

ACCC Analysis in PSSE

Open a Case...

The screenshot displays the PSSE software interface. The main window has a menu bar (File, Edit, View, Power Flow, Short Circuit, OPF, Node-Breaker, Dynamics, Subsystem, Misc, I/O Control, Window, Integrations, Help) and a toolbar. The 'Open (Ctrl+O)' button is highlighted. An 'Open' dialog box is open, showing the file explorer for the path 'PTI > PSSE34 > EXAMPLE'. The dialog lists several files, with 'savnw.sav' selected. The 'File name' field contains 'savnw.sav' and the file type is set to 'Save Case file (*.sav, *.cnv)'. The 'Open' button is highlighted. Below the dialog is the 'Output Bar' with the text 'New study initialized:'. At the bottom, there is a status bar with 'Progress' and 'Alerts/Warnings' tabs, and a message 'Solution not attempted'.

Name	Date modified	Type	Size
RAS	2/16/2017 7:22 PM	File folder	
bench.sav	6/2/2016 10:51 PM	SAV File	730 KB
bench2.sav	6/2/2016 10:51 PM	SAV File	3,652 KB
iec60909_testnetwork_50Hz...	6/2/2016 10:51 PM	SAV File	10 KB
iec60909_testnetwork_50Hz...	6/2/2016 10:51 PM	SAV File	10 KB
ieee_25bus.sav	6/2/2016 10:51 PM	SAV File	17 KB
ieee_gic_test_case.sav	6/2/2016 10:51 PM	SAV File	11 KB
sample.sav	6/2/2016 10:51 PM	SAV File	44 KB
savcnv.sav	6/2/2016 10:51 PM	SAV File	18 KB
savnw.sav	6/2/2016 10:51 PM	SAV File	18 KB

File name: savnw.sav Save Case file (*.sav, *.cnv)

Open Cancel

Output Bar

New study initialized:

Progress Alerts/Warnings

Select an object on which to get Help Solution not attempted Bind items Next bus - 1

ACCC Analysis in PSSE

Go to --> Powerflow --> Contingency, Reliability, PV/QV analysis --> AC contingency solution (ACCC)

The screenshot displays the PSSE software interface. The 'Power Flow' menu is open, showing the path: Power Flow > Contingency, Reliability, PV/QV analysis > AC contingency solution (ACCC)...

The 'Network data' table shows the following data:

Bus Number	Section Number	S
101		
102		
151		
152		
153		
154		
201		
202		
203		
204		
205		
206		
211		
3001		
3002		
3003		
3004		
3005		
3006		
3007		
3008		

The data table below shows the following columns: Area Name, Zone Num, Zone Name, Owner Num, Owner Name, Code, Voltage (pu), Angle (deg), Normal Vmax (pu), Normal Vmin (pu), and Emergency Vmax (pu).

Area Name	Zone Num	Zone Name	Owner Num	Owner Name	Code	Voltage (pu)	Angle (deg)	Normal Vmax (pu)	Normal Vmin (pu)	Emergency Vmax (pu)
PCO	77	PLANT	11	GEN 1	2	1.0200	16.55	1.1000	0.9000	1.1000
PCO	77	PLANT	11	GEN 1	2	1.0200	16.55	1.1000	0.9000	1.1000
					1	1.0119	10.89	1.1000	0.9000	1.1000
					1	1.0170	-1.12	1.1000	0.9000	1.1000
					1	0.9935	-3.24	1.1000	0.9000	1.1000
					1	0.9392	-9.88	1.1000	0.9000	1.1000
					2	1.0400	6.16	1.1000	0.9000	1.1000
					1	1.0088	-1.32	1.1000	0.9000	1.1000
					1	0.9666	-6.92	1.1000	0.9000	1.1000
					1	0.9789	-3.73	1.1000	0.9000	1.1000
					1	0.9492	-9.18	1.1000	0.9000	1.1000
					2	1.0238	-2.97	1.1000	0.9000	1.1000
					2	1.0404	12.92	1.1000	0.9000	1.1000
					1	1.0298	-1.37	1.1000	0.9000	1.1000
					1	1.0280	-1.83	1.1000	0.9000	1.1000
					1	1.0234	-2.25	1.1000	0.9000	1.1000
					1	1.0165	-3.43	1.1000	0.9000	1.1000
					1	0.9949	-5.18	1.1000	0.9000	1.1000
					1	0.9944	-3.79	1.1000	0.9000	1.1000
					1	0.9639	-8.54	1.1000	0.9000	1.1000
					1	0.9588	-9.05	1.1000	0.9000	1.1000

