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### Electrical Transient Analyzer Program

#### Load Flow Analysis

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

	<u>Swing</u>	<u>V-Control</u>	<u>Load</u>	<u>Total</u>
Number of Buses:	1	0	58	59

	<u>XEMR2</u>	<u>XEMR3</u>	<u>Reactor</u>	<u>Line/Cable</u>	<u>Impedance</u>	<u>Tie PD</u>	<u>Total</u>
Number of Branches:	8	0	0	62	0	16	86

Method of Solution:	Newton-Raphson Method
Maximum No. of Iteration:	99
Precision of Solution:	0.0001000
System Frequency:	50.00 Hz
Unit System:	Metric
Project Filename:	ali
Output Filename:	C:\Users\Ali\Desktop\project-etap\ali\Untitled.lfr

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**Adjustments**

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

  

<u>Temperature Correction</u>	<u>Apply Adjustments</u>	<u>Individual /Global</u>	<u>Degree C</u>
Transmission Line Resistance:	Yes	Individual	
Cable Resistance:	Yes	Individual	

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**Bus Input Data**

Bus			Initial Voltage		Load							
					Constant kVA		Constant Z		Constant I		Generic	
ID	kV	Sub-sys	% Mag.	Ang.	MW	Mvar	MW	Mvar	MW	Mvar	MW	Mvar
Bus 1	161.000	1	100.0	0.0								
Bus 2	161.000	1	100.0	0.0								
Bus 3	161.000	1	100.0	0.0								
Bus4	33.000	1	100.0	0.0								
Bus5	33.000	1	100.0	0.0								
Bus6	33.000	1	100.0	0.0								
Bus7	33.000	1	100.0	0.0								
Bus8	33.000	1	100.0	0.0								
Bus 9	33.000	1	100.0	0.0	1.775	0.607	7.101	2.428				
Bus 10	33.000	1	100.0	0.0	1.350	0.412	7.650	2.337				
Bus 11	33.000	1	100.0	0.0	1.800	0.750	7.200	3.000				
Bus 12	33.000	1	100.0	0.0	7.200	4.600	1.800	1.150				
Bus 13	33.000	1	100.0	0.0	1.800	0.550	7.200	2.200				
Bus 14	33.000	1	100.0	0.0	5.326	3.302	3.550	2.201				
Bus 15	33.000	1	100.0	0.0	1.775	0.807	7.101	3.228				
Bus 16	33.000	1	100.0	0.0	7.101	4.028	1.775	1.007				
Bus17	161.000	1	100.0	0.0								
Bus18	161.000	1	100.0	0.0								
Bus19	33.000	1	100.0	0.0								
Bus20	33.000	1	100.0	0.0								
Bus21	33.000	1	100.0	0.0								
Bus22	33.000	1	100.0	0.0								
Bus 23	33.000	1	100.0	0.0								
Bus 24	33.000	1	100.0	0.0	4.076	1.298	16.305	5.194				
Bus 25	33.000	1	100.0	0.0	16.579	10.895	4.145	2.724				
Bus 26	33.000	1	100.0	0.0	3.057	1.057	17.324	5.992				
Bus 27	33.000	1	100.0	0.0	16.305	9.994	4.076	2.498				
Bus 28	33.000	1	100.0	0.0	4.076	1.298	16.305	5.194				
Bus 29	33.000	1	100.0	0.0	16.305	8.394	4.076	2.098				
Bus 30	33.000	1	100.0	0.0	4.076	1.298	16.305	5.194				
Bus 31	33.000	1	100.0	0.0	16.305	8.394	4.076	2.098				
Bus 32	33.000	1	100.0	0.0	4.076	1.098	16.305	4.394				
Bus 33	161.000	1	100.0	0.0								

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Bus			Initial Voltage		Load							
					Constant kVA		Constant Z		Constant I		Generic	
ID	kV	Sub-sys	% Mag.	Ang.	MW	Mvar	MW	Mvar	MW	Mvar	MW	Mvar
Bus 34	161.000	1	100.0	0.0								
Bus 35	33.000	1	100.0	0.0								
Bus 36	33.000	1	100.0	0.0								
Bus 37	33.000	1	100.0	0.0								
Bus 38	33.000	1	100.0	0.0								
Bus 39	33.000	1	100.0	0.0								
Bus 40	33.000	1	100.0	0.0	3.242	0.972	12.967	3.886				
Bus 41	33.000	1	100.0	0.0	12.967	7.086	3.242	1.772				
Bus 42	33.000	1	100.0	0.0	3.260	1.128	13.039	4.512				
Bus 43	33.000	1	100.0	0.0	13.039	7.712	3.260	1.928				
Bus 44	33.000	1	100.0	0.0	3.260	0.928	13.039	3.712				
Bus 45	33.000	1	100.0	0.0	13.039	8.512	3.260	2.128				
Bus 46	33.000	1	100.0	0.0	3.242	1.172	12.967	4.686				
Bus 47	33.000	1	100.0	0.0	12.967	5.486	3.242	1.372				
Bus 48	33.000	1	100.0	0.0	3.242	0.972	12.967	3.886				
Bus 49	33.000	1	100.0	0.0	9.725	4.115	6.484	2.743				
Bus 50	161.000	1	100.0	0.0								
Bus 51	161.000	1	100.0	0.0								
Bus 52	33.000	1	100.0	0.0								
Bus 53	33.000	1	100.0	0.0								
Bus 54	33.000	1	100.0	0.0								
Bus 55	33.000	1	100.0	0.0								
Bus56	33.000	1	100.0	0.0								
Bus 57	33.000	1	100.0	0.0	1.800	0.872	7.200	3.487				
Bus 58	33.000	1	100.0	0.0	5.400	2.615	3.600	1.744				
Bus 59	33.000	1	100.0	0.0	7.120	3.648	1.780	0.912				
Total Number of Buses: 59					205.288	104.000	239.344	89.704	0.000	0.000	0.000	0.000

Generation Bus				Voltage		Generation			Mvar Limits	
ID	kV	Type	Sub-sys	% Mag.	Angle	MW	Mvar	% PF	Max	Min
Bus 1	161.000	Swing	1	100.0	0.0					
						0.000	0.000			

