



Working with Remedial Action and Contingency Data



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Overview



- Sharing information
 - Importing data
 - Saving all data
 - Saving a selection of data
- Verifying information
 - Dependency Explorer
 - Future validation tool
- Best Practices
 - Within WECC or other entities sharing RAS and contingencies, some convention should be established for naming so that data is not overwritten incorrectly

Importing



- Use any of the many places where an auxiliary file can be loaded
 - File → Load Auxiliary
 - Contingency Analysis dialog → Load button
 - Contingencies case information display → Load → Auxiliary File
- When Contingency Analysis dialog is open always use the Load button on the dialog
 - This ensures that the options on the dialog are updated to reflect what was just loaded from the auxiliary file
- Concise and legacy format are both accepted
 - WECC RAS format is just the concise format

Saving All Data



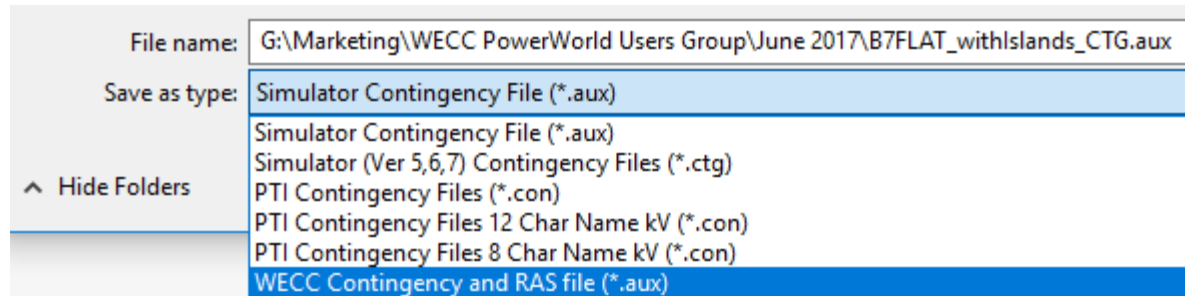
- Save button on bottom of contingency analysis dialog
 - This has everything built in so that the format is correct for the WECC RAS format
 - Would not recommend using general Save As Auxiliary File options accessed from other locations within Simulator because these will not set the appropriate WECC RAS options for you
- Script commands

Contingency Analysis Dialog

Save Button



- Selecting *WECC Contingency and RAS file (*.aux)* will save only the options and fields in the format required by the WECC RAS format
- These options can be determined in the detailed dialog shown on the next slide



Contingency Analysis Dialog

Save Button



Selecting file type of Simulator Contingency File (*.aux) will open dialog with lots of options

Contingency Analysis

Contingencies Options Results

Records Set

Label
1 N-1: Path 1A to 1B
2 N-1: Treeville to Refinery
3 N-1-1: Treeville to Refinery and North Line
4 BSBF: Bus 8176
5 N-1: North Line
6 N-1-1: Treeville to Refinery and Second North
7 N-1: Path 2
8 N-2: Big Gens to Oval Office
9 N-1: Big Gens to Oval Office 1
10 N-1: Big Gens to Oval Office 2

Violations What Actually Occurred

Show related contingencies Combined Tables

Category	Element
None	Defined

Status: Initialized

Load Auto Insert **Save** Other >

Start Run Close ? Help

Contingency Settings

There are numerous settings which affect the Contingency Analysis calculations. Choose which settings you would like to store and also some formatting options on how to represent them in the AUX file

What to Store

- Save Contingency Definitions
- Save Remedial Actions and Global Actions
 - Save unlinked contingency actions (none)
- Save Model Filters, Model Conditions, Model Expressions, and Model Result Overrides
- Save Contingency Options (also Area Makeup, Gen Line Drop, Gen AGC, Gen Max MW, Bus Load Throw, Shunt)
 - Suppress Gen and Bus Contingency Options
- Save Voltage Control Groups (none)
- Save General Power Flow Solution Options
- Save Custom Monitors (none)
- Save Limit Monitoring Settings (Area, Zone, LimitSet, Bus, Branch, and Interface)
 - Save Limit Cost Functions if they exist (none)
- Save List Display Settings
- Save Contingency Results
 - Save Inactive Violations
- Save Interface Definitions
- Save Injection Group Definitions
- Save Distributed Computing Settings
- Save Advanced Filters Used by Other Objects
- Save Calculated Fields and Custom Expressions Used by Other Objects
- Merge Contingency Blocks and Global Actions (none)