The 'Command Line Input' field contains the text: Python

ACCC Analysis in PSSE

Click on --> DFX ... Browse for your .sub .mon .con files ... Type in a name for the .dfx file ... Click OK

The screenshot displays the PSSE software interface with the 'AC Contingency Solution' dialog box open. The dialog box is divided into several sections: 'Solution options' (Tap adjustment, Area interchange control, Switched shunt adjustments), 'Solution Engine' (Fixed slope decoupled Newton-Raphson, Full Newton-Raphson), 'Dispatch mode' (Disable), 'Dispatch system', 'Low terminal voltage behavior' (Induction machine stalls, Treat contingency as non-converged), and file selection fields for Distribution factor data file, Contingency solution output file, Load throwover data file, Unit inertia and governor data file, and Incremental Save case archive. A 'DFAX...' button is highlighted in the 'Distribution factor data file' field.

The 'Build Distribution Factor Data File' dialog box is also open, showing input files for Subsystem definition file, Monitored element file, and Contingency description file, all pointing to files in the 'C:\Program Files (x86)\PTI\PSSE34\EXAMPLE\save' directory. The 'Distribution factor output file' field contains 'save.dfx'. The 'Sort Monitored elements for reporting' checkbox is checked, and 'Monitor out-of-service lines' is unchecked. The 'Prepare file for use with' dropdown is set to 'AC and/or DC analysis'.

A red box highlights the 'DFAX...' button and the 'Build Distribution Factor Data File' dialog box, with the text 'Reference Sub,Mon,Con,DFX Files for Help'.

Zone Name	Owner Num	Owner Name	Code	Voltage (pu)	Angle (deg)	Normal Vmax (pu)	Normal Vmin (pu)	Emergency Vmax (pu)
	11	GEN 1	2	1.0200	16.55	1.1000	0.9000	1.1000
	11	GEN 1	2	1.0200	16.55	1.1000	0.9000	1.1000
	1	TRAN 1	1	1.0119	10.89	1.1000	0.9000	1.1000
	1	TRAN 1	1	1.0170	-1.12	1.1000	0.9000	1.1000
	1	TRAN 1	1	0.9935	-3.24	1.1000	0.9000	1.1000
	1	TRAN 1	1	0.9392	-9.88	1.1000	0.9000	1.1000
ND	22	GEN 2	1	1.0400	6.16	1.1000	0.9000	1.1000
ND	2	TRAN 2	1	1.0088	-1.32	1.1000	0.9000	1.1000
ND	2	TRAN 2	1	0.9666	-6.92	1.1000	0.9000	1.1000
ND	2	TRAN 2	1	0.9789	-3.73	1.1000	0.9000	1.1000
ND	2	TRAN 2	1	0.9492	-9.18	1.1000	0.9000	1.1000
ND	22	GEN 2	-2	1.0238	-2.97	1.1000	0.9000	1.1000
ND	22	GEN 2	2	1.0404	12.92	1.1000	0.9000	1.1000
	55	GEN 5	1	1.0298	-1.37	1.1000	0.9000	1.1000
	5	TRAN 5	1	1.0280	-1.83	1.1000	0.9000	1.1000
	5	TRAN 5	1	1.0234	-2.25	1.1000	0.9000	1.1000
	5	TRAN 5	1	1.0165	-3.43	1.1000	0.9000	1.1000
	5	TRAN 5	1	0.9949	-5.18	1.1000	0.9000	1.1000
						1.1000	0.9000	1.1000
						1.1000	0.9000	1.1000

ACCC Analysis in PSSE

Type in a name for the .acc file ... Click Solve

The screenshot displays the PSSE software interface. The main window shows a data table with columns: Zone Name, Owner Num, Owner Name, Code, Voltage (pu), Angle (deg), Normal Vmax (pu), Normal Vmin (pu), and Emergency Vmax (pu). The data table contains multiple rows of power system parameters.