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**Line/Cable Input Data**

Line/Cable		Ohms or Siemens/1000 m per Conductor (Cable) or per Phase (Line)								
		Library	Size	Length		#/Phase	T (°C)	R	X	Y
				Adj. (m)	% Tol.					
ID										
Cable1	138NCUS1	1500	600.0	0.0	1	75	0.056325	0.180446		
Cable3	138NCUS1	1500	600.0	0.0	1	75	0.056325	0.180446		
Cable7	138NCUS1	500	600.0	0.0	1	75	0.109521	0.213255		
Cable8	138NCUS1	500	600.0	0.0	1	75	0.109521	0.213255		
Cable11	138NCUS1	500	600.0	0.0	1	75	0.109521	0.213255		
Cable12	138NCUS1	500	600.0	0.0	1	75	0.109521	0.213255		
Cable13	138NCUS1	500	600.0	0.0	1	75	0.109521	0.213255		
Cable14	138NCUS1	500	600.0	0.0	1	75	0.109521	0.213255		
Line1		262	2000.0	0.0	1	75	0.102982	0.314194	0.0000028	
Line3		262	1000.0	0.0	1	75	0.102982	0.314194	0.0000028	
Line4		262	1609.3	0.0	1	75	0.106978	0.256651	0.0000032	
Line5		262	1609.3	0.0	1	75	0.106978	0.256651	0.0000032	
Line6		262	1609.3	0.0	1	75	0.106978	0.256651	0.0000032	
Line7		262	1609.3	0.0	1	75	0.106978	0.256651	0.0000032	
Line14		262	1609.3	0.0	1	75	0.106978	0.236662	0.0000032	
Line15		262	10500.0	0.0	1	75	0.107004	0.304271	0.0000028	
Line16		262	10500.0	0.0	1	75	0.107004	0.304271	0.0000028	
Line17		262	1609.3	0.0	1	75	0.106978	0.256651	0.0000032	
Line18		262	1609.3	0.0	1	75	0.106978	0.256651	0.0000032	
Line19		262	1609.3	0.0	1	75	0.106978	0.256651	0.0000032	
Line26		262	1609.3	0.0	1	75	0.106978	0.242657	0.0000032	
Line27		262	15000.0	0.0	1	75	0.106981	0.314194	0.0000028	
Line28		262	15000.0	0.0	1	75	0.106981	0.304206	0.0000028	
Line29		262	1609.3	0.0	1	75	0.106978	0.256651	0.0000032	
Line30		262	1609.3	0.0	1	75	0.106978	0.242657	0.0000032	
Line31		262	1609.3	0.0	1	75	0.106978	0.242657	0.0000032	
Line32		262	1609.3	0.0	1	75	0.106978	0.256651	0.0000032	
Line33		262	13000.0	0.0	1	75	0.106981	0.314194	0.0000028	
Line34		262	13000.0	0.0	1	75	0.106981	0.314194	0.0000028	
Line35		262	1609.3	0.0	1	75	0.106978	0.256651	0.0000032	
Line36		262	1609.3	0.0	1	75	0.106978	0.256651	0.0000032	
Line37		262	1609.3	0.0	1	75	0.106978	0.256651	0.0000032	
Line44		120	1609.3	0.0	1	75	0.102979	0.288653	0.0000030	
Line45		120	1609.3	0.0	1	75	0.102979	0.288653	0.0000030	

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Ohms or Siemens/1000 m per Conductor (Cable) or per Phase (Line)									
Line/Cable	Library	Size	Length		#/Phase	T (°C)	R	X	Y
ID			Adj. (m)	% Tol.					
Line46		120	1609.3	0.0	1	75	0.102979	0.288653	0.0000030
Line47		120	1609.3	0.0	1	75	0.102979	0.288653	0.0000030
Line48		120	1609.3	0.0	1	75	0.102979	0.288653	0.0000030
Line49		120	1609.3	0.0	1	75	0.102979	0.288653	0.0000030
Line56		120	1609.3	0.0	1	75	0.102979	0.288653	0.0000030
Line57		120	1609.3	0.0	1	75	0.102979	0.288653	0.0000030
Line58		120	1609.3	0.0	1	75	0.102979	0.348257	0.0000030
Line59		120	1609.3	0.0	1	75	0.102979	0.288653	0.0000030
Line60		120	1609.3	0.0	1	75	0.102979	0.288653	0.0000030
Line61		120	1609.3	0.0	1	75	0.102979	0.288653	0.0000030
Line62		120	1609.3	0.0	1	75	0.102979	0.288653	0.0000030
Line63		120	1609.3	0.0	1	75	0.102979	0.288653	0.0000030
Line64		120	1609.3	0.0	1	75	0.102979	0.288653	0.0000030
Line65		120	1609.3	0.0	1	75	0.102979	0.288653	0.0000030
Line66		120	1609.3	0.0	1	75	0.102979	0.288653	0.0000030
Line67		120	1609.3	0.0	1	75	0.102979	0.288653	0.0000030
Line74		120	1609.3	0.0	1	75	0.102979	0.288653	0.0000030
Line75		120	1609.3	0.0	1	75	0.102979	0.288653	0.0000030
Line76		120	1609.3	0.0	1	75	0.102979	0.288653	0.0000030
Line91		120	1609.3	0.0	1	75	0.102979	0.288653	0.0000030
Line92		120	1609.3	0.0	1	75	0.102979	0.288653	0.0000030
Line94		120	1609.3	0.0	1	75	0.102979	0.288653	0.0000030
Line95		120	1609.3	0.0	1	75	0.102979	0.288653	0.0000030
Line96		120	1609.3	0.0	1	75	0.102979	0.288653	0.0000030
Line98		120	1609.3	0.0	1	75	0.102979	0.288653	0.0000030
Line99		120	1609.3	0.0	1	75	0.102979	0.288653	0.0000030
Line100		120	1609.3	0.0	1	75	0.102979	0.288653	0.0000030
Line101		120	1609.3	0.0	1	75	0.102979	0.288653	0.0000030

Line / Cable 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
T 1	3-Phase	75.000	161.000	33.000	3.00	20.00	0	0	0	0	0	3.0000	Dyn	0.000
T 2	3-Phase	75.000	161.000	33.000	3.00	20.00	0	0	0	0	0	3.0000	Dyn	0.000
T 3	3-Phase	200.000	161.000	33.000	1.50	20.00	0	0	0	0	0	1.5000	Dyn	0.000
T 4	3-Phase	200.000	161.000	33.000	1.50	20.00	0	0	0	0	0	1.5000	Dyn	0.000
T 5	3-Phase	200.000	161.000	33.000	1.50	20.00	0	0	0	0	0	1.5000	Dyn	0.000
T 6	3-Phase	150.000	161.000	33.000	2.00	20.00	0	0	0	0	0	2.0000	Dyn	0.000
T 7	3-Phase	50.000	161.000	33.000	3.50	20.00	0	0	0	-5.000	0	3.5000	Dyn	0.000
T 8	3-Phase	25.000	161.000	33.000	4.00	20.00	0	0	0	-2.500	0	4.0000	Dyn	0.000

