Electrical Transient Analyzer Program

Load Flow Analysis

Loading Category (1):	Design
Generation Category (1):	Design
Load Diversity Factor:	None

	Swing	V-Control	Load	Total
Number of Buses:	1	2	6	9

	XFMR2	XFMR3	Reactor	Line/Cable/ Busway	Impedance	Tie PD	Total
Number of Branches:	3	0	0	6	0	0	9

Method of Solution:	Adaptive Newton-Raphson Method
Maximum No. of Iteration:	99
Precision of Solution:	0.0001000
System Frequency:	60.00 Hz
Unit System:	English
Project Filename:	grid2
Output Filename:	C:\Users\owner's\Desktop\PSA PBL\grid2\grid2\Untitled.lfr

Adjustments

Tolerance	Apply Adjustments	Individual /Global	Percent
Transformer Impedance:	Yes	Individual	
Reactor Impedance:	Yes	Individual	
Overload Heater Resistance:	No		
Transmission Line Length:	No		
Cable / Busway Length:	No		

Temperature Correction	Apply Adjustments	Individual /Global	Degree C
Transmission Line Resistance:	Yes	Individual	
Cable / Busway Resistance:	Yes	Individual	

Bus Input Data

Bus ID	kV	Sub-sys	Initial Voltage % Mag.	Ang.	Constant kVA MW	Mvar	Constant Z MW	Mvar	Constant I MW	Mvar	Generic MW	Mvar
Bus1	11.300	1	100.0	0.0								
Bus2	20.000	1	100.0	0.0								
Bus3	20.000	1	105.0	0.0	6.800	4.214	1.752	1.086				
Bus4	20.000	1	106.0	0.0	6.800	4.214	1.735	1.075				
Bus5	11.000	1	100.0	0.0								
Bus6	20.000	1	100.0	0.0	10.880	6.743	2.720	1.686				
Bus7	20.000	1	100.0	0.0	10.200	6.321	2.602	1.612				
Bus8	20.000	1	100.0	0.0	21.760	13.486	5.550	3.440				
Bus9	55.000	1	100.0	0.0								
Total Number of Buses: 9					56.440	34.978	14.359	8.899	0.000	0.000	0.000	0.000

Generation Bus ID	kV	Type	Sub-sys	Voltage % Mag.	Angle	Generation MW	Mvar	% PF	Mvar Limits Max	Min
Bus1	11.300	Swing	1	100.0	0.0					
Bus5	11.000	Voltage Control	1	100.0	0.0	25.000			30.000	0.000
Bus9	55.000	Voltage Control	1	100.0	0.0	20.000			40.000	0.000
						45.000	0.000			

Line/Cable/Busway Input Data

ohms or siemens/1000 ft per Conductor (Cable) or per Phase (Line/Busway)

Line/Cable/Busway ID	Library	Size	Length Adj. (ft)	% Tol.	#/Phase	T (°C)	R	X	Y
Cable2-6	25MCUS1	750	8000.0	0.0	12	75	0.024798	0.093000	
Cable4-7	15MALS1	750	8000.0	0.0	12	75	0.036570	0.049700	
Cable_7-8	25MCUS1	750	8000.0	0.0	12	75	0.024798	0.093000	
Line2-3		203.	5280.0	0.0	1	75	0.130873	0.166755	0.0000010
Line_3-4		203.	5280.0	0.0	1	75	0.130873	0.166755	0.0000010
Line6-8		203.	5280.0	0.0	1	75	0.130873	0.166755	0.0000010

Line / Cable / Busway resistances are listed at the specified temperatures.

2-Winding Transformer Input Data

Transformer			Rating				Z Variation			% Tap Setting		Adjusted	Phase Shift	
ID	Phase	MVA	Prim. kV	Sec. kV	% Z1	X1/R1	+ 5%	- 5%	% Tol.	Prim.	Sec.	% Z	Type	Angle
TR_1	3-Phase	100.000	11.300	20.000	6.50	34.10	0	0	0	0	0	6.5000	YNd	0.000
TR_2	3-Phase	100.000	20.000	11.000	6.50	34.10	0	0	0	0	0	6.5000	Dyn	0.000
TR_3	3-Phase	100.000	20.000	55.000	8.00	34.10	0	0	0	0	0	8.0000	YNd	0.000

