

Changes to Difference Case Tool in Simulator 20



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Corporation

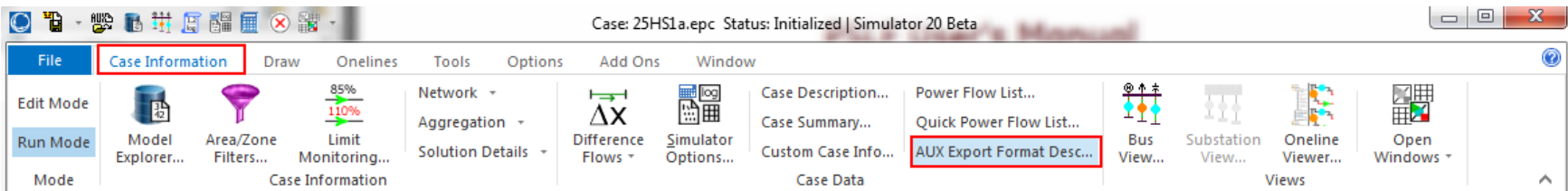
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AUX Export Format Description: Built-In “Complete Case” descriptions



- Auxiliary File Export Format Descriptions have been around a long time (about 2006, Version 13)
 - Available under Case Information tab
 - AUX Export Format Desc...

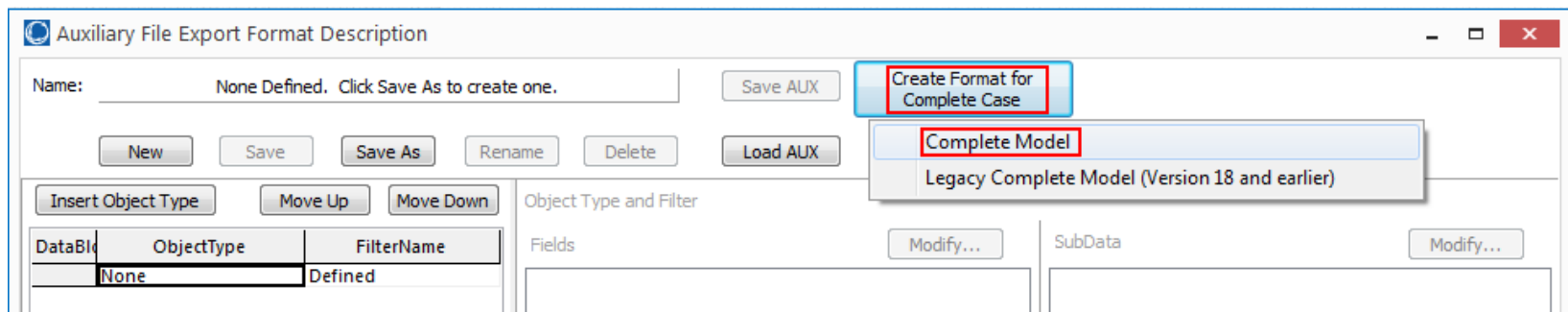


- We are working on adding a large number of Built-In versions of these however

Create Format for Complete Case



- Drop-down available on the Auxiliary File Export Format Description
 - [https://www.powerworld.com/WebHelp/#MainDocumentation_HTML/Complete Case Auxiliary File Export Format Description.htm](https://www.powerworld.com/WebHelp/#MainDocumentation_HTML/Complete_Case_Auxiliary_File_Export_Format_Description.htm)
 - Several are done
 - Custom Info, Network Model, Contingency, Transient Models, Transient Models, Model Info



AUX Export Format Complete Case: Network Model

- This is the same set of objects that are going to be available for comparison using the Difference Case Tool