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**Branch Connections**

CKT/Branch		Connected Bus ID		% Impedance, Pos. Seq., 100 MVA Base			
ID	Type	From Bus	To Bus	R	X	Z	Y
T 1	2W XFMR	Bus 2	Bus5	0.20	4.00	4.00	
T 2	2W XFMR	Bus 3	Bus4	0.20	4.00	4.00	
T 3	2W XFMR	Bus17	Bus19	0.04	0.75	0.75	
T 4	2W XFMR	Bus18	Bus20	0.04	0.75	0.75	
T 5	2W XFMR	Bus 33	Bus 36	0.04	0.75	0.75	
T 6	2W XFMR	Bus 34	Bus 35	0.07	1.33	1.33	
T 7	2W XFMR	Bus 50	Bus 52	0.33	6.64	6.65	
T 8	2W XFMR	Bus 51	Bus 53	0.78	15.58	15.60	
Cable1	Cable	Bus 2	Bus 3	0.01	0.04	0.04	
Cable3	Cable	Bus 2	Bus 3	0.01	0.04	0.04	
Cable7	Cable	Bus17	Bus18	0.03	0.05	0.06	
Cable8	Cable	Bus17	Bus18	0.03	0.05	0.06	
Cable11	Cable	Bus 33	Bus 34	0.03	0.05	0.06	
Cable12	Cable	Bus 33	Bus 34	0.03	0.05	0.06	
Cable13	Cable	Bus 50	Bus 51	0.03	0.05	0.06	
Cable14	Cable	Bus 50	Bus 51	0.03	0.05	0.06	
Line1	Line	Bus 2	Bus 1	0.08	0.24	0.26	0.1426855
Line3	Line	Bus 2	Bus 1	0.04	0.12	0.13	0.0713428
Line4	Line	Bus4	Bus8	1.58	3.79	4.11	0.0056364
Line5	Line	Bus5	Bus8	1.58	3.79	4.11	0.0056364
Line6	Line	Bus7	Bus8	1.58	3.79	4.11	0.0056364
Line7	Line	Bus6	Bus8	1.58	3.79	4.11	0.0056364
Line14	Line	Bus22	Bus 23	1.58	3.50	3.84	0.0056364
Line15	Line	Bus17	Bus 3	0.43	1.23	1.31	0.7492593
Line16	Line	Bus17	Bus 3	0.43	1.23	1.31	0.7492593
Line17	Line	Bus19	Bus 23	1.58	3.79	4.11	0.0056364
Line18	Line	Bus20	Bus 23	1.58	3.79	4.11	0.0056364
Line19	Line	Bus21	Bus 23	1.58	3.79	4.11	0.0056364
Line26	Line	Bus 37	Bus 39	1.58	3.59	3.92	0.0056364
Line27	Line	Bus 33	Bus18	0.62	1.82	1.92	1.0704490
Line28	Line	Bus 33	Bus18	0.62	1.76	1.87	1.0704490
Line29	Line	Bus 36	Bus 39	1.58	3.79	4.11	0.0056364
Line30	Line	Bus 35	Bus 39	1.58	3.59	3.92	0.0056364
Line31	Line	Bus 38	Bus 39	1.58	3.59	3.92	0.0056364
Line32	Line	Bus 54	Bus56	1.58	3.79	4.11	0.0056364
Line33	Line	Bus 50	Bus 34	0.54	1.58	1.66	0.9277222
Line34	Line	Bus 50	Bus 34	0.54	1.58	1.66	0.9277222



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CKT/Branch		Connected Bus ID		% Impedance, Pos. Seq., 100 MVA Base			
ID	Type	From Bus	To Bus	R	X	Z	Y
Line35	Line	Bus 52	Bus56	1.58	3.79	4.11	0.0056364
Line36	Line	Bus 53	Bus56	1.58	3.79	4.11	0.0056364
Line37	Line	Bus 55	Bus56	1.58	3.79	4.11	0.0056364
Line44	Line	Bus8	Bus 10	1.52	4.27	4.53	0.0052615
Line45	Line	Bus8	Bus 11	1.52	4.27	4.53	0.0052615
Line46	Line	Bus8	Bus 12	1.52	4.27	4.53	0.0052615
Line47	Line	Bus8	Bus 13	1.52	4.27	4.53	0.0052615
Line48	Line	Bus8	Bus 14	1.52	4.27	4.53	0.0052615
Line49	Line	Bus8	Bus 15	1.52	4.27	4.53	0.0052615
Line56	Line	Bus 23	Bus 30	1.52	4.27	4.53	0.0052615
Line57	Line	Bus 23	Bus 29	1.52	4.27	4.53	0.0052615
Line58	Line	Bus 23	Bus 28	1.52	5.15	5.37	0.0052615
Line59	Line	Bus 23	Bus 27	1.52	4.27	4.53	0.0052615
Line60	Line	Bus 23	Bus 26	1.52	4.27	4.53	0.0052615
Line61	Line	Bus 23	Bus 25	1.52	4.27	4.53	0.0052615
Line62	Line	Bus 39	Bus 47	1.52	4.27	4.53	0.0052615
Line63	Line	Bus 39	Bus 46	1.52	4.27	4.53	0.0052615
Line64	Line	Bus 39	Bus 45	1.52	4.27	4.53	0.0052615
Line65	Line	Bus 39	Bus 44	1.52	4.27	4.53	0.0052615
Line66	Line	Bus 39	Bus 43	1.52	4.27	4.53	0.0052615
Line67	Line	Bus 39	Bus 42	1.52	4.27	4.53	0.0052615
Line74	Line	Bus56	Bus 57	1.52	4.27	4.53	0.0052615
Line75	Line	Bus56	Bus 58	1.52	4.27	4.53	0.0052615
Line76	Line	Bus56	Bus 59	1.52	4.27	4.53	0.0052615
Line91	Line	Bus8	Bus 9	1.52	4.27	4.53	0.0052615
Line92	Line	Bus8	Bus 16	1.52	4.27	4.53	0.0052615
Line94	Line	Bus 23	Bus 24	1.52	4.27	4.53	0.0052615
Line95	Line	Bus 23	Bus 31	1.52	4.27	4.53	0.0052615
Line96	Line	Bus 23	Bus 32	1.52	4.27	4.53	0.0052615
Line98	Line	Bus 39	Bus 41	1.52	4.27	4.53	0.0052615
Line99	Line	Bus 39	Bus 48	1.52	4.27	4.53	0.0052615
Line100	Line	Bus 39	Bus 49	1.52	4.27	4.53	0.0052615
Line101	Line	Bus 39	Bus 40	1.52	4.27	4.53	0.0052615
CB7	Tie Breakr	Bus4	Bus5				
CB8	Tie Breakr	Bus6	Bus4				
CB10	Tie Breakr	Bus5	Bus7				
CB11	Tie Breakr	Bus6	Bus7				
CB29	Tie Breakr	Bus21	Bus22				
CB30	Tie Breakr	Bus19	Bus22				

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CKT/Branch		Connected Bus ID		% Impedance, Pos. Seq., 100 MVA Base			
ID	Type	From Bus	To Bus	R	X	Z	Y
CB39	Tie Breakr	Bus20	Bus19				
CB40	Tie Breakr	Bus21	Bus20				
CB53	Tie Breakr	Bus 38	Bus 37				
CB54	Tie Breakr	Bus 36	Bus 37				
CB63	Tie Breakr	Bus 35	Bus 36				
CB64	Tie Breakr	Bus 38	Bus 35				
CB65	Tie Breakr	Bus 55	Bus 54				
CB66	Tie Breakr	Bus 52	Bus 54				
CB75	Tie Breakr	Bus 53	Bus 52				
CB76	Tie Breakr	Bus 55	Bus 53				