Branch Connections

CKT/Branch		Connected Bus ID		% Impedance, Pos. Seq., 100 MVA Base			
ID	Type	From Bus	To Bus	R	X	Z	Y
TR_1	2W XFMR	Bus1	Bus2	0.19	6.50	6.50	
TR_2	2W XFMR	Bus4	Bus5	0.19	6.50	6.50	
TR_3	2W XFMR	Bus8	Bus9	0.23	8.00	8.00	
Cable2-6	Cable	Bus2	Bus6	0.41	1.55	1.60	
Cable4-7	Cable	Bus4	Bus7	0.61	0.83	1.03	
Cable_7-8	Cable	Bus7	Bus8	0.41	1.55	1.60	
Line2-3	Line	Bus2	Bus3	17.28	22.01	27.98	0.0020147
Line_3-4	Line	Bus3	Bus4	17.28	22.01	27.98	0.0020147
Line6-8	Line	Bus8	Bus6	17.28	22.01	27.98	0.0020147

LOAD FLOW REPORT

Bus		Voltage		Generation		Load		Load Flow					XFMR
ID	kV	% Mag.	Ang.	MW	Mvar	MW	Mvar	ID	MW	Mvar	Amp	%PF	%Tap
* Bus1	11.300	100.000	0.0	25.652	9.579	0.000	0.000	Bus2	25.652	9.579	1399.0	93.7	
Bus2	20.000	99.342	-1.0	0.000	0.000	0.000	0.000	Bus6	18.614	7.193	579.9	93.3	
								Bus3	7.023	1.899	211.4	96.5	
								Bus1	-25.637	-9.092	790.4	94.2	
Bus3	20.000	97.708	-1.7	0.000	0.000	8.473	5.251	Bus2	-6.931	-1.783	211.4	96.8	
								Bus4	-1.542	-3.468	112.1	40.6	
Bus4	20.000	98.762	-1.8	0.000	0.000	8.492	5.263	Bus7	14.922	9.127	511.3	85.3	
								Bus3	1.568	3.500	112.1	40.9	
								Bus5	-24.982	-17.889	898.1	81.3	
* Bus5	11.000	100.000	-0.9	25.000	18.518	0.000	0.000	Bus4	25.000	18.518	1632.9	80.4	
Bus6	20.000	99.153	-1.1	0.000	0.000	13.554	8.400	Bus2	-18.597	-7.130	579.9	93.4	
								Bus8	5.043	-1.270	151.4	-97.0	
Bus7	20.000	98.593	-1.9	0.000	0.000	12.729	7.889	Bus4	-14.903	-9.101	511.3	85.3	
								Bus8	2.173	1.212	72.9	87.3	
Bus8	20.000	98.565	-1.9	0.000	0.000	27.152	16.828	Bus7	-2.173	-1.211	72.9	87.4	
								Bus6	-4.996	1.328	151.4	-96.6	
								Bus9	-19.983	-16.945	767.4	76.3	
* Bus9	55.000	100.000	-1.0	20.000	17.510	0.000	0.000	Bus8	20.000	17.510	279.0	75.2	

* Indicates a voltage regulated bus (voltage controlled or swing type machine connected to it)

# Indicates a bus with a load mismatch of more than 0.1 MVA

Bus Loading Summary Report

| Bus | | | Directly Connected Load | | | | | | | | Total Bus Load | | | |
| | | | Constant kVA | | Constant Z | | Constant I | | Generic | | | | | Percent |
ID	kV	Rated Amp	MW	Mvar	MW	Mvar	MW	Mvar	MW	Mvar	MVA	% PF	Amp	Loading
Bus1	11.300										27.382	93.7	1399.0	
Bus2	20.000										27.202	94.2	790.4	
Bus3	20.000		6.800	4.214	1.673	1.037					9.968	85.0	294.5	
Bus4	20.000		6.800	4.214	1.692	1.049					30.726	81.3	898.1	
Bus5	11.000										31.111	80.4	1632.9	
Bus6	20.000		10.880	6.743	2.674	1.657					20.406	91.1	594.1	
Bus7	20.000		10.200	6.321	2.529	1.567					17.462	85.3	511.3	
Bus8	20.000		21.760	13.486	5.392	3.342					32.663	83.1	956.6	
Bus9	55.000										26.582	75.2	279.0	

* Indicates operating load of a bus exceeds the bus critical limit (100.0% of the Continuous Ampere rating).
# Indicates operating load of a bus exceeds the bus marginal limit (95.0% of the Continuous Ampere rating).