Overlaid on the interface is the "AC Contingency Solution" dialog box. The "Contingency solution output file" field is highlighted with a blue border and contains the text "savnw.acc". A mouse cursor is pointing at the file selection icon (three dots) to the right of this field. Other fields in the dialog include "Distribution factor data file" (savnw.dfx), "Load throwover data file", "Unit inertia and governor data file", and "Incremental Save case archive".

At the bottom of the dialog box, there are buttons for "Defaults", "Reports...", "Browser...", "Solve", and "Close". The "Solve" button is highlighted with a blue border.

The bottom of the screen shows the "Command Line Input" window with a dropdown menu set to "Python" and a text input field. The status bar at the very bottom displays "Select an object on which to get Help", "Met convergence tolerances", and "Bind items Next bus - 1".

Zone Name	Owner Num	Owner Name	Code	Voltage (pu)	Angle (deg)	Normal Vmax (pu)	Normal Vmin (pu)	Emergency Vmax (pu)
	11	GEN 1	2	1.0200	16.55	1.1000	0.9000	1.1000
	11	GEN 1	2	1.0200	16.55	1.1000	0.9000	1.1000
	1	TRAN 1	1	1.0119	10.89	1.1000	0.9000	1.1000
	1	TRAN 1	1	1.0170	-1.12	1.1000	0.9000	1.1000
	1	TRAN 1	1	0.9935	-3.24	1.1000	0.9000	1.1000
	1	TRAN 1	1	0.9392	-9.88	1.1000	0.9000	1.1000
ND	22	GEN 2	1	1.0400	6.16	1.1000	0.9000	1.1000
ND	2	TRAN 2	1	1.0088	-1.32	1.1000	0.9000	1.1000
ND	2	TRAN 2	1	0.9666	-6.92	1.1000	0.9000	1.1000
ND	2	TRAN 2	1	0.9789	-3.73	1.1000	0.9000	1.1000
ND	2	TRAN 2	1	0.9492	-9.18	1.1000	0.9000	1.1000
ND	22	GEN 2	-2	1.0238	-2.97	1.1000	0.9000	1.1000
ND	22	GEN 2	2	1.0404	12.92	1.1000	0.9000	1.1000
	55	GEN 5	1	1.0298	-1.37	1.1000	0.9000	1.1000
	5	TRAN 5	1	1.0280	-1.83	1.1000	0.9000	1.1000
	5	TRAN 5	1	1.0234	-2.25	1.1000	0.9000	1.1000
	5	TRAN 5	1	1.0165	-3.43	1.1000	0.9000	1.1000
	5	TRAN 5	1	0.9949	-5.18	1.1000	0.9000	1.1000
	5	TRAN 5	1	0.9944	-3.79	1.1000	0.9000	1.1000
	5	TRAN 5	1	0.9639	-8.54	1.1000	0.9000	1.1000
	55	GEN 5	1	0.9588	-9.05	1.1000	0.9000	1.1000

ACCC Analysis in PSSE

You will see the contingencies scroll by in the Output Bar ...