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### LOAD FLOW REPORT

Bus		Voltage		Generation		Load		Load Flow					XFMR	
ID	kV	% Mag.	Ang.	MW	Mvar	MW	Mvar	ID	MW	Mvar	Amp	%PF	%Tap	
* Bus 1	161.000	100.000	0.0	434.558	213.100	0	0	Bus 2	144.853	70.998	578.5	89.8		
								Bus 2	289.705	142.102	1157.1	89.8		
Bus 2	161.000	99.713	-0.2	0	0	0	0	Bus 3	198.941	96.808	795.7	89.9		
								Bus 3	198.941	96.808	795.7	89.9		
								Bus 1	-144.646	-70.509	578.7	89.9		
								Bus 1	-289.292	-140.911	1157.3	89.9		
								Bus5	36.055	17.804	144.6	89.7		
Bus 3	161.000	99.647	-0.2	0	0	0	0	Bus 2	-198.877	-96.602	795.7	89.9		
								Bus 2	-198.877	-96.602	795.7	89.9		
								Bus17	181.777	88.502	727.6	89.9		
								Bus17	181.777	88.502	727.6	89.9		
								Bus4	34.201	16.200	136.2	90.4		
Bus4	33.000	98.938	-1.0	0	0	0	0	Bus8	17.549	8.195	342.5	90.6		
								Bus 3	-34.172	-15.624	664.4	90.9		
								Bus5	8.312	3.715	161.0	91.3		
								Bus6	8.312	3.715	161.0	91.3		
Bus5	33.000	98.938	-1.0	0	0	0	0	Bus8	17.549	8.195	342.5	90.6		
								Bus 2	-36.022	-17.155	705.5	90.3		
								Bus4	-8.312	-3.715	161.0	91.3		
								Bus7	26.786	12.675	524.0	90.4		
Bus6	33.000	98.938	-1.0	0	0	0	0	Bus8	17.549	8.195	342.5	90.6		
								Bus4	-8.312	-3.715	161.0	91.3		
								Bus7	-9.237	-4.480	181.5	90.0		
Bus7	33.000	98.938	-1.0	0	0	0	0	Bus8	17.549	8.195	342.5	90.6		
								Bus5	-26.786	-12.675	524.0	90.4		
								Bus6	9.237	4.480	181.5	90.0		
Bus8	33.000	98.344	-1.3	0	0	0	0	Bus4	-17.488	-8.055	342.5	90.8		
								Bus5	-17.488	-8.055	342.5	90.8		
								Bus7	-17.488	-8.055	342.5	90.8		
								Bus6	-17.488	-8.055	342.5	90.8		
								Bus 10	8.724	2.693	162.4	95.6		
								Bus 11	8.736	3.669	168.6	92.2		
								Bus 12	8.945	5.748	189.2	84.1		
								Bus 13	8.741	2.699	162.7	95.5		
								Bus 14	8.750	5.456	183.5	84.9		
								Bus 15	8.615	3.944	168.6	90.9		

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Bus		Voltage		Generation		Load		Load Flow				XFMR	
ID	kV	% Mag.	Ang.	MW	Mvar	MW	Mvar	ID	MW	Mvar	Amp	%PF	%Tap
								Bus 9	8.619	2.974	162.2	94.5	
								Bus 16	8.822	5.035	180.7	86.8	
Bus 9	33.000	98.082	-1.5	0	0	8.606	2.943	Bus8	-8.606	-2.943	162.2	94.6	
Bus 10	33.000	98.093	-1.5	0	0	8.711	2.662	Bus8	-8.711	-2.662	162.5	95.6	
Bus 11	33.000	98.050	-1.5	0	0	8.722	3.634	Bus8	-8.722	-3.634	168.6	92.3	
Bus 12	33.000	97.957	-1.5	0	0	8.927	5.703	Bus8	-8.927	-5.703	189.2	84.3	
Bus 13	33.000	98.092	-1.5	0	0	8.728	2.667	Bus8	-8.728	-2.667	162.8	95.6	
Bus 14	33.000	97.973	-1.5	0	0	8.734	5.415	Bus8	-8.734	-5.415	183.5	85.0	
Bus 15	33.000	98.040	-1.5	0	0	8.600	3.909	Bus8	-8.600	-3.909	168.6	91.0	
Bus 16	33.000	97.990	-1.5	0	0	8.805	4.995	Bus8	-8.805	-4.995	180.7	87.0	
Bus17	161.000	97.774	-1.3	0	0	0	0	Bus18	133.937	61.339	540.3	90.9	
								Bus18	133.937	61.339	540.3	90.9	
								Bus 3	-179.989	-84.150	728.7	90.6	
								Bus 3	-179.989	-84.150	728.7	90.6	
								Bus19	92.104	45.623	377.0	89.6	
Bus18	161.000	97.709	-1.3	0	0	0	0	Bus17	-133.880	-61.227	540.3	90.9	
								Bus17	-133.880	-61.227	540.3	90.9	
								Bus 33	89.893	42.394	364.8	90.4	
								Bus 33	92.961	42.724	375.5	90.9	
								Bus20	84.905	37.336	340.4	91.5	
Bus19	33.000	97.392	-1.7	0	0	0	0	Bus 23	43.313	20.350	859.7	90.5	
								Bus17	-92.063	-44.795	1839.2	89.9	
								Bus22	24.375	12.222	489.8	89.4	
								Bus20	24.375	12.222	489.8	89.4	
								Bus 23	43.313	20.350	859.7	90.5	
Bus20	33.000	97.392	-1.7	0	0	0	0	Bus18	-84.872	-36.661	1660.8	91.8	
								Bus19	-24.375	-12.222	489.8	89.4	
								Bus21	65.934	28.533	1290.6	91.8	
Bus21	33.000	97.392	-1.7	0	0	0	0	Bus 23	43.313	20.350	859.7	90.5	
								Bus22	22.621	8.182	432.1	94.0	
								Bus20	-65.934	-28.533	1290.6	91.8	
Bus22	33.000	97.392	-1.7	0	0	0	0	Bus 23	46.996	20.405	920.4	91.7	
								Bus21	-22.621	-8.182	432.1	94.0	
								Bus19	-24.375	-12.222	489.8	89.4	
Bus 23	33.000	95.906	-2.5	0	0	0	0	Bus22	-46.558	-19.442	920.4	92.3	
								Bus19	-42.931	-19.440	859.7	91.1	
								Bus20	-42.931	-19.440	859.7	91.1	
								Bus21	-42.931	-19.440	859.7	91.1	
								Bus 30	18.961	6.198	363.9	95.1	