Branch Loading Summary Report

| CKT / Branch | | Busway / Cable & Reactor | | | Transformer | | | | |
| | | | | | | Loading (input) | | Loading (output) | |
ID	Type	Ampacity (Amp)	Loading Amp	%	Capability (MVA)	MVA	%	MVA	%
Cable2-6	Cable	7697.38	579.88	7.53					
Cable4-7	Cable	6144.38	511.27	8.32					
Cable_7-8	Cable	7697.38	72.86	0.95					
TR_1	Transformer				100.000	27.382	27.4	27.202	27.2
TR_2	Transformer				100.000	31.111	31.1	30.726	30.7
TR_3	Transformer				100.000	26.582	26.6	26.200	26.2

* Indicates a branch with operating load exceeding the branch capability.

Branch Losses Summary Report

Branch ID	From-To Bus Flow		To-From Bus Flow		Losses		% Bus Voltage		Vd % Drop in Vmag
	MW	Mvar	MW	Mvar	kW	kvar	From	To	
Cable_7-8	2.173	1.212	-2.173	-1.211	0.3	1.0	98.6	98.6	0.03
Cable2-6	18.614	7.193	-18.597	-7.130	16.7	62.5	99.3	99.2	0.19
Cable4-7	14.922	9.127	-14.903	-9.101	19.1	26.0	98.8	98.6	0.17
Line_3-4	-1.542	-3.468	1.568	3.500	26.1	31.3	97.7	98.8	1.05
Line2-3	7.023	1.899	-6.931	-1.783	92.7	116.1	99.3	97.7	1.63
Line6-8	5.043	-1.270	-4.996	1.328	47.5	58.6	99.2	98.6	0.59
TR_1	25.652	9.579	-25.637	-9.092	14.3	487.1	100.0	99.3	0.66
TR_2	-24.982	-17.889	25.000	18.518	18.4	628.9	98.8	100.0	1.24
TR_3	-19.983	-16.945	20.000	17.510	16.6	565.0	98.6	100.0	1.43
					251.6	1976.5			

* This Transmission Line includes Series Capacitor.

Alert Summary Report

% Alert Settings

	Critical	Marginal
Loading		
Bus	100.0	95.0
Cable / Busway	100.0	95.0
Reactor	100.0	95.0
Line	100.0	95.0
Transformer	100.0	95.0
Panel	100.0	95.0
Protective Device	100.0	95.0
Generator	100.0	95.0
Inverter/Charger	100.0	95.0
Bus Voltage		
OverVoltage	105.0	102.0
UnderVoltage	95.0	98.0
Generator Excitation		
OverExcited (Q Max.)	100.0	95.0
UnderExcited (Q Min.)	100.0	

Marginal Report

Device ID	Type	Condition	Rating/Limit	Unit	Operating	% Operating	Phase Type
Bus3	Bus	Under Voltage	20.000	kV	19.542	97.7	3-Phase

SUMMARY OF TOTAL GENERATION , LOADING & DEMAND

	MW	Mvar	MVA	% PF
Source (Swing Buses):	25.652	9.579	27.382	93.68 Lagging
Source (Non-Swing Buses):	45.000	36.028	57.646	78.06 Lagging
Total Demand:	70.652	45.607	84.093	84.02 Lagging
Total Motor Load:	56.440	34.978	66.400	85.00 Lagging
Total Static Load:	13.960	8.652	16.424	85.00 Lagging
Total Constant I Load:	0.000	0.000	0.000	
Total Generic Load:	0.000	0.000	0.000	
Apparent Losses:	0.252	1.977		
System Mismatch:	0.000	0.000		

Number of Iterations: 3

Electrical Transient Analyzer Program

Short-Circuit Analysis

ANSI Standard

3-Phase, LG, LL, & LLG Fault Currents

1/2 Cycle Network

	Swing	V-Control	Load	Total
Number of Buses:	1	2	6	9

	XFMR2	XFMR3	Reactor	Line/Cable/ Busway	Impedance	Tie PD	Total
Number of Branches:	3	0	0	6	0	0	9

	Synchronous Generator	Power Grid	Synchronous Motor	Induction Machines	Lumped Load	Total
Number of Machines:	3	0	0	0	6	9

System Frequency:	60.00
Unit System:	English
Project Filename:	grid2
Output Filename:	C:\Users\owner's\Desktop\PSA PBL\grid2\grid2\Untitled.SQ1S

Adjustments

Tolerance	Apply Adjustments	Individual /Global	Percent
Transformer Impedance:	Yes	Individual	
Reactor Impedance:	Yes	Individual	
Overload Heater Resistance:	No		
Transmission Line Length:	No		
Cable / Busway Length:	No		