The screenshot displays the PSSE software interface. At the top is a menu bar with options like File, Edit, View, Data Grid, Power Flow, Short Circuit, OPF, Node-Breaker, Dynamics, Subsystem, Misc, I/O Control, Window, Integrations, and Help. Below the menu is a toolbar with various icons for file operations and analysis. The main window shows a 'Network data' table with columns for Bus Number, Section Number, Substation Number, Bus Name, Base kV, Area Num, Area Name, Zone Num, Zone Name, Owner Num, Owner Name, Code, Voltage (pu), Angle (deg), Normal Vmax (pu), Normal Vmin (pu), and Emergency Vmax (pu). The table lists various buses and their associated parameters. Below the table is a navigation bar with tabs for 'Bus', 'Plant', 'Machine', 'Load', 'Fixed Shunt', 'Switched Shunt', 'Induction Machine', and 'NCSFCC'. The 'Output Bar' at the bottom shows the results of contingency analysis, including 'Processing contingency "LOSE2LINEEA" (#9 of 10):' and 'Processing contingency "LOSEWESTGEN" (#4 of 10):'. A red box highlights the text '<-- Processed Contingencies' next to the output bar. Another red box highlights the text '^ results saved in .acc file' near the 'Progress' tab. The 'Command Line Input' section at the bottom shows 'Python' selected in a dropdown menu.

Bus Number	Section Number	Substation Number	Bus Name	Base kV	Area Num	Area Name	Zone Num	Zone Name	Owner Num	Owner Name	Code	Voltage (pu)	Angle (deg)	Normal Vmax (pu)	Normal Vmin (pu)	Emergency Vmax (pu)
101			NUC-A	21.6	1	FLAPCO	77	PLANT	11	GEN 1	2	1.0200	16.55	1.1000	0.9000	1.1000
102			NUC-B	21.6	1	FLAPCO	77	PLANT	11	GEN 1	2	1.0200	16.55	1.1000	0.9000	1.1000
151			NUCPANT	500.0	1	FLAPCO	1	FIRST	1	TRAN 1	1	1.0119	10.89	1.1000	0.9000	1.1000
152			MID500	500.0	1	FLAPCO	1	FIRST	1	TRAN 1	1	1.0170	-1.12	1.1000	0.9000	1.1000
153			MID230	230.0	1	FLAPCO	1	FIRST	1	TRAN 1	1	0.9935	-3.24	1.1000	0.9000	1.1000
154			DOWNTN	230.0	1	FLAPCO	1	FIRST	1	TRAN 1	1	0.9392	-9.88	1.1000	0.9000	1.1000
201			HYDRO	500.0	2	LIGHTCO	2	SECOND	22	GEN 2	1	1.0400	6.16	1.1000	0.9000	1.1000
202			EAST500	500.0	2	LIGHTCO	2	SECOND	2	TRAN 2	1	1.0088	-1.32	1.1000	0.9000	1.1000
203			EAST230	230.0	2	LIGHTCO	2	SECOND	2	TRAN 2	1	0.9666	-6.92	1.1000	0.9000	1.1000
204			SUB500	500.0	2	LIGHTCO	2	SECOND	2	TRAN 2	1	0.9789	-3.73	1.1000	0.9000	1.1000
205			SUB230	230.0	2	LIGHTCO	2	SECOND	2	TRAN 2	1	0.9493	-9.18	1.1000	0.9000	1.1000
206			URBGEN	18.0	2	LIGHTCO	2	SECOND	22	GEN 2	-2	1.0238	-2.97	1.1000	0.9000	1.1000
211			HYDRO_G	20.0	2	LIGHTCO	2	SECOND	22	GEN 2	2	1.0403	12.92	1.1000	0.9000	1.1000
3001			MINE	230.0	5	WORLD	5	FIFTH	55	GEN 5	1	1.0298	-1.37	1.1000	0.9000	1.1000
3002			E. MINE	500.0	5	WORLD	5	FIFTH	5	TRAN 5	1	1.0280	-1.83	1.1000	0.9000	1.1000
3003			S. MINE	230.0	5	WORLD	5	FIFTH	5	TRAN 5	1	1.0234	-2.25	1.1000	0.9000	1.1000
3004			WEST	500.0	5	WORLD	5	FIFTH	5	TRAN 5	1	1.0165	-3.43	1.1000	0.9000	1.1000
3005			WEST	230.0	5	WORLD	5	FIFTH	5	TRAN 5	1	0.9949	-5.18	1.1000	0.9000	1.1000
3006			UPTOWN	230.0	5	WORLD	5	FIFTH	5	TRAN 5	1	0.9944	-3.79	1.1000	0.9000	1.1000
3007			RURAL	230.0	5	WORLD	5	FIFTH	5	TRAN 5	1	0.9639	-8.54	1.1000	0.9000	1.1000
3008			CATDOG	230.0	5	WORLD	5	FIFTH	55	GEN 5	1	0.9588	-9.05	1.1000	0.9000	1.1000