Bus		Voltage		Generation		Load		Load Flow					XFMR
ID	kV	% Mag.	Ang.	MW	Mvar	MW	Mvar	ID	MW	Mvar	Amp	%PF	%Tap
								Bus 29	20.079	10.526	413.6	88.6	
								Bus 28	18.943	6.231	363.8	95.0	
								Bus 27	20.079	12.505	431.5	84.9	
								Bus 26	18.862	6.681	365.0	94.3	
								Bus 25	20.418	13.627	447.8	83.2	
								Bus 24	18.961	6.198	363.9	95.1	
								Bus 31	20.079	10.526	413.6	88.6	
								Bus 32	18.972	5.270	359.2	96.4	
Bus 24	33.000	95.332	-3.0	0	0	18.895	6.018	Bus 23	-18.895	-6.018	363.9	95.3	
Bus 25	33.000	94.978	-2.9	0	0	20.318	13.352	Bus 23	-20.318	-13.352	447.9	83.6	
Bus 26	33.000	95.312	-3.0	0	0	18.795	6.500	Bus 23	-18.795	-6.500	365.1	94.5	
Bus 27	33.000	95.033	-2.9	0	0	19.987	12.250	Bus 23	-19.987	-12.250	431.6	85.3	
Bus 28	33.000	95.275	-3.1	0	0	18.877	6.013	Bus 23	-18.877	-6.013	363.8	95.3	
Bus 29	33.000	95.122	-3.0	0	0	19.994	10.292	Bus 23	-19.994	-10.292	413.6	88.9	
Bus 30	33.000	95.332	-3.0	0	0	18.895	6.018	Bus 23	-18.895	-6.018	363.9	95.3	
Bus 31	33.000	95.122	-3.0	0	0	19.994	10.292	Bus 23	-19.994	-10.292	413.6	88.9	
Bus 32	33.000	95.373	-3.0	0	0	18.908	5.095	Bus 23	-18.908	-5.095	359.2	96.6	
Bus 33	161.000	96.351	-2.2	0	0	0	0	Bus 34	40.867	18.528	167.0	91.1	
								Bus 34	40.867	18.528	167.0	91.1	
								Bus18	-89.250	-41.512	366.3	90.7	
								Bus18	-92.279	-41.794	377.0	91.1	
								Bus 36	99.795	46.251	409.4	90.7	
								Bus 33	-40.861	-18.517	167.0	91.1	
								Bus 33	-40.861	-18.517	167.0	91.1	
								Bus 50	13.414	6.218	55.0	90.7	
								Bus 50	13.414	6.218	55.0	90.7	
								Bus 35	54.895	24.598	223.9	91.3	
								Bus 39	39.193	17.350	781.5	91.4	
								Bus 34	-54.869	-24.079	1092.5	91.6	
								Bus 36	7.838	3.364	155.5	91.9	
								Bus 38	7.838	3.364	155.5	91.9	
								Bus 39	37.036	17.303	745.3	90.6	
								Bus 33	-99.746	-45.274	1997.2	91.1	
								Bus 37	70.548	31.336	1407.5	91.4	
								Bus 35	-7.838	-3.364	155.5	91.9	
								Bus 39	39.193	17.350	781.5	91.4	
								Bus 38	31.355	13.986	626.0	91.3	
								Bus 36	-70.548	-31.336	1407.5	91.4	
								Bus 39	39.193	17.350	781.5	91.4	
Bus 37	33.000	95.955	-2.6	0	0	0	0	Bus 39	39.193	17.350	781.5	91.4	
								Bus 38	31.355	13.986	626.0	91.3	
								Bus 36	-70.548	-31.336	1407.5	91.4	
Bus 38	33.000	95.955	-2.6	0	0	0	0	Bus 39	39.193	17.350	781.5	91.4	

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Bus		Voltage		Generation		Load		Load Flow				XFMR	
ID	kV	% Mag.	Ang.	MW	Mvar	MW	Mvar	ID	MW	Mvar	Amp	%PF	%Tap
Bus 39	33.000	94.669	-3.3	0	0	0	0	Bus 37	-31.355	-13.986	626.0	91.3	
								Bus 35	-7.838	-3.364	155.5	91.9	
								Bus 37	-38.878	-16.640	781.5	91.9	
								Bus 36	-36.749	-16.620	745.4	91.1	
								Bus 35	-38.878	-16.640	781.5	91.9	
								Bus 38	-38.878	-16.640	781.5	91.9	
								Bus 47	15.889	6.839	319.7	91.9	
								Bus 46	14.788	5.443	291.2	93.8	
								Bus 45	15.978	10.560	353.9	83.4	
								Bus 44	14.880	4.334	286.4	96.0	
								Bus 43	15.978	9.575	344.2	85.8	
								Bus 42	14.871	5.245	291.4	94.3	
								Bus 41	15.889	8.805	335.7	87.5	
								Bus 48	14.796	4.532	286.0	95.6	
Bus 40	33.000	94.228	-3.7	0	0	14.755	4.422	Bus 49	15.517	6.676	312.2	91.9	
								Bus 40	14.796	4.532	286.0	95.6	
								Bus 39	-14.755	-4.422	286.0	95.8	
								Bus 39	-15.833	-8.652	335.8	87.8	
								Bus 39	-14.829	-5.131	291.5	94.5	
								Bus 39	-15.919	-9.415	344.3	86.1	
								Bus 39	-14.839	-4.224	286.4	96.2	
								Bus 39	-15.916	-10.390	354.0	83.7	
								Bus 39	-14.745	-5.329	291.2	94.0	
								Bus 39	-15.838	-6.701	319.7	92.1	
								Bus 39	-14.755	-4.422	286.0	95.8	
								Bus 39	-15.469	-6.545	312.2	92.1	
								Bus 51	3.719	-3.494	19.0	-72.9	
								Bus 51	3.719	-3.494	19.0	-72.9	
Bus 51	161.000	96.148	-2.3	0	0	0	0	Bus 34	-13.401	-7.039	56.5	88.5	
								Bus 34	-13.401	-7.039	56.5	88.5	
								Bus 52	19.364	21.066	106.7	67.7	-5.000
								Bus 50	-3.719	3.494	19.0	-72.9	
								Bus 50	-3.719	3.494	19.0	-72.9	
								Bus 53	7.438	-6.988	38.1	-72.9	-2.500
Bus 52	33.000	99.694	-3.0	0	0	0	0	Bus56	6.691	3.337	131.2	89.5	
								Bus 50	-19.336	-20.507	494.6	68.6	
								Bus 54	6.322	8.585	187.1	59.3	
								Bus 53	6.322	8.585	187.1	59.3	
Bus 53	33.000	99.694	-3.0	0	0	0	0	Bus56	6.691	3.337	131.2	89.5	

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Bus		Voltage		Generation		Load		Load Flow					XFMR
ID	kV	% Mag.	Ang.	MW	Mvar	MW	Mvar	ID	MW	Mvar	Amp	%PF	%Tap
Bus 54	33.000	99.694	-3.0	0	0	0	0	Bus 51	-7.429	7.160	181.1	-72.0	
								Bus 52	-6.322	-8.585	187.1	59.3	
								Bus 55	7.060	-1.911	128.4	-96.5	
								Bus56	6.691	3.337	131.2	89.5	
								Bus 55	-0.369	5.248	92.3	-7.0	
Bus 55	33.000	99.694	-3.0	0	0	0	0	Bus 52	-6.322	-8.585	187.1	59.3	
								Bus56	6.691	3.337	131.2	89.5	
								Bus 54	0.369	-5.248	92.3	-7.0	
Bus56	33.000	99.461	-3.1	0	0	0	0	Bus 53	-7.060	1.911	128.4	-96.5	
								Bus 54	-6.682	-3.321	131.3	89.6	
								Bus 52	-6.682	-3.321	131.3	89.6	
								Bus 53	-6.682	-3.321	131.3	89.6	
								Bus 55	-6.682	-3.321	131.3	89.6	
								Bus 57	8.892	4.336	174.0	89.9	
								Bus 58	8.953	4.367	175.2	89.9	
Bus 57	33.000	99.139	-3.3	0	0	8.877	4.299	Bus 59	8.884	4.582	175.8	88.9	
								Bus56	-8.877	-4.299	174.1	90.0	
								Bus 58	8.938	4.329	175.3	90.0	
								Bus56	-8.869	-4.544	175.9	89.0	