Temperature Correction	Apply Adjustments	Individual /Global	Degree C
Transmission Line Resistance:	Yes	Individual	
Cable / Busway Resistance:	Yes	Individual	

Bus Input Data

	Bus				Initial Voltage	
ID	Type	Nom. kV	Base kV	Sub-sys	%Mag.	Ang.
Bus1	SWNG	11.300	11.300	1	100.00	0.00
Bus2	Load	20.000	20.000	1	100.00	30.00
Bus3	Load	20.000	20.000	1	105.00	30.00
Bus4	Load	20.000	20.000	1	106.00	30.00
Bus5	Gen.	11.000	11.000	1	100.00	0.00
Bus6	Load	20.000	20.000	1	100.00	30.00
Bus7	Load	20.000	20.000	1	100.00	30.00
Bus8	Load	20.000	20.000	1	100.00	30.00
Bus9	Gen.	55.000	55.000	1	100.00	60.00

9 Buses Total

All voltages reported by ETAP are in % of bus Nominal kV.
Base kV values of buses are calculated and used internally by ETAP.

Line/Cable/Busway Input Data

ohms or siemens per 1000 ft per Conductor (Cable) or per Phase (Line/Busway)

Line/Cable/Busway ID	Library	Size	Length Adj. (ft)	% Tol.	#/Phase	T (°C)	R1	X1	Y1	R0	X0	Y0
Cable2-6	25MCUS1	750	8000.0	0.0	12	75	0.0247982	0.093		0.2861325	0.248	
Cable4-7	15MALS1	750	8000.0	0.0	12	75	0.03657	0.0497		0.11519	0.12226	
Cable_7-8	25MCUS1	750	8000.0	0.0	12	75	0.0247982	0.093		0.2861325	0.248	
Line2-3		203.	5280.0	0.0	1	75	0.1308732	0.1667548	0.000001	0.1812249	0.4952841	0.0000005
Line_3-4		203.	5280.0	0.0	1	75	0.1308732	0.1667548	0.000001	0.1812249	0.4952841	0.0000005
Line6-8		203.	5280.0	0.0	1	75	0.1308732	0.1667548	0.000001	0.1812249	0.4952841	0.0000005

Line / Cable / Busway resistances are listed at the specified temperatures.

2-Winding Transformer Input Data

Transformer							Z Variation			% Tap Setting		Adjusted	Phase Shift	
ID	MVA	Prim. kV	Sec. kV	% Z	X/R	+ 5%	- 5%	% Tol.	Prim.	Sec.	% Z	Type	Angle
TR_1	100.000	11.300	20.000	6.50	34.10	0	0	0	0	0	6.50	YNd	30.00
TR_2	100.000	20.000	11.000	6.50	34.10	0	0	0	0	0	6.50	Dyn	30.00
TR_3	100.000	20.000	55.000	8.00	34.10	0	0	0	0	0	8.00	YNd	30.00

2-Winding Transformer Grounding Input Data

Transformer				Rating		Conn.	Grounding								
							Primary					Secondary			
ID		MVA	Prim. kV	Sec. kV		Type	Type	kV	Amp	ohm	Type		kV	Amp	ohm
TR_1		100.000	11.300	20.000		D/Y					Solid				
TR_2		100.000	20.000	11.000		D/Y					Solid				
TR_3		100.000	20.000	55.000		D/Y					Solid				

Branch Connections

CKT/Branch		Connected Bus ID		% Impedance, Pos. Seq., 100 MVAb			
ID	Type	From Bus	To Bus	R	X	Z	Y
TR_1	2W XFMR	Bus1	Bus2	0.19	6.50	6.50	
TR_2	2W XFMR	Bus4	Bus5	0.19	6.50	6.50	
TR_3	2W XFMR	Bus8	Bus9	0.23	8.00	8.00	
Cable2-6	Cable	Bus2	Bus6	0.41	1.55	1.60	
Cable4-7	Cable	Bus4	Bus7	0.61	0.83	1.03	
Cable_7-8	Cable	Bus7	Bus8	0.41	1.55	1.60	
Line2-3	Line	Bus2	Bus3	17.28	22.01	27.98	0.0020147
Line_3-4	Line	Bus3	Bus4	17.28	22.01	27.98	0.0020147
Line6-8	Line	Bus8	Bus6	17.28	22.01	27.98	0.0020147