Auxiliary File Export Format Description

Name: Network Model

Save AUX Create Format for Complete Case

New Save Save As Rename Delete Load AUX

Insert Object Type Move Up Move Down

DataBlk	ObjectType	FilterName
1	Case Information	All
2	Data Maintainer	All
3	Owner	All
4	Model Group	All
5	Substation	All
6	Transformer Correction	All
7	Voltage Control Group	All
8	Limit_Monitoring_Option	All
9	Limit Set	All
10	Rating Set Name Bus	All
11	Rating Set Name Branch	All
12	Rating Set Name Interface	All
13	Rating Set Name BusPair	All
14	Bus	All
15	Generator	All
16	Reactive Capability	All
17	Load	All
18	Branch	BranchDeviceType notcontains 'Transformer'
19	Branch	BranchDeviceType = 'Transformer'
20	3W Transformer	All
21	Multi-Section Line	All
22	Switched Shunt	ShuntMode <> 'Bus Shunt'
23	Switched Shunt	ShuntMode = 'Bus Shunt'
24	Line Shunt	All
25	DFACTSCorrection	All
26	DFACTS	All
27	DC Transmission Line	All
28	Voltage Source Converter	All
29	Multi-Terminal DC Recorder	All
30	Multi-Terminal DC Bus	All
31	Multi-Terminal DC Converter	All
32	Multi-Terminal DC Transformer	All
33	Injection Group	All
34	Participation Point	All
35	Super Area	All
36	Area	All
37	Study MW Transactions	All
38	Balancing Authority	All
39	Zone	All
40	Interface	All
41	Interface Element	All
42	Nomogram	All
43	Sim_Solution_Options_V	All
44	Post Power Flow Actions	All
45	Post Power Flow Actions	All

Bus (All)

Fields Modify...

SubData Modify...

Click on Modify... to add subdata

Number : 8 : 0
Name : -1 : -1
Voltage\KV Nominal : 8 : 4
Solution\Type Slack? : -1 : -1
Bus Shunt\Mvar - Nominal (B) : 10 : 5
Bus Shunt\MW - Nominal (G) : 10 : 5
Voltage\Per Unit Magnitude : 10 : 8
Voltage\Angle (degrees) : 11 : 7
Solution\DC Approximation Loss Multiplier : 8 : 6
Area\Number : 6 : 0
Zone\Number : 6 : 0
Balancing Authority\Number : 6 : 0
Owners\Number : 6 : 0
Substation\Number : 6 : 0
Limit Monitoring\Monitor Bus Voltage : -1 : -1
Limit Monitoring\Limit Group : -1 : -1
Limit Monitoring\Bus Specific Limits\Use Bus-Specific
Limit Monitoring\Bus Specific Limits\Low PU Volt A
Limit Monitoring\Bus Specific Limits\Low PU Volt B
Limit Monitoring\Bus Specific Limits\Low PU Volt C
Limit Monitoring\Bus Specific Limits\Low PU Volt D
Limit Monitoring\Bus Specific Limits\High PU Volt A
Limit Monitoring\Bus Specific Limits\High PU Volt B
Limit Monitoring\Bus Specific Limits\High PU Volt C
Limit Monitoring\Bus Specific Limits\High PU Volt D
Geography\Latitude : 16 : 13
Geography\Longitude : 16 : 12
Topology\Topology Bus Type : -1 : -1
Topology\Node Priority : 5 : 0
Topology\EMS Type : -1 : -1
Topology\EMS ID : -1 : -1
Data Maintainer\Name Assigned : -1 : -1
Data Maintainer\Inheritance Allowed : -1 : -1
Data Maintainer\Inheritance Block : -1 : -1
Labels\Labels All : -1 : -1