\* 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

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### Bus Loading Summary Report

Bus			Directly Connected Load								Total Bus Load			
			Constant kVA		Constant Z		Constant I		Generic		MVA	% PF	Amp	Percent Loading
ID	kV	Rated Amp	MW	Mvar	MW	Mvar	MW	Mvar	MW	Mvar				
Bus 1	161.000		0	0	0	0	0	0	0	0	483.996	89.8	1735.6	
Bus 2	161.000		0	0	0	0	0	0	0	0	482.701	89.9	1736.0	
Bus 3	161.000		0	0	0	0	0	0	0	0	442.195	89.9	1591.3	
Bus4	33.000		0	0	0	0	0	0	0	0	37.575	90.9	664.4	
Bus5	33.000		0	0	0	0	0	0	0	0	49.001	90.5	866.5	
Bus6	33.000		0	0	0	0	0	0	0	0	19.368	90.6	342.5	
Bus7	33.000		0	0	0	0	0	0	0	0	29.633	90.4	524.0	
Bus8	33.000		0	0	0	0	0	0	0	0	77.016	90.8	1370.1	
Bus 9	33.000		1.775	0.607	6.831	2.336	0	0	0	0	9.096	94.6	162.2	
Bus 10	33.000		1.350	0.412	7.361	2.249	0	0	0	0	9.109	95.6	162.5	
Bus 11	33.000		1.800	0.750	6.922	2.884	0	0	0	0	9.449	92.3	168.6	
Bus 12	33.000		7.200	4.600	1.727	1.103	0	0	0	0	10.594	84.3	189.2	
Bus 13	33.000		1.800	0.550	6.928	2.117	0	0	0	0	9.126	95.6	162.8	
Bus 14	33.000		5.326	3.302	3.408	2.113	0	0	0	0	10.276	85.0	183.5	
Bus 15	33.000		1.775	0.807	6.825	3.102	0	0	0	0	9.447	91.0	168.6	
Bus 16	33.000		7.101	4.028	1.705	0.967	0	0	0	0	10.123	87.0	180.7	
Bus17	161.000		0	0	0	0	0	0	0	0	397.378	90.6	1457.4	
Bus18	161.000		0	0	0	0	0	0	0	0	294.432	90.9	1080.6	
Bus19	33.000		0	0	0	0	0	0	0	0	102.382	89.9	1839.2	
Bus20	33.000		0	0	0	0	0	0	0	0	119.685	91.3	2150.0	
Bus21	33.000		0	0	0	0	0	0	0	0	71.843	91.8	1290.6	
Bus22	33.000		0	0	0	0	0	0	0	0	51.234	91.7	920.4	
Bus 23	33.000		0	0	0	0	0	0	0	0	191.820	91.4	3499.3	
Bus 24	33.000		4.076	1.298	14.819	4.720	0	0	0	0	19.830	95.3	363.9	
Bus 25	33.000		16.579	10.895	3.739	2.457	0	0	0	0	24.313	83.6	447.9	
Bus 26	33.000		3.057	1.057	15.738	5.443	0	0	0	0	19.888	94.5	365.1	
Bus 27	33.000		16.305	9.994	3.681	2.256	0	0	0	0	23.442	85.3	431.6	
Bus 28	33.000		4.076	1.298	14.801	4.714	0	0	0	0	19.812	95.3	363.8	
Bus 29	33.000		16.305	8.394	3.688	1.899	0	0	0	0	22.487	88.9	413.6	
Bus 30	33.000		4.076	1.298	14.819	4.720	0	0	0	0	19.830	95.3	363.9	
Bus 31	33.000		16.305	8.394	3.688	1.899	0	0	0	0	22.487	88.9	413.6	
Bus 32	33.000		4.076	1.098	14.831	3.996	0	0	0	0	19.582	96.6	359.2	
Bus 33	161.000		0	0	0	0	0	0	0	0	199.731	90.9	743.4	
Bus 34	161.000		0	0	0	0	0	0	0	0	89.722	91.1	334.0	
Bus 35	33.000		0	0	0	0	0	0	0	0	59.920	91.6	1092.5	
Bus 36	33.000		0	0	0	0	0	0	0	0	118.068	91.1	2152.7	



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Bus			Directly Connected Load								Total Bus Load			
			Constant kVA		Constant Z		Constant I		Generic		MVA	% PF	Amp	Percent Loading
ID	kV	Rated Amp	MW	Mvar	MW	Mvar	MW	Mvar	MW	Mvar				
Bus 37	33.000		0	0	0	0	0	0	0	0	77.194	91.4	1407.5	
Bus 38	33.000		0	0	0	0	0	0	0	0	42.862	91.4	781.5	
Bus 39	33.000		0	0	0	0	0	0	0	0	167.193	91.7	3089.9	
Bus 40	33.000		3.242	0.972	11.514	3.451	0	0	0	0	15.404	95.8	286.0	
Bus 41	33.000		12.967	7.086	2.866	1.566	0	0	0	0	18.043	87.8	335.8	
Bus 42	33.000		3.260	1.128	11.569	4.003	0	0	0	0	15.692	94.5	291.5	
Bus 43	33.000		13.039	7.712	2.879	1.703	0	0	0	0	18.494	86.1	344.3	
Bus 44	33.000		3.260	0.928	11.579	3.296	0	0	0	0	15.429	96.2	286.4	
Bus 45	33.000		13.039	8.512	2.877	1.878	0	0	0	0	19.007	83.7	354.0	
Bus 46	33.000		3.242	1.172	11.504	4.157	0	0	0	0	15.679	94.0	291.2	
Bus 47	33.000		12.967	5.486	2.871	1.215	0	0	0	0	17.197	92.1	319.7	
Bus 48	33.000		3.242	0.972	11.514	3.451	0	0	0	0	15.404	95.8	286.0	
Bus 49	33.000		9.725	4.115	5.744	2.430	0	0	0	0	16.796	92.1	312.2	
Bus 50	161.000		0	0	0	0	0	0	0	0	34.090	78.6	127.1	
Bus 51	161.000		0	0	0	0	0	0	0	0	10.206	72.9	38.1	
Bus 52	33.000		0	0	0	0	0	0	0	0	28.185	68.6	494.6	
Bus 53	33.000		0	0	0	0	0	0	0	0	17.300	79.5	303.6	
Bus 54	33.000		0	0	0	0	0	0	0	0	10.885	61.5	191.0	
Bus 55	33.000		0	0	0	0	0	0	0	0	8.797	80.3	154.4	
Bus56	33.000		0	0	0	0	0	0	0	0	29.849	89.6	525.0	
Bus 57	33.000		1.800	0.872	7.077	3.427	0	0	0	0	9.863	90.0	174.1	
Bus 58	33.000		5.400	2.615	3.538	1.714	0	0	0	0	9.931	90.0	175.3	
Bus 59	33.000		7.120	3.648	1.749	0.896	0	0	0	0	9.965	89.0	175.9	

\* 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).

