ETAP FAQ # 12

How do you build and validate switching sequences in ETAP?

Description: Switching Management allows the dispatcher to build a complete switching program using a graphical user interface and execute the switching plan all in one step.

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Switching Sequence Management

The switching sequence contains a list of switching devices and time of execution for circuit breakers, load disconnects, and ground disconnects. Before any switching sequence is executed, the application verifies whether the sequence is compliant with safety switching procedures and requests confirmation during execution of each step before proceeding to the next step in order to avoid inadvertent switching.

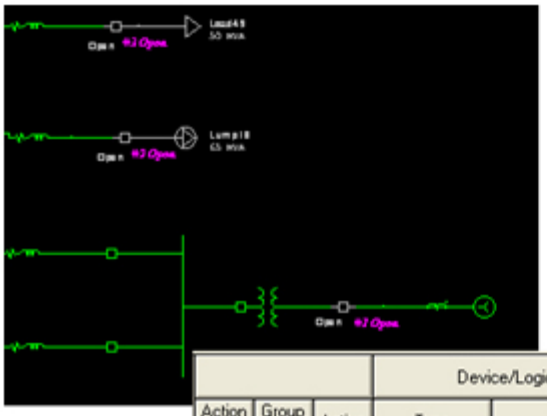
Building a Switching Sequence

1. Go to the Mode Toolbar and select Switching Sequence Management.

2. Setup up system alerts.

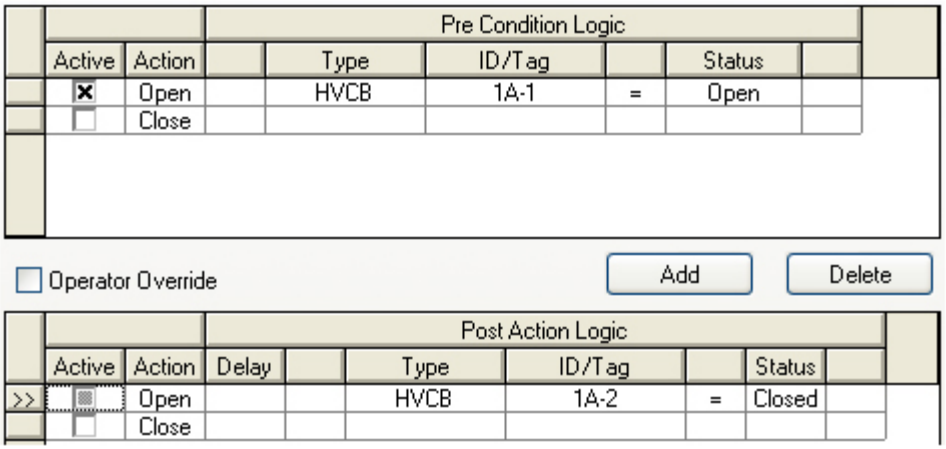
3. Click the Switching Sequence Builder icon to begin building the switching sequence.

4. Create an action for each step by clicking on the protective device. Open a breaker and close a ground switch by simply clicking each device.



			Device/Logic		Operation				
Action #	Group #	Active	Type	ID	Delay T (H:M:S)	Action	Crew	Remarks	Cost ($)
1	1	☑	HV CB	CB805	0:00:00.000	Open			100.00
2	2	☑	HV CB	CB798	0:00:00.000	Open			50.00
3	3	☑	HV CB	CB802	0:00:00.000	Open			150.00