Defaults for Exporting Fields Total Digits 12 Dec Places 6

Use Concise Variable Names and Auxiliary File Headers
Use Consolidated Model

OK Help Cancel

Present Topological Differences From Basecase Updated

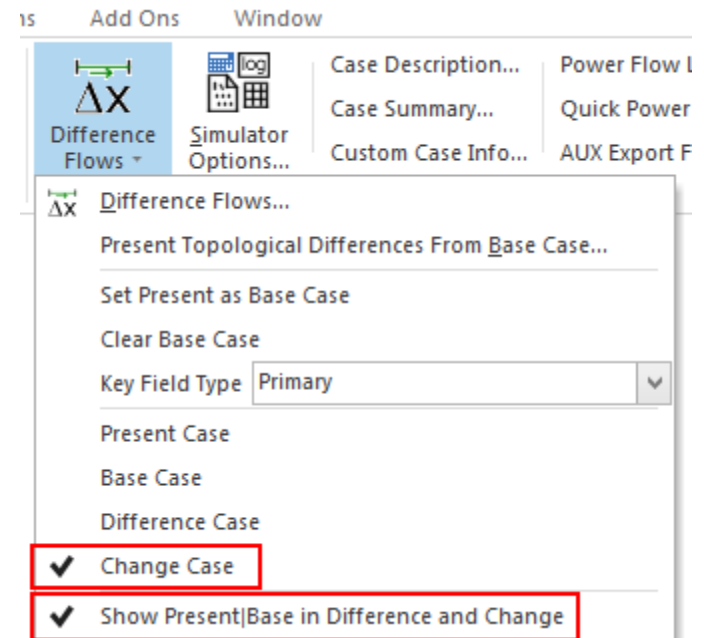


- Example
 - Load 25HS1A.epc and Solve
 - Set as Present Case
 - Load 26hs1ae.epc and Solve
 - Choose Difference Flows, Present Topological Differences

User Interface Changes



- Difference Case Tool modes
 - Present Case, Base Case, Difference Case
 - New: Change Case
 - Only shows values which are different between the two cases
 - If values are the same they will either show a blank or “_same_” (for fields which blank means something)
 - New Option
 - Show Present | Base in Difference and Change



Example

- Notice blanks and values like 10.16| 0.00

Model Explorer: Generators

Generators | Buses | Interfaces | Owners

Filter: Advanced | Generator

Gen	BusNum	BusName	ID	Status	SensdValuedPinj	SensdValuedQinj	MW	Mvar	VoltSet	AGC
1	10097	EL_CERRO	PV	Closed	0.000	0.000	5.93		1.00000	YES
2	10112	GALLINAS	PV		0.000	0.000	3.26 3.30			
3	10131	HONDALE	PV		0.000	0.000	5.87 3.30			
4	10189	LA LUZ	1	Closed	0.000		40.00	-5.35	1.00500	YES
5	10193	MANZANO	PV		0.000	0.000	5.22 5.20			
6	10197	MARQUEZ	PV	Closed	0.000	0.000	4.96		1.00000	YES
7	10246	RIO BRAVO PE	1	Closed Open	0.000		132.00 0.00	10.16 0.00	1.02714 1.03117	
8	10261	REEVE_G1	1	Closed Open	0.000		44.00 0.00	2.26 0.00	1.00396 1.00379	
9	10262	REEVE_G2	1	Closed Open	0.000		43.00 0.00	2.13 0.00	1.00386 1.00381	
10	10263	REEVE_G3	1		0.000			4.01 4.43	1.00799 1.01631	
11	10264	REEVES	PV		0.000	0.000	1.30 1.30			
12	10277	STUDIO	PV	Open Closed	0.000	0.000				
13	10318	SJUAN_G1	1		0.000			77.61 83.82		
14	10319	SJUAN_G2	1		0.000		344.00 350.00	77.61 83.82		
15	10320	SJUAN_G3	1		0.000			116.41 125.74		
16	10321	SJUAN_G4	1		0.000		404.28 493.98	116.41 125.74		
17	10394	LEF_G1	1		0.000			12.34 21.94	0.99955 1.00620	
18	10395	LEF_G2	1		0.000			12.34 21.94	0.99955 1.00620	
19	10396	LEF_S1	1		0.000			22.35 38.02	1.00023 1.00686	
20	10471	PRGRSS	PV	Closed	0.000	0.000	3.98		1.04300	YES
21	10485	AFTONS	1		0.000			4.80 10.84	1.02368 1.02634	
22	10486	AFTONG	1		0.000			13.74 19.76	1.03000 1.03262	
23	10491	LRDSBGG1	1	Closed Open	0.000		40.00 0.00	5.81 0.00	0.99684 1.05000	
24	10492	LRDSBGG2	1		0.000	0.000				