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### Branch Loading Summary Report

CKT / Branch		Cable & Reactor			Transformer				
ID	Type	Ampacity (Amp)	Loading Amp	%	Capability (MVA)	Loading (input)		Loading (output)	
						MVA	%	MVA	%
Cable1	Cable	935.49	795.67	85.05					
Cable3	Cable	935.49	795.67	85.05					
Cable7	Cable	626.50	540.30	86.24					
Cable8	Cable	626.50	540.30	86.24					
Cable11	Cable	626.50	167.00	26.66					
Cable12	Cable	626.50	167.00	26.66					
Cable13	Cable	626.50	19.03	3.04					
Cable14	Cable	626.50	19.03	3.04					
T 1	Transformer				75.000	40.211	53.6	39.899	53.2
T 2	Transformer				75.000	37.844	50.5	37.575	50.1
T 3	Transformer				200.000	102.784	51.4	102.382	51.2
T 4	Transformer				200.000	92.752	46.4	92.451	46.2
T 5	Transformer				200.000	109.992	55.0	109.540	54.8
T 6	Transformer				150.000	60.154	40.1	59.920	39.9
T 7	Transformer				50.000	28.613	57.2	28.185	56.4
T 8	Transformer				25.000	10.318	41.3	10.206	40.8

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

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### Branch Losses Summary Report

CKT / 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	
Line1	144.853	70.998	-144.646	-70.509	206.9	488.8	100.0	99.7	0.29
Line3	289.705	142.102	-289.292	-140.911	413.7	1191.1	100.0	99.7	0.29
Cable1	198.941	96.808	-198.877	-96.602	64.2	205.6	99.7	99.6	0.07
Cable3	198.941	96.808	-198.877	-96.602	64.2	205.6	99.7	99.6	0.07
T 1	36.055	17.804	-36.022	-17.155	32.5	649.7	99.7	98.9	0.78
Line15	181.777	88.502	-179.989	-84.150	1787.2	4351.9	99.6	97.8	1.87
Line16	181.777	88.502	-179.989	-84.150	1787.2	4351.9	99.6	97.8	1.87
T 2	34.201	16.200	-34.172	-15.624	28.8	576.2	99.6	98.9	0.71
Line4	17.549	8.195	-17.488	-8.055	60.6	139.9	98.9	98.3	0.59
Line5	17.549	8.195	-17.488	-8.055	60.6	139.9	98.9	98.3	0.59
Line7	17.549	8.195	-17.488	-8.055	60.6	139.9	98.9	98.3	0.59
Line6	17.549	8.195	-17.488	-8.055	60.6	139.9	98.9	98.3	0.59
Line44	8.724	2.693	-8.711	-2.662	13.1	31.7	98.3	98.1	0.25
Line45	8.736	3.669	-8.722	-3.634	14.1	34.5	98.3	98.1	0.29
Line46	8.945	5.748	-8.927	-5.703	17.8	44.8	98.3	98.0	0.39
Line47	8.741	2.699	-8.728	-2.667	13.2	31.8	98.3	98.1	0.25
Line48	8.750	5.456	-8.734	-5.415	16.7	41.8	98.3	98.0	0.37
Line49	8.615	3.944	-8.600	-3.909	14.1	34.5	98.3	98.0	0.30
Line91	8.619	2.974	-8.606	-2.943	13.1	31.6	98.3	98.1	0.26
Line92	8.822	5.035	-8.805	-4.995	16.2	40.4	98.3	98.0	0.35
Cable7	133.937	61.339	-133.880	-61.227	57.5	112.1	97.8	97.7	0.07
Cable8	133.937	61.339	-133.880	-61.227	57.5	112.1	97.8	97.7	0.07
T 3	92.104	45.623	-92.063	-44.795	41.4	827.8	97.8	97.4	0.38
Line27	89.893	42.394	-89.250	-41.512	643.4	881.7	97.7	96.4	1.36
Line28	92.961	42.724	-92.279	-41.794	681.6	930.3	97.7	96.4	1.36
T 4	84.905	37.336	-84.872	-36.661	33.7	675.0	97.7	97.4	0.32
Line17	43.313	20.350	-42.931	-19.440	381.7	910.5	97.4	95.9	1.49
Line18	43.313	20.350	-42.931	-19.440	381.7	910.5	97.4	95.9	1.49
Line19	43.313	20.350	-42.931	-19.440	381.7	910.5	97.4	95.9	1.49
Line14	46.996	20.405	-46.558	-19.442	437.5	962.7	97.4	95.9	1.49
Line56	18.961	6.198	-18.895	-6.018	65.8	179.8	95.9	95.3	0.57
Line57	20.079	10.526	-19.994	-10.292	85.0	233.6	95.9	95.1	0.78
Line58	18.943	6.231	-18.877	-6.013	65.8	217.7	95.9	95.3	0.63
Line59	20.079	12.505	-19.987	-12.250	92.6	254.7	95.9	95.0	0.87
Line60	18.862	6.681	-18.795	-6.500	66.3	180.9	95.9	95.3	0.59