Check All Uncheck All

Formatting Options

Save Data Using

- Number
- Name and Nominal kv
- Label (Use Number if no label)

- Use Concise Variable Names and AUX Headers
- Replace SUBDATA with DATA (recommended)
- Use Object ID fields with Area, Zone, Bus, Branch, Gen, Shunt, and Interface objects to simplify AUX file output
 - Use Special Objects IDs for MS Line Sections
 - Use Special Objects IDs for 3 Winding Transformer windings

Set What to Store and Formatting options to match the WECC RAS and Contingency Format

Web Help on RAS and Contingency AUX Format

- Save Selected Data Maintainers Only
 - Select Data Maintainers
- Force saving of objects used by other objects selected in What to Store

OK Cancel

Lots of Options



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Save Selected Data Maintainers Only

Force saving of objects used by other objects selected in What to Store

Specify what types of objects should be saved

Specify the format of the data in the file

Set all of the options as they should be set for saving in the WECC RAS format

Options for limiting the data that is saved

Saving a Subset of Data



- Data Maintainer
 - *Save Selected Data Maintainers Only*
 - Set Selected = YES for the data maintainers for which data should be saved

Saving a Subset of Data



- Dependencies
 - *Force saving of objects used by other objects selected in What to Store*
 - The top of the hierarchy is specified by *What to Store* objects
 - Other objects that are required, i.e. dependencies, to define objects higher up the hierarchy will also be saved
 - When also saving by selected data maintainers, the data maintainer condition will only be enforced for the objects specified in *What to Store* and dependencies will not have this enforced

Saving Only RAS and Dependencies



- To save only remedial action definitions and the objects required to define them, **ONLY** need to check the *Save Remedial Actions and Global Actions* and *Force saving of objects used by other objects selected in What to Store* options

Contingency Settings

There are numerous settings which affect the Contingency Analysis calculations. Choose which settings you would like to store and also some formatting options on how to represent them in the AUX file

What to Store

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- Save Contingency Results
 - Save Inactive Violations
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- Save Advanced Filters Used by Other Objects
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- Merge Contingency Blocks and Global Actions (none)

Check All Uncheck All

Formatting Options

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- Number
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Set What to Store and Formatting options to match the WECC RAS and Contingency Format

Web Help on RAS and Contingency AUX Format

- Save Selected Data Maintainers Only

Select Data Maintainers

- Force saving of objects used by other objects selected in What to Store

OK Cancel

Saving a Selection of RAS



- Data Maintainer
 - Option previously discussed
- Remedial Action case information display local menu options
 - *Save As Auxiliary File (all related info)...*
 - *Save As Auxiliary File (all related/only selected records)...*
 - Allows filtering on remedial actions other than data maintainer to select which ones should be saved
 - Format options are the same as those required by the WECC RAS format
- Dependency Explorer
 - Save only the studied object and its dependencies
 - Go into more detail in another presentation

Script Commands



- CTGWriteAllOptions("filename", KeyField, UseSelectedDataMaintainers, SaveDependencies)
 - Use this to save using the format and object options required by the WECC RAS format (same as clicking the *Set What to Store and Formatting options to match the WECC RAS and Contingency Format* button)
- CTGWriteResultsAndOptions("filename", [opt1...opt19], KeyField, UseDATASection, UseConcise, UseObjectIDs, UseSelectedDataMaintainers, SaveDependencies)
 - Use this to specify object types to save and the format in which they should be saved
- CTGSaveDataDependencies
 - Future script command to mimic functionality available through the *Save As Auxiliary File (all related info)...* option
 - More flexible in that it will allow filtering other than by data maintainer, and multiple object types can be saved

Verifying Information



- Dependency Explorer
 - Separate presentation
- Future Development
 - Envision a process that will make sure that there are no unlinked objects (for any of the required objects) in any of the contingency and RAS related objects