Search: Search Now Options

Colors for Rows and Columns



- Light Orange rows shows objects that are in the Present Case but not the Base Case
- Light Green columns indicate field is not part of the base case comparison tool

Gen	BusNum(1<)	BusName (<)	ID(2B<)	Status (*<)	SensdValuedPinj	SensdValuedQinj	MW (<)
1	10097	EL_CERRO	PV	Closed	0.000	0.000	5.93
2	10112	GALLINAS	PV		0.000	0.000	3.26 3.30
3	10131	HONDALE	PV		0.000	0.000	5.87 3.30
4	10189	LA LUZ	1	Closed	0.000		40.00
5	10193	MANZANO	PV		0.000	0.000	5.22 5.20
6	10197	MARQUEZ	PV	Closed	0.000	0.000	4.96
7	10246	RIO_BRAVO PE	1	Closed Open	0.000		132.00 0.00
8	10261	REEVE_G1	1	Closed Open	0.000		44.00 0.00
9	10262	REEVE_G2	1	Closed Open	0.000		43.00 0.00
10	10263	REEVE_G3	1		0.000		
11	10264	REEVES	PV		0.000	0.000	1.30 1.30
12	10277	STUDIO	PV	Open Closed	0.000	0.000	
13	10318	SJUAN_G1	1		0.000		

Many Updates in Present Case Topological Difference from Base Case



Present Case Topological Differences from the Base Case

Summary

Difference Mode: Present Base Difference Change Show Present|Base in Difference and Change

Below is a summary of the comparison between the present case: 26hs1ae.epc and the base case: 25HS1a.epc saved from the Difference Flows Dialog.

Element Type	New	Removed	Both
Bus	1140	639	20875
Load	1583	1973	9391
Switched Shunt	457	319	2723
Generator	276	365	3981
Reactive Capability	1570	1163	3898
Branch	2071	1737	25350
Transformer Correction	4		27
Transformer	1141	681	8989
3W Transformer	138	36	564
Line Shunt	28	22	201
DC Transmission Line			4
Voltage Source Converter DC Link			
Multi-Terminal DC Record			2
Multi-Terminal DC Bus			8
Multi-Terminal DC Transmission			6
Multi-Terminal DC Converter			4
Voltage Control Group			

Element Type	New	Removed	Both
Area			21
Study MW Transactions	45	45	
Balancing Authority			1
Zone	4	2	468
Owner	11	4	508
Super Area			
Data Maintainer			
Interface	1	1	69
Interface Element	55	49	258
Bus Pair			
Injection Group			
Participation Point			
Substation			
Multi-Section Line	69	102	183
Model Group			
Nomogram			
Limit Set			1
Rating Set Name Branch			15
Rating Set Name Bus			4
Rating Set Name BusPair			4
Rating Set Name Interface			15

Assume base case Areas/Zones which are not in present case meet the Area/Zone Filters

Save and Send Option

All Lists

Use Area/Zone Filters when saving to Auxiliary File

Send To Excel Save to Text File Save To EPC File

Save To Aux File Load Aux File

Close

Option to Save to AUX File: Complete Model

- New Option
 - Saves removed and added objects
 - For Both: only saves those fields which have changed

Present Case Topological Differences from the Base Case

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Assume base case Areas/Zones which are not in present case meet the Area/Zone Filters

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Complete Model
Legacy Complete Model (Version 18 and earlier)

Now, saving out truly creates an AUX file that converts the cases



- Conversion AUX file does not include “BOTH” records for which all entries are either blank or “_same_”
- Blank or “_same_” values throughout indicate no change
- All values that are part of the AUX File Export Format “Network Model” are now supported by the Difference Case Tool