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CKT / 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	
Line61	20.418	13.627	-20.318	-13.352	99.7	274.7	95.9	95.0	0.93
Line94	18.961	6.198	-18.895	-6.018	65.8	179.8	95.9	95.3	0.57
Line95	20.079	10.526	-19.994	-10.292	85.0	233.6	95.9	95.1	0.78
Line96	18.972	5.270	-18.908	-5.095	64.2	175.0	95.9	95.4	0.53
Cable11	40.867	18.528	-40.861	-18.517	5.5	10.7	96.4	96.3	0.02
Cable12	40.867	18.528	-40.861	-18.517	5.5	10.7	96.4	96.3	0.02
T 5	99.795	46.251	-99.746	-45.274	48.8	976.2	96.4	96.0	0.40
Line33	13.414	6.218	-13.401	-7.039	13.0	-821.2	96.3	96.1	0.18
Line34	13.414	6.218	-13.401	-7.039	13.0	-821.2	96.3	96.1	0.18
T 6	54.895	24.598	-54.869	-24.079	26.0	519.3	96.3	96.0	0.38
Line30	39.193	17.350	-38.878	-16.640	315.5	710.4	96.0	94.7	1.29
Line29	37.036	17.303	-36.749	-16.620	286.9	683.3	96.0	94.7	1.29
Line26	39.193	17.350	-38.878	-16.640	315.5	710.4	96.0	94.7	1.29
Line31	39.193	17.350	-38.878	-16.640	315.5	710.4	96.0	94.7	1.29
Line62	15.889	6.839	-15.838	-6.701	50.8	137.8	94.7	94.1	0.56
Line63	14.788	5.443	-14.745	-5.329	42.2	113.5	94.7	94.2	0.48
Line64	15.978	10.560	-15.916	-10.390	62.3	169.9	94.7	93.9	0.73
Line65	14.880	4.334	-14.839	-4.224	40.8	109.6	94.7	94.2	0.43
Line66	15.978	9.575	-15.919	-9.415	58.9	160.5	94.7	94.0	0.69
Line67	14.871	5.245	-14.829	-5.131	42.2	113.7	94.7	94.2	0.47
Line98	15.889	8.805	-15.833	-8.652	56.0	152.4	94.7	94.0	0.65
Line99	14.796	4.532	-14.755	-4.422	40.7	109.3	94.7	94.2	0.44
Line100	15.517	6.676	-15.469	-6.545	48.5	131.1	94.7	94.1	0.55
Line101	14.796	4.532	-14.755	-4.422	40.7	109.3	94.7	94.2	0.44
Cable13	3.719	-3.494	-3.719	3.494	0.1	0.1	96.1	96.1	0.00
Cable14	3.719	-3.494	-3.719	3.494	0.1	0.1	96.1	96.1	0.00
T 7	19.364	21.066	-19.336	-20.507	27.9	558.8	96.1	99.7	3.55
T 8	7.438	-6.988	-7.429	7.160	8.6	171.2	96.1	99.7	3.55
Line35	6.691	3.337	-6.682	-3.321	8.9	15.8	99.7	99.5	0.23
Line36	6.691	3.337	-6.682	-3.321	8.9	15.8	99.7	99.5	0.23
Line32	6.691	3.337	-6.682	-3.321	8.9	15.8	99.7	99.5	0.23
Line37	6.691	3.337	-6.682	-3.321	8.9	15.8	99.7	99.5	0.23
Line74	8.892	4.336	-8.877	-4.299	15.1	37.0	99.5	99.1	0.32
Line75	8.953	4.367	-8.938	-4.329	15.3	37.6	99.5	99.1	0.32
Line76	8.884	4.582	-8.869	-4.544	15.4	37.9	99.5	99.1	0.33
					10479.6	26936.5			

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### Alert Summary Report

#### % Alert Settings

	<u>Critical</u>	<u>Marginal</u>
<u>Loading</u>		
Bus	100.0	95.0
Cable	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
<u>Bus Voltage</u>		
OverVoltage	105.0	102.0
UnderVoltage	95.0	98.0
<u>Generator Excitation</u>		
OverExcited (Q Max.)	100.0	95.0
UnderExcited (Q Min.)	100.0	

### Critical Report

Device ID	Type	Condition	Rating/Limit	Unit	Operating	% Operating	Phase Type
Bus 25	Bus	Under Voltage	33.00	kV	31.34	95.0	3-Phase
Bus 39	Bus	Under Voltage	33.00	kV	31.24	94.7	3-Phase
Bus 40	Bus	Under Voltage	33.00	kV	31.10	94.2	3-Phase
Bus 41	Bus	Under Voltage	33.00	kV	31.03	94.0	3-Phase
Bus 42	Bus	Under Voltage	33.00	kV	31.08	94.2	3-Phase
Bus 43	Bus	Under Voltage	33.00	kV	31.01	94.0	3-Phase
Bus 44	Bus	Under Voltage	33.00	kV	31.10	94.2	3-Phase
Bus 45	Bus	Under Voltage	33.00	kV	31.00	93.9	3-Phase
Bus 46	Bus	Under Voltage	33.00	kV	31.08	94.2	3-Phase
Bus 47	Bus	Under Voltage	33.00	kV	31.06	94.1	3-Phase
Bus 48	Bus	Under Voltage	33.00	kV	31.10	94.2	3-Phase
Bus 49	Bus	Under Voltage	33.00	kV	31.06	94.1	3-Phase

### Marginal Report

Device ID	Type	Condition	Rating/Limit	Unit	Operating	% Operating	Phase Type
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### Marginal Report

Device ID	Type	Condition	Rating/Limit	Unit	Operating	% Operating	Phase Type
Bus 12	Bus	Under Voltage	33.00	kV	32.33	98.0	3-Phase
Bus 14	Bus	Under Voltage	33.00	kV	32.33	98.0	3-Phase
Bus 16	Bus	Under Voltage	33.00	kV	32.34	98.0	3-Phase
Bus 23	Bus	Under Voltage	33.00	kV	31.65	95.9	3-Phase
Bus 24	Bus	Under Voltage	33.00	kV	31.46	95.3	3-Phase
Bus 26	Bus	Under Voltage	33.00	kV	31.45	95.3	3-Phase
Bus 27	Bus	Under Voltage	33.00	kV	31.36	95.0	3-Phase
Bus 28	Bus	Under Voltage	33.00	kV	31.44	95.3	3-Phase
Bus 29	Bus	Under Voltage	33.00	kV	31.39	95.1	3-Phase
Bus 30	Bus	Under Voltage	33.00	kV	31.46	95.3	3-Phase
Bus 31	Bus	Under Voltage	33.00	kV	31.39	95.1	3-Phase
Bus 32	Bus	Under Voltage	33.00	kV	31.47	95.4	3-Phase
Bus 33	Bus	Under Voltage	161.00	kV	155.12	96.4	3-Phase
Bus 34	Bus	Under Voltage	161.00	kV	155.09	96.3	3-Phase
Bus 35	Bus	Under Voltage	33.00	kV	31.67	96.0	3-Phase
Bus 36	Bus	Under Voltage	33.00	kV	31.67	96.0	3-Phase
Bus 37	Bus	Under Voltage	33.00	kV	31.67	96.0	3-Phase
Bus 38	Bus	Under Voltage	33.00	kV	31.67	96.0	3-Phase
Bus 50	Bus	Under Voltage	161.00	kV	154.80	96.1	3-Phase
Bus 51	Bus	Under Voltage	161.00	kV	154.80	96.1	3-Phase
Bus17	Bus	Under Voltage	161.00	kV	157.42	97.8	3-Phase
Bus18	Bus	Under Voltage	161.00	kV	157.31	97.7	3-Phase
Bus19	Bus	Under Voltage	33.00	kV	32.14	97.4	3-Phase
Bus20	Bus	Under Voltage	33.00	kV	32.14	97.4	3-Phase
Bus21	Bus	Under Voltage	33.00	kV	32.14	97.4	3-Phase
Bus22	Bus	Under Voltage	33.00	kV	32.14	97.4	3-Phase

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**SUMMARY OF TOTAL GENERATION , LOADING & DEMAND**

	<u>MW</u>	<u>Mvar</u>	<u>MVA</u>	<u>% PF</u>
Source (Swing Buses):	434.558	213.100	483.996	89.79 Lagging
Source (Non-Swing Buses):	0.000	0.000	0.000	
Total Demand:	434.558	213.100	483.996	89.79 Lagging
Total Motor Load:	205.288	104.000	230.128	89.21 Lagging
Total Static Load:	218.790	82.163	233.709	93.62 Lagging
Total Constant I Load:	0.000	0.000	0.000	
Total Generic Load:	0.000	0.000	0.000	
Apparent Losses:	10.480	26.937		
System Mismatch:	0.000	0.000		

Number of Iterations: 4