Synchronous Generator Input Data

Synchronous Generator		Rating			Positive Seq. Impedance		% Xd"				Grounding			Zero Seq. Impedance		
ID	Type	MVA	kV	RPM	X"/R	% R	Adj.	Tol.	% Xd'	Conn.	Type	Amp	X/R	% R0	% X0
Gen1	Steam Turbo	192.000	11.300	1800	4.00	5.000	20.00	0.0	10.00	Wye	Solid		3.00	5.000	15.00
Gen5	Steam Turbo	128.000	11.000	1800	0.50	20.000	10.00	0.0	20.00	Wye	Solid		0.50	20.000	10.00
Gen9	Steam Turbo	141.177	55.000	1800	0.50	20.000	10.00	0.0	20.00	Wye	Solid		0.50	20.000	10.00

Total Connected Synchronous Generators (= 3): 461.177 MVA

Lumped Load Input Data

Lumped Load					Motor Loads									
Lumped Load	Rating		% Load		Loading		X/R Ratio		Impedance (Machine Base)			Grounding		
ID	kVA	kV	MTR	STAT	kW	kvar	X"/R	X'/R	% R	% X"	% X'	Conn.	Type	Amp.
Data Center	15000.0	19.800	80	20	10200.0	6321.4	10.00	10.00	1.538	15.38	23.08	Delta		
Great Lakes Tech_Park	10000.0	19.800	80	20	6800.0	4214.3	10.00	10.00	1.538	15.38	23.08	Delta		
HOSPITAL	17000.0	19.800	80	20	11560.0	7164.2	10.00	10.00	1.538	15.38	23.08	Delta		
Sewage Treatment	15000.0	19.800	80	20	10200.0	6321.4	10.00	10.00	1.538	15.38	23.08	Delta		
Solar Farm	10000.0	19.700	80	20	6800.0	4214.3	10.00	10.00	1.538	15.38	23.08	Delta		
Water Treatment Plant	16000.0	20.000	80	20	10880.0	6742.8	10.00	10.00	1.538	15.38	23.08	Delta		

Total Connected Lumped Loads (= 6): 83000.0 kVA

SHORT- CIRCUIT REPORT

Fault at bus: **Bus7**

Prefault voltage = 20.000 kV   = 100.00 % of nominal bus kV (20.000 kV)
                                   = 100.00 % of base kV (20.000 kV)

		3-Phase Fault		Line-To-Ground Fault					Positive & Zero Sequence Impedances			
Contribution									Looking into "From Bus"			
From Bus ID	To Bus ID	% V From Bus	kA Symm. rms	% Voltage at From Bus			kA Symm. rms		% Impedance on 100 MVA base			
				Va	Vb	Vc	Ia	3I0	R1	X1	R0	X0
Bus7	Total	0.00	39.986	0.00	144.53	150.07	11.779	11.779	3.90E+000	6.07E+000	2.03E+001	5.39E+001
Bus4	Bus7	6.08	17.067	2.54	144.25	149.32	4.701	4.281	1.09E+001	1.30E+001	4.95E+001	1.51E+002
Bus8	Bus7	11.70	21.049	7.50	143.29	145.48	6.604	7.505	6.79E+000	1.19E+001	3.40E+001	8.38E+001
Sewage Treatment	Bus7	101.01	2.286	101.01	101.01	101.01	0.494	0.000	1.26E+001	1.26E+002		
Bus3	Bus4	38.86	3.404	42.98	122.80	123.45	2.050	4.281	3.38E+001	7.21E+001	4.76E+001	1.49E+002
Bus5	Bus4	33.37	12.714	90.47	88.03	102.35	2.352	0.000	1.58E+001	1.43E+001		
Great Lakes Tech_Park	Bus4	101.01	1.432	101.01	101.01	101.01	0.312	0.000	1.88E+001	1.88E+002		
Bus6	Bus8	60.64	5.189	76.31	105.73	106.00	3.412	7.505	2.00E+001	4.51E+001	2.92E+001	7.97E+001
Bus9	Bus8	44.90	12.285	89.95	102.44	91.82	2.292	0.000	1.44E+001	1.51E+001		
Data Center	Bus8	101.01	2.029	101.01	101.01	101.01	0.442	0.000	1.26E+001	1.26E+002		
HOSPITAL	Bus8	101.01	2.299	101.01	101.01	101.01	0.501	0.000	1.11E+001	1.11E+002		
Bus2	Bus3	62.86	2.478	81.60	105.61	101.30	1.835	4.281	2.85E+001	6.67E+001	2.37E+001	8.33E+001
Solar Farm	Bus3	101.52	0.958	101.52	101.52	101.52	0.221	0.000	1.87E+001	1.87E+002		
Gen5	Bus5	100.00	23.116	100.00	100.00	100.00	4.143	0.000	1.56E+001	7.81E+000	1.56E+001	7.81E+000
Bus2	Bus6	62.86	4.190	81.60	105.61	101.30	3.170	7.505	3.55E+000	2.86E+001	5.32E+000	1.43E+001
Water Treatment Plant	Bus6	100.00	1.000	100.00	100.00	100.00	0.251	0.000	1.20E+001	1.20E+002		
Gen9	Bus9	100.00	4.467	100.00	100.00	100.00	0.655	0.000	1.42E+001	7.08E+000	1.42E+001	7.08E+000