Processing contingency "LOSE2LINEEA" (#9 of 10):
TRIP LINE FROM BUS 151 [NUCPANT 500.00] TO BUS 201 [HYDRO 500.00]
TRIP LINE FROM BUS 152 [MID500 500.00] TO BUS 202 [EAST500 500.00]

Processing contingency "LOSEWESTGEN" (#4 of 10):
REMOVE UNIT 1 FROM BUS 3018 [CATDOG_G 13.800]

AC Contingency analysis results "savnw.acc" are ready for graphical display

^ results saved in .acc file

ACCC Analysis in PSSE

Select options and browse for .acc file(s) ... Click Go

Multiple AC Contingency Run Report

Select reports

- Monitored elements summary
- Missing contingencies
- Missing monitored elements
- Non-converged contingencies
- Missing monitored voltage buses

Contingency legend: Reduced legend with each table

Loading violations: Base case and worst case contingency violations only

Voltage violations: Base case and worst case contingency violations only

Report options

Column headings: AC Contingency report filenames

Base case: Rating 1 (RATING SET 1) Use Emergency Voltage limit

Contingency case: Rating 2 (RATING SET 2) Use Emergency Voltage limit

- Include interface loading violations
- Exclude elements with base case loading violations from contingency reports
- Exclude elements with base case voltage range violations from contingency reports

90.00 Percent of flow rating for reporting

90.00 Percent of flow rating for counting in worst case contingency violation reports

0.50 Minimum contingency case flow change for reporting and counting

0.50 Minimum contingency case % loading increase for overload

0.75 Minimum contingency case voltage for reporting in voltage range violation

0.50 Bus mismatch "converged" tolerance (MVA)

0.50 System mismatch "converged" tolerance (MVA)

Contingency solution output files

C:\Program Files (x86)\PTI\PSSE34\EXAMPLE\savnw.acc

C:\Program Files (x86)\PTI\PSSE34\EXAMPLE\savnw.acc

Go Close

	Angle (deg)	Normal Vmax (pu)	Normal Vmin (pu)	Emergency Vmax (pu)	Emergency Vmin (pu)
101	16.55	1.1000	0.9000	1.1000	0.9000
102	16.55	1.1000	0.9000	1.1000	0.9000
151	10.89	1.1000	0.9000	1.1000	0.9000
152	-1.12	1.1000	0.9000	1.1000	0.9000
153	-3.24	1.1000	0.9000	1.1000	0.9000
154	-9.88	1.1000	0.9000	1.1000	0.9000
201	6.16	1.1000	0.9000	1.1000	0.9000
202	-1.32	1.1000	0.9000	1.1000	0.9000
203	-6.92	1.1000	0.9000	1.1000	0.9000
204	-3.73	1.1000	0.9000	1.1000	0.9000
205	-9.18	1.1000	0.9000	1.1000	0.9000
206	-2.97	1.1000	0.9000	1.1000	0.9000
211	12.92	1.1000	0.9000	1.1000	0.9000
3001	-1.37	1.1000	0.9000	1.1000	0.9000
3002	-1.83	1.1000	0.9000	1.1000	0.9000
3003	-2.25	1.1000	0.9000	1.1000	0.9000
3004	-3.43	1.1000	0.9000	1.1000	0.9000
3005	-5.18	1.1000	0.9000	1.1000	0.9000
3006	-3.79	1.1000	0.9000	1.1000	0.9000
3007	-8.54	1.1000	0.9000	1.1000	0.9000

ACCC Analysis in PSSE

Report is displayed in the Output Bar by default ... You could write to file --> I/O Control --> Direct Report Output (Open)

