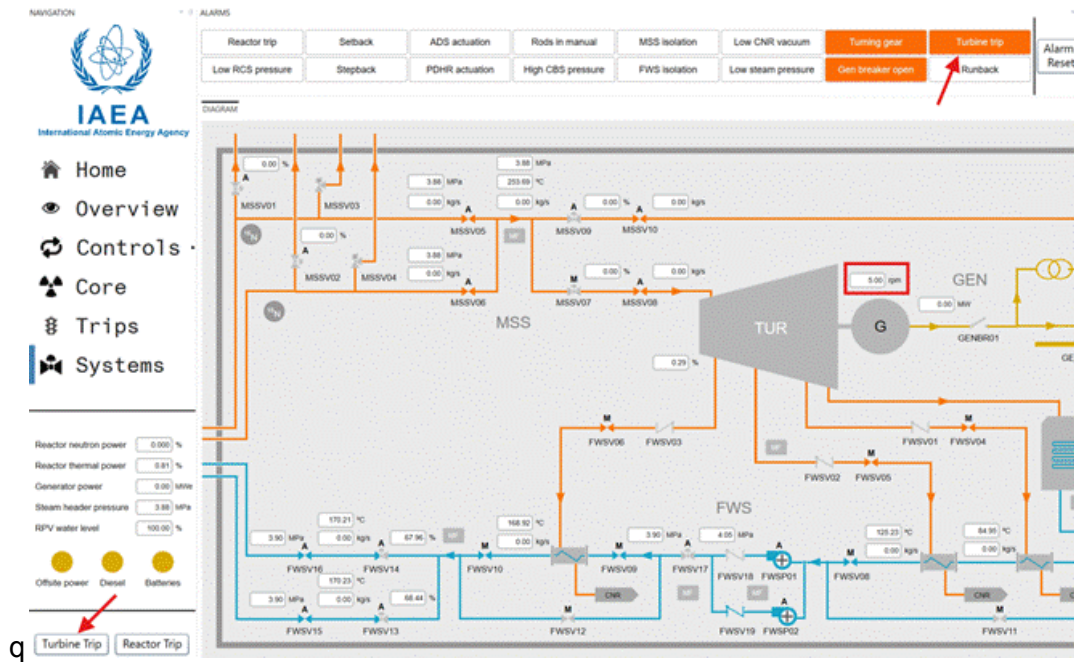


7. Start Turbine Load Reduction to 6%

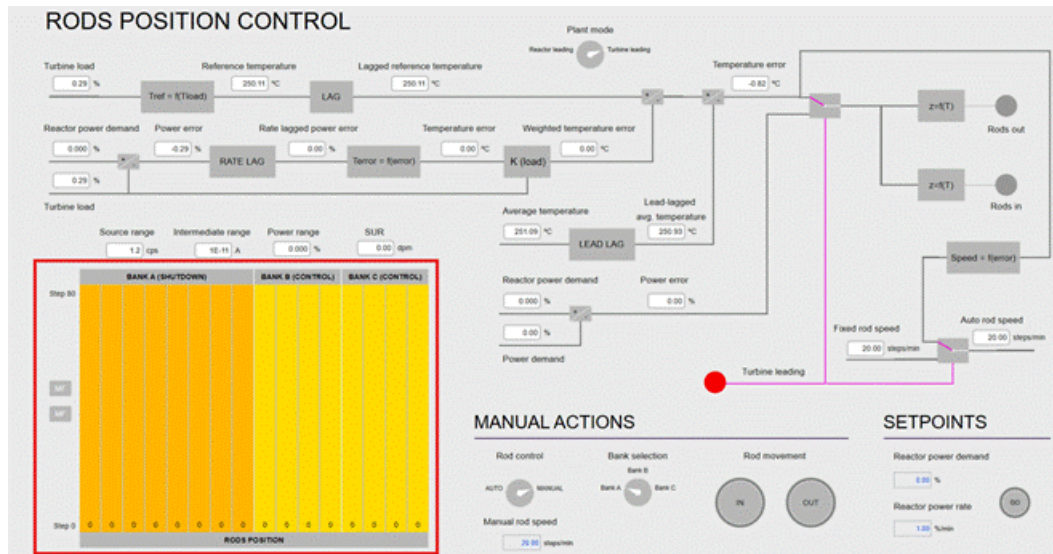
- Set Turbine Load to 3 MW at 0.2 MW/min
- Press Go
- Monitor the Turbine Power decrease



8. Once Turbine Load reaches 3 MW:
  - a. Trip the Turbine
  - b. Verify Turbine Trip
  - c. Verify Turbine Speed is lowering to 5 RPM



9. Set the Control Rods to Manual and lower all of the banks



10. Confirm plant is stable:

- Neutron power: 0%
- FW flow: ~2 kg/s
- SG pressure: ~4 MPa
- PZR Level: ~23%
- PZR pressure: 15.5 MPa