\# Indicates fault current contribution is from three-winding transformers

* Indicates a zero sequence fault current contribution (3I0) from a grounded Delta- Y transformer

Short-Circuit Summary Report

1/2 Cycle - 3-Phase, LG, LL, & LLG Fault Currents

Prefault Voltage = 100 % of the Bus Nominal Voltage

Bus		3-Phase Fault			Line-to-Ground Fault			Line-to-Line Fault			*Line-to-Line-to-Ground		
ID	kV	Real	Imag.	Mag.	Real	Imag.	Mag.	Real	Imag.	Mag.	Real	Imag.	Mag.
Bus7	20.000	21.604	-33.648	39.986	4.163	-11.019	11.779	29.434	11.173	31.483	-31.435	-8.263	32.503

All fault currents are symmetrical (1/2 Cycle network) values in rms kA.
* LLG fault current is the larger of the two faulted line currents.

Sequence Impedance Summary Report

Bus		Positive Seq. Imp. (ohm)			Negative Seq. Imp. (ohm)			Zero Seq. Imp. (ohm)			Fault Zf (ohm)		
ID	kV	Resistance	Reactance	Impedance	Resistance	Reactance	Impedance	Resistance	Reactance	Impedance	Resistance	Reactance	Impedance
Bus7	20.000	0.15602	0.24300	0.28877	0.06943	0.35091	0.35772	0.81379	2.15715	2.30555	0.00000	0.00000	0.00000

Sequence-of-Operation Event Summary Report

Symmetrical 3-Phase Fault at Bus7.

Time (ms)	ID	If (kA)	T1 (ms)	T2 (ms)	Condition
2.1	Relay3	12.714	2.1		Phase - OC1 - 50
2.1	Relay4	17.067	2.1		Phase - OC1 - 50
2.1	Relay6	12.285	2.1		Phase - OC1 - 50
20.0	Relay1		20.0		Phase - 87
20.0	Relay4		20.0		Phase - 87
20.0	Relay5		20.0		Phase - 87
52.1	CB_4		50.0		Tripped by Relay3 Phase - OC1 - 50
85.4	CB_3		83.3		Tripped by Relay3 Phase - OC1 - 50
85.4	CB_5		83.3		Tripped by Relay4 Phase - OC1 - 50
85.4	CB_12		83.3		Tripped by Relay6 Phase - OC1 - 50
85.4	CB_13		83.3		Tripped by Relay6 Phase - OC1 - 50
99.4	Relay1	6.655	99.4		Phase - OC1 - 51
99.4	Relay3	12.714	99.4		Phase - OC1 - 51
99.4	Relay4	17.067	99.4		Phase - OC1 - 51
99.4	Relay6	12.285	99.4		Phase - OC1 - 51
103	CB_1		83.3		Tripped by Relay1 Phase - 87
103	CB_2		83.3		Tripped by Relay1 Phase - 87
103	CB_5		83.3		Tripped by Relay4 Phase - 87
103	CB_10		83.3		Tripped by Relay5 Phase - 87
149	CB_4		50.0		Tripped by Relay3 Phase - OC1 - 51
183	CB_1		83.3		Tripped by Relay1 Phase - OC1 - 51
183	CB_2		83.3		Tripped by Relay1 Phase - OC1 - 51
183	CB_3		83.3		Tripped by Relay3 Phase - OC1 - 51
183	CB_5		83.3		Tripped by Relay4 Phase - OC1 - 51
183	CB_12		83.3		Tripped by Relay6 Phase - OC1 - 51
183	CB_13		83.3		Tripped by Relay6 Phase - OC1 - 51