The screenshot shows the PSSE software interface. The main window displays an AC contingency report. The report title is 'PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS(R)E' and the date is 'SAT, JUN 23 2018 16:27'. The report content includes:

AC CONTINGENCY REPORT FOR 1 AC CONTINGENCY CALCULATION RUNS

CONTINGENCY CASE MONITORED BRANCHES LOADED ABOVE 90.0% OF RATING SET 2 - WORST CASE
% LOADING VALUES ARE % MVA FOR TRANSFORMERS AND % CURRENT FOR NON-TRANSFORMER BE
THRESHOLD FOR THE COUNT OF CONTINGENCIES CAUSING OVERLOADING IS 90.0% OF RATING
MINIMUM DEVIATION FROM BASE CASE LOADING = 0.5 MVA (MW FOR INTERFACES)
MINIMUM INCREASE IN LOADING FROM BASE CASE = 0.5 PERCENT OF RATING SET

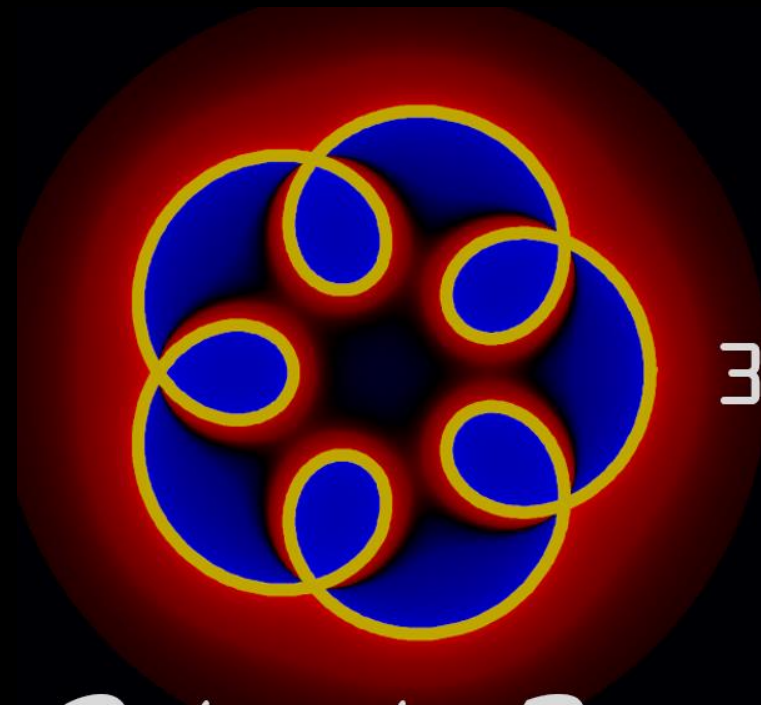
X----- MONITORED ELEMENT -----X	X----- LABEL-----X	... \EXAM PLE\savn w.acc
205 SUB230 230.00	LOSE2LINEEA	91.2%
154 DOWNTN 230.00 1		497MVA (1x)

CONTINGENCY LEGEND:
<----- CONTINGENCY LABEL -----> EVENTS
LOSE2LINEEA : TRIP LINE FROM BUS 151 [NUCPANT 500.00] TO BUS 201 [HYDRO 500.00]
TRIP LINE FROM BUS 152 [MID500 500.00] TO BUS 202 [EAST500 500.00]

The 'Report Output Destination Selector' dialog box is open, showing options for report output destination. The 'File' option is selected. The printer is set to 'Microsoft_Print_to_PDF'. The number of copies is 1, and the lines per page is 60. The 'ReportOutput Destination file' is 'some_filename.txt'. The 'Use FORTRAN forms control' checkbox is checked, and the 'Append to file, if file exists' checkbox is unchecked. The 'OK' button is highlighted.

At the bottom of the screenshot, a text box contains the following text:

PSSE text reports are difficult to interpret.
better option is to create a [python script](#) that gets ACCC results and reports to Excel



ΕΦΕΕ

Dedicated to Power Engineering

Questions or Comments ...

[contact us](#)