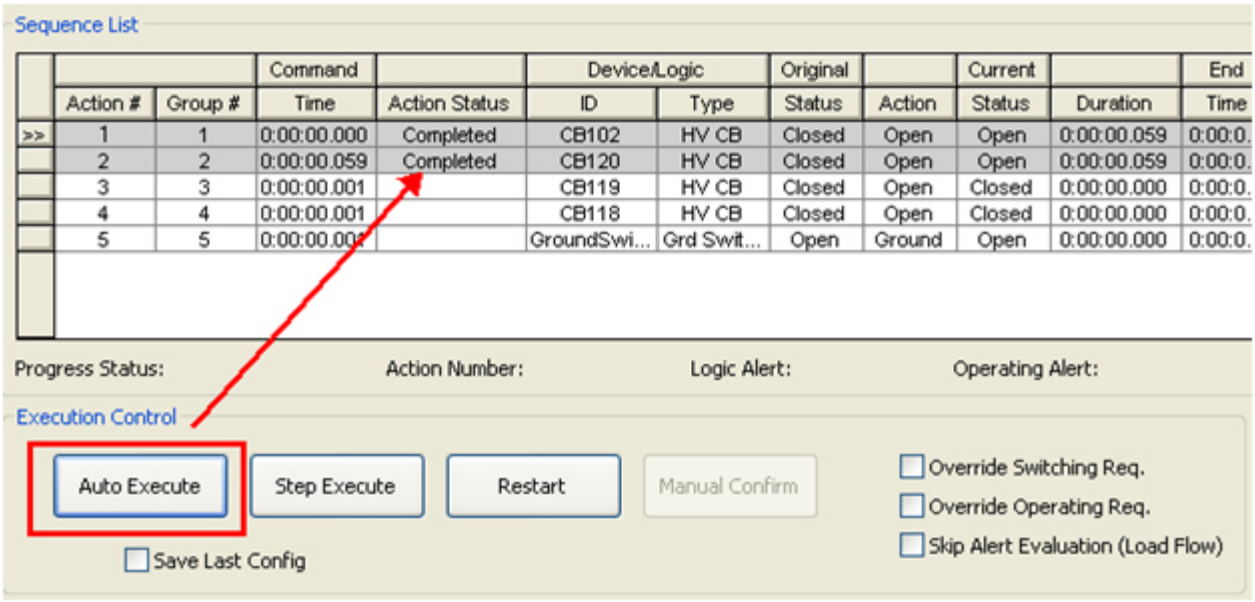
5. An interlock scheme can be set for any protective device. Click the Logic Editor button on the Switching Sequence Builder to view or define any preconditioned or post action logic for each protective device.



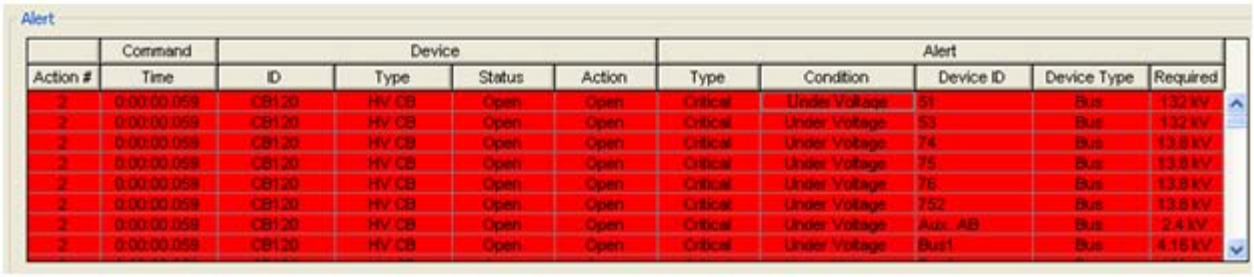
The above case shows that the action will not be performed unless HVCB 1A-1 is open. If HVCB 1A-1 is open, then the action from the switching sequence will be performed and HVCB 1A-2 will automatically close as specified in the Post Action Logic.

6. Click the Run Switching Sequence icon to open the Switching Sequence View

7. Click Auto Execute to execute each switching action.



8. View any alarms and alerts caused by a switching sequence.



Real-Time Simulation and Execution

9. Run a switching sequence using real-time data by clicking the get-online data icon and updated the project with real-time

status for loads, generators, and protective devices. After clicking get online data, repeat steps 1-8 to run a switching sequence simulation using real-time data.

10. Also run a switching sequence using archived data by clicking the get-archived data icon and select the date and time to activate the archived real-time data. After clicking get archived data, repeat steps 1-8 to run a switching sequence simulation using archived real-time data.

Switching sequences can be saved and utilized by the operator at any time. Activate the switching sequence saved in the project and execute the actions specified